Conservation Plan

Green River Wind Farm

Lee and Whiteside Counties, Illinois

November 16, 2023

Prepared for:

Green River Wind Farm Phase 1, LLC
8400 Normandale Lake Boulevard
Suite 1200
Bloomington, MN 55437

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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: Green River Wind Farm Phase 1, LLC

PROJECT NAME: Green River Wind Farm

COUNTY: Lee and Whiteside

LOCATION: Approximately 9 Miles Southeast of Sterling, Illinois and 4 Miles North of Walnut, Illinois (Township 19N, Range 7E, Sections 12-13, 24-25, and 35-36; Township 19N, Range 8E, Sections 7-8, 10-31, and 36; Township 19N, Range 9E, Sections 4-6, 16-21, and 28-33)

Directions to the Project from Sterling, Illinois: Travel south along Highway 40 and then east on Hahnaman Road

Directions to the Project from Walnut, Illinois: Travel north on 1400E Street/Indian Head Road

1.0 INTRODUCTION

Green River Wind Farm Phase 1, LLC (Green River or the Applicant) has been operating the Green River Wind Farm (GRWF) in Lee and Whiteside counties in Illinois since November 2019. GRWF was developed and is managed by National Grid Renewables, formerly known as Geronimo Energy. In 2019, Green River prepared a Conservation Plan for the following state-listed species:

- Indiana Bat (*Myotis sodalis*) – Endangered (State and Federal)
- Northern Long-eared Bat (*Myotis septentrionalis*) – Threatened (State and Federal)
- Blanding's Turtle (*Emydoidea blandingii*) – State-Threatened
- Ornate Box Turtle (*Terrapene ornata*) – State-Threatened
- Plains Hog-nosed Snake (*Heterodon nasicus*) – State-Threatened
- Regal Fritillary (*Speyeria idalia*) – State-Threatened

An Incidental Take Authorization (ITA) covering take of the Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary was issued for the Project in March 2020 (IDNR ITA #98). Issuance of an ITA amendment covering take of the Indiana bat and northern long-eared bat was issued on November 1, 2022 following issuance of a federal Incidental Take Permit (ITP) for these species (Permit Number ESPER0047664).

In July 2021, an ITA amendment was issued covering take of the state-threatened black-billed cuckoo (*Coccyzus erythropthalmus*) (IDNR ITA #98).

On August 2, 2023, an upland sandpiper (*Bartramia longicauda*) carcass was found during post-construction monitoring surveys for the Project. The species is listed as endangered in the state of Illinois; therefore, the Illinois Department of Natural Resources (Department or IDNR) was notified of the mortality.

Following coordination with the Department, this Conservation Plan was prepared in accordance with the Illinois Endangered Species Protection Act (520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080) in support of an ITA application. The purpose of this Conservation Plan is to review the proposed Green River Wind Farm (Project or Action) in sufficient detail to determine to what extent the proposed action may result in "incidental take" of the upland sandpiper.

Based on review of the National Land Cover Database (NLCD), land use within the Project area consists primarily of agricultural lands in rowcrop production (92.5%) and developed space (i.e., developed open spaces, low and high intensity; 3.7%). Deciduous forest makes up approximately 1.8% of the Project area and is typically associated with homesteads, shelterbelts, forested fence lines, and riparian areas near the Green River (Homer et al. 2015).

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROJECT DESCRIPTION

The Project is a 194.25-megawatt (MW) wind farm located in Lee and Whiteside counties, Illinois (Figure 1). The Project is approximately 12,120 acres (ac) in size and consists of 74 Siemens Gamesa G126 (2.625-MW) wind turbine generators (WTGs) and associated access roads, collector lines, crane paths, fiber optic line, substation, and operations and maintenance (O&M) building (Figures 1 and 2). Commercial operation of the Project began in November 2019 and the Project is anticipated to be in operation for 30 years.

Each WTG consists of the tower, a nacelle that houses the generator and gearbox, and a three-blade rotor assembly. From the base of the tower to the tip of the blade, the total maximum height of the WTG is 485 feet (ft). Hub height is approximately 275 ft. Each WTG is anchored to a steel-reinforced concrete foundation. Each turbine pad is approximately 20 ft in diameter.

The Project includes an underground power collection system between the pad-mounted transformers and a collector substation. All collector lines are buried a minimum of 5 ft. The collector system connects to the ComEd Schauff Road switchyard located immediately west of County Line Road and south of Hahnaman Road in Whiteside County. In addition to the WTGs and power collection system, access roads were constructed to provide access to the turbines. These access roads are approximately 16 ft wide and are constructed of crushed gravel/rock.

The Project O&M building is located immediately west of County Line Road and south of Hahnaman Road in Whiteside County. The Project substation pad is approximately 200 ft x 300 ft (approximately 1.5 ac in size).

2.2 COVERED ACTIVITIES

Take coverage is requested for continued commercial operation of the Project.

2.3 ACTION AREA

The upland sandpiper may be affected by operation of the Project. Therefore, the Action Area has been defined as the area within the Green River Wind Farm Project boundary (12,120 ac in size; Figures 1 and 2), including 74 2.625-MW WTGs and associated access roads.

2.4 PERMITTING REVIEWS

Green River will continue to comply with all federal, state, and local regulations. Below is a summary of the consultation and permitting that has taken place to-date:

1. In 2019, Green River prepared a Conservation Plan that included two bat species (Indiana bat and northern long-eared bat, and four terrestrial species (Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary). An ITA was issued authorizing take of the terrestrial species on March 25, 2020.

2. In 2020, Green River prepared a Conservation Plan to amend the existing ITA and add take of black-billed cuckoo. An ITA amendment covering the take of black-billed cuckoo was issued on July 16, 2021.

3. Green River coordinated with the U.S. Fish and Wildlife Service (USFWS) to prepare a Habitat Conservation Plan (HCP) in support of a federal ITP for the federally endangered Indiana bat and the federally threatened northern long-eared bat. The federal ITP was issued on July 29, 2022 (Permit Number ESPER0047664).

4. An ITA amendment covering take of the Indiana bat and northern long-eared bat was issued on November 1, 2022.

5. A Joint Clean Water Act Section 404/401 permit was issued by the U.S. Army Corp of Engineers (USACE) for the Project on March 5, 2018.

6. Green River coordinated with both Lee and Whiteside counties to obtain Special Use Permits for the Project. The Whiteside County Board approved a Special Use Permit for the Project at the August 21, 2012 Board meeting. The Lee County Board approved a Special Use Permit for the Project at the May 21, 2013 Board meeting.

2.5 TIMELINE OF PROJECT ACTIVITIES

Green River proposes to continue operation of the Project for up to 30 years. Commercial operation of the Project began in 2019; therefore, take coverage is requested through 2049.

2.6 OWNERSHIP OF AFFECTED PROPERTIES

Green River has lease agreements or easements for or ownership over each parcel where Project infrastructure occurs. The terms of the individual lease agreements vary but the agreements are valid through the anticipated lifespan of the Project. The Project is anticipated to be operational for 30 years (beginning in 2019), after which time it may be repowered or decommissioned.

2.7 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.

2.8 PROPOSED ACTION AND ALTERNATIVES CONSIDERED

2.8.1 Proposed Action

The Proposed Action includes continued operation of the Project under the curtailment strategy developed for the 2022 HCP prepared for the Indiana bat and northern long-eared bat (Federal Permit Number ESPER0047664 and IDNR ITA #98), or under future curtailment strategies developed in coordination with the USFWS and the Department. Regardless of the specifics, the curtailment strategy will not meaningfully affect the take of the upland sandpiper (i.e., increase or decrease take) because changing cut-in speed has not been shown to affect bird mortality (Marques et al. 2014).

Additional conservation measures implemented by the Applicant, including measures to avoid and minimize impacts to the upland sandpiper, are found in Section 5.2.

2.8.2 Alternatives Considered But Dismissed

The 2019 Conservation Plan for the Project includes a description of those alternatives considered, but ultimately dismissed for construction and operation Project (IDNR ITA #98).

No Action Alternative

The purpose of the Project, which has already been constructed, is electrical energy production. Two No Action Alternatives were considered for the purposes of this Conservation Plan: 1) complete shutdown of the turbines; and 2) shutting down turbines at night during spring and fall migration when rotor strikes are most likely to occur. Neither of these No Action alternatives meets the Project purpose and need; therefore, Green River rejected these alternatives and will continue operation of the Project under the Proposed Action (see Section 2.8.1).

3.0 BIOLOGICAL DATA ON AFFECTED SPECIES

3.1.1 Upland Sandpiper

Species Description

Upland sandpipers are slender shorebirds with long, yellow legs, a thin neck, a small head, large eyes, and a thin, yellow bill with black tip. They average 11 to 12 inches in length. The tail is long. The upper side of the body and head is marbled golden brown and blackish. The underside is white with dark streaks on the breast and sides. Juveniles look similar in appearance.

Habitat Requirements

Upland sandpipers nest in a variety of grassland habitats (i.e., native prairie, dry meadows, pastures, hayfields, plowed fields, highway rights-of way, grassed waterways, and airfields) (NatureServe 2023). Occasionally, they will use agricultural fields (i.e., recently hayed legumes and wheat stubble) (NatureServe 2023). Preferred habitat includes large areas of short grass for feeding and courtship. Additionally, habitats with adjacent taller grasses for nesting and brood cover is preferred (NatureServe 2023). Eggs are produced from mid-May through June. The nest is built in a hollow lined with grasses or leaves (IDNR 2023). Taller grasses provide cover over the nest.

Migration

The upland sandpiper is a long-distance migrant species. Spring migrants begin arriving in early to mid-April and fall migration begins in July (IDNR 2023). The upland sandpiper spends its winters as far south as central Argentina and Uruguay (IDNR 2023).

Species Status in Illinois

The upland sandpiper is listed as endangered in the state of Illinois. They are an uncommon migrant and summer resident throughout the state (IDNR 2023).

Status in the Action Area

The Project is located within the known range of the upland sandpiper. Hay/pasture, which provides suitable habitat for this species, makes up approximately 1.1% of the Project area (Homer et al. 2015). However, they may occasionally use agricultural lands in row crop production (approximately 92.5% of the Project area). One upland sandpiper was found at the Project during a scheduled carcass search on August 2, 2023.

4.0 EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

4.1 UPLAND SANDPIPER

4.1.1 Direct Effects

No suitable habitat for the upland sandpiper (i.e., hay/pasture or cultivated crops) will be lost as a result of Project operation.

Operational impacts of wind facilities on birds include varying degrees of displacement from the wind turbines and surrounding habitat, and fatalities resulting from collisions with turbines, transmission lines, and other project-related structures (Winegrad 2004). Erickson et al. (2005) estimate that 500 million to 1 billion birds are killed annually in the United States due to anthropogenic sources. Fatality estimates at wind farms make up a fraction of that estimate.

Resident and migrating songbirds (passerines) represent the majority of fatalities at wind turbines nationwide (75%, excluding California; Erickson et al. 2001). Collision risk for passerines is likely greatest during take-off and landing, particularly when wind energy facilities abut migratory stopover sites. Additionally, poor weather conditions may lower the flight altitude of migrants which may put them at risk of collision if flying in the rotor swept areas (Kerlinger 1995). Since upland sandpipers typically forage and nest at heights below the rotor swept area, collision risk is likely greatest during migration for this species. Avian collision mortality estimates vary across the United States (and have not been calculated for the Project) but generally are not substantial enough to significantly affect passerine populations (Kuvlesky et al. 2007).

Bird mortality at wind facilities has been reported from direct impact with a spinning turbine blade. Barotrauma, involving tissue damage to air-containing structures (e.g., lungs) caused by rapid or excessive pressure change, is not suggested as a cause of bird fatalities (Baerwald et al. 2008). Though barotrauma is a common cause of bat fatalities at wind farms, differences in anatomy suggest that birds are less susceptible to barotrauma (Baerwald et al. 2008).

4.1.2 Indirect Effects

Wind turbines may displace birds from an area due to the creation of edge habitat, introduction of vertical structures, and/or disturbances directly associated with turbine operation (e.g., noise, shadow flicker). Disturbance impacts are often complex, involving shifts in abundance, species composition, and behavioral patterns. The magnitude of these impacts varies across species, habitats, and regions. Strickland et al. (2004) indicated that avoidance impacts to birds generally extend 246 ft to 2,624 ft from a turbine, depending on the environment and bird species affected.

Since the Project is already constructed and no addition of turbines or other infrastructure is proposed, additional disturbance and displacement impacts to birds, including the upland sandpiper, are not expected. Additionally, no breeding habitat for the upland sandpiper will be modified or lost as a result of ongoing operation of the Project.

4.1.3 Take Estimate

Nationwide, a total of 16 upland sandpiper fatalities had been reported as of 2018 from 12 post-construction monitoring studies, making up 0.2% of all bird fatalities (Allison et al. 2020). Post-construction monitoring at the Project has been ongoing since 2020. To date, one upland sandpiper has been found during post-construction monitoring at the Project, making up 0.2% of all bird fatalities found as of August 31, 2023, though this value will likely decrease as post-construction monitoring continues (assuming no more upland sandpipers are found). Two other wind facilities in Illinois, EcoGrove/Wolf Creek Windpower and Adams Electric Cooperative Wind, have prepared Conservation Plans for the upland sandpiper, although neither had any recorded upland sandpiper fatalities at the time of publication and no other conservation plans covering upland sandpiper have been published for wind facilities since 2010. Averaging the species composition values available (0.2% nationwide and 0.2% to-date at the Project) results in an average species composition of 0.2%. A site-specific bird fatality estimate has not yet been calculated, however, Allison et al. (2020) estimated that wind facilities in the prairie region (where the Project is located) average 1.83 birds/MW. Using the 1.83 birds/MW estimate and the 194.25 MW capacity of the Project, an estimated 356 birds are predicted to be killed annually, of which, 0.2% are assumed to be upland sandpiper, for an estimated annual take of 0.7 upland sandpiper per year.

Green River is applying for a take limit of **1 upland sandpiper per year** (0.7 rounded up to the nearest whole bird) which is not anticipated to reduce the survival or recovery of the species, the biotic community of which it is a part, or the habitat essential to its existence due to the implementation of conservation measures (see Section 5.2).

5.0 MINIMIZATION MEASURES, MITIGATION, AND MONITORING

5.1 PLANS FOR MANAGEMENT OF THE AREA

The Project began operating in 2019. Green River will continue to maintain existing turbines and Project infrastructure, including existing gravel access roads and pads. The use of cropped areas will be determined by individual landowners; however, it is assumed that most areas will continue to be use for the production of rowcrops.

5.2 MEASURES TO AVOID AND MINIMIZE EFFECTS

The following Conservation Measures have been implemented by Green River to avoid or minimize impacts to the upland sandpiper:

- Green River has provided all contractors and employees with training and an environmental information package regarding the state-endangered upland sandpiper which has the potential to be affected by Project operation; this package includes information on how to identify the species and the protocols to follow if the species is encountered within the Action Area during operation of the Project.

- During development of the Project, Green River implemented measures to avoid and minimize effects to bird species in accordance with the USFWS Land-Based Wind Energy Guidelines (WEGs; USFWS 2012), including:

    - Minimizing the number of turbines located within 1,000 feet of woodlots
    - Avoiding siting turbines within wetland areas to the extent practicable
    - Constructing tubular towers to eliminate perching opportunities and minimize the risk of rotor collisions
    - Installation of an underground electrical collection system except in area where it was impractical
    - Marking overhead transmission with bird diverters at 20-foot intervals where crossing habitat resources such as wetlands and woodlots
    - Marking overhead transmission lines/substations in compliance with Avian Power Line Interaction Committee (APLIC) recommendations.

- As part of Project operation, Green River implemented measures to avoid and minimize effects to bird species in accordance with the USFWS WEGs (USFWS 2012), including:

    - Minimizing facility lighting to avoid attracting songbirds by using motion sensors where possible, directing lights downward, and lighting turbines in accordance with Federal Aviation Administration (FAA) minimum requirements
    - Temporary meteorological (MET) towers were replaced with non-guyed lattice towers
    - Spark arrestors were installed on all electrical equipment

- If changed or unforeseen circumstances arise that reduce the effectiveness of the minimization measures described in this Conservation Plan, Green River will coordinate with the Department to determine if additional conservation measures are warranted for the upland sandpiper.

5.3 MITIGATION

In addition to implementation of avoidance and minimization measures summarized in Section 5.2, Green River has contributed $75,000 to Illinois Wildlife Preservation Fund for use within protected habitat for the state-listed Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary and $25,000 to assist with management of or bring conservation benefit to black-billed cuckoo. Additionally, Green River facilitated donation of 12.5 acres of suitable habitat for these species to Middle Rock Conservation Partners, along with $31,250 to support restoration of those acres and protected 123.4 acres of summer bat habitat (i.e., woodland) in Vermillion County, Illinois (IDNR ITA#98).

Green River 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 upland sandpiper.

5.4 MONITORING

Post-construction monitoring for the Project began in November 2019 for eagles, and in May 2020 for bats. Bat monitoring protocols are outlined in the 2019 Conservation Plan (IDNR ITA #98). Although the primary purpose of this monitoring is to detect eagles and listed bat species, all birds detected are also recorded. Any findings of state-listed bird species, including the upland sandpiper, are reported to the Department.

Post-construction monitoring plans for the upland sandpiper are presented in Table 5-1.

Table 5-1. Summary of Post-construction Monitoring for Upland Sandpiper at Green River Wind Farm

Season	Monitoring Dates	Roads and Pads or Full Plots	Search Interval	Monitoring Activities
Spring	May 1 – May 15	Roads and pads (100%; n=74)	Once Annually	Monitoring for upland sandpiper will occur concurrent with post-construction monitoring visits for eagles.
Summer/Fall (during the first three years of operation)	May 15 – October 15	Roads and pads (65%; n=48) and full plots (35%; n=26)	Twice weekly	Monitoring for the upland sandpiper will occur concurrent with post-construction monitoring visits for bats
Summer/Fall (after the first three years of operation)	May 15 – October 15	Roads and pads (n=23 during summer; n=74 during fall)	Weekly	Monitoring for the upland sandpiper will occur concurrent with post-construction monitoring visits for bats

5.5 FUNDING TO SUPPORT MITIGATION AND MONITORING

Funding for the implementation of the conservation measures outlined in this conservation plan has been dedicated as part of Green River's overall budget for the Project.

6.0 ADAPTIVE MANAGEMENT PRACTICES

Adaptive management is a process that will allow Green River to adjust its actions to reflect new information or changing conditions to reach a goal, in this case, minimization of take and conservation of the upland sandpiper.

Information used in the adaptive management process will come from the post-construction mortality monitoring activities described above. If the conservation measures are not producing the desired results, adjustments will be made as needed in coordination with the Department.

All upland sandpiper fatalities will be reported to the Department within one business day of positive identification of the carcass. If documented take of upland sandpiper exceeds the anticipated take level, up to one upland sandpiper per year, the following measures will be implemented (i.e., if two upland sandpipers are found within a single year):

- Green River will meet and confer with the Department to determine the potential cause of mortality. If the cause is determined to be related to Project operation, Green River will develop additional conservation measures as needed in coordination with the Department to reduce effects to this species.
- Post-construction monitoring will be conducted again the following year within the season in which the fatality was documented to determine if the additional conservation measures were successful at reducing mortality.
- If no spatial, temporal, or weather patterns emerge as potential causes for the fatality, no new conservation measures will be implemented based on one year of exceeding the anticipated take levels. However, if subsequent years also document more than one upland sandpiper fatality, Green River will coordinate with the Department to determine the need to implement additional conservation measures, and if needed, pursue an amendment to the ITA.

7.0 CONCLUSIONS AND EFFECTS DETERMINATION

The take to the upland sandpiper at the Project is not likely to reduce the survival or recovery of the species in Illinois, the biotic community of which it is a part, or the habitat essential to its existence for the following reasons:

- Project operation is anticipated to result in upland sandpiper take (mortality). For the purposes of this Illinois Conservation Plan, take of the upland sandpiper is estimated to be **1 upland sandpiper per year.**

- Due to annual variation in environmental factors that may affect upland sandpiper population sizes and migration, annual mortality can be expected to differ from year to year. In an effort to be responsive to this variation, and to ensure that the 30-year take limits are not exceeded, this Conservation Plan includes post-construction monitoring (Section 5.4) and adaptive management take thresholds (summarized in Section 6.0).

- Mitigation measures have been incorporated into the Project to provide a long-term benefit to upland sandpiper that will mitigate for the impacts of the permitted levels of take. Mitigation measures include a monetary contribution to the Illinois Wildlife Preservation Fund to assist with management of, or bring conservation benefit to, upland sandpiper (see Section 5.3).

8.0 REFERENCES

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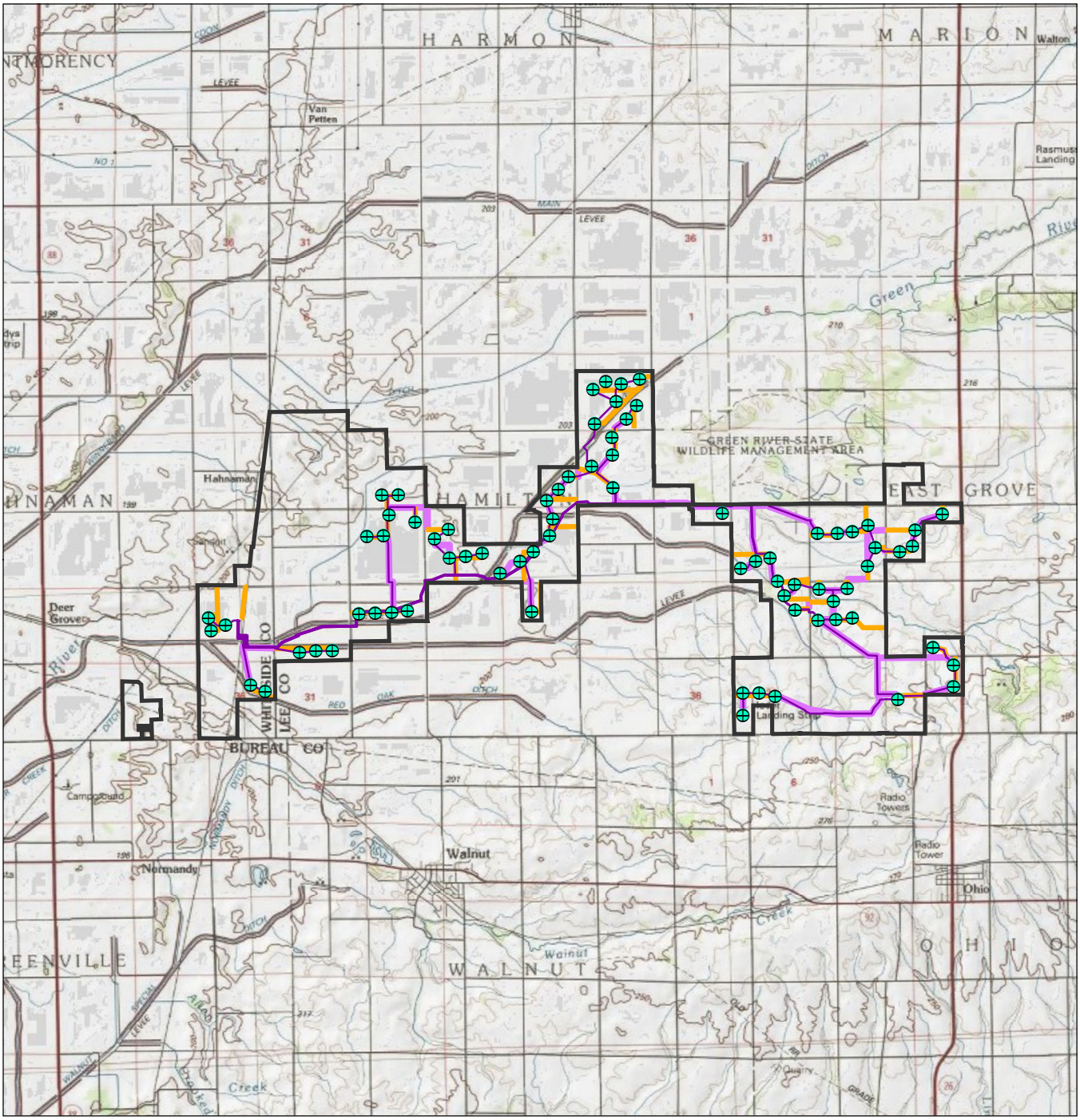

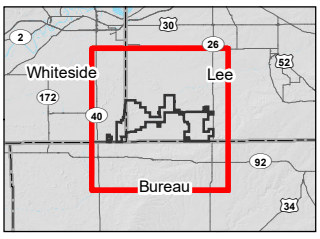

Legend

- Project Boundary/Action Area
- Terrestrial Action Area
- Turbine
- Collection System
- Access Road
- Crane Path

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS
3. Background: USGS 7.5' Topographic Quadrangle

Figure No.
1

Title
Project Location and Project Components

Client/Project
Green River Wind Farm Phase I, LLC
Green River Wind Farm
Upland Sandpiper Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by AJS on 2020-10-29
Technical Review by DG on 2020-10-29
Independent Review by SP on 2020-10-29

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1:126,720 (at original document size of 8.5x11)

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Stantec

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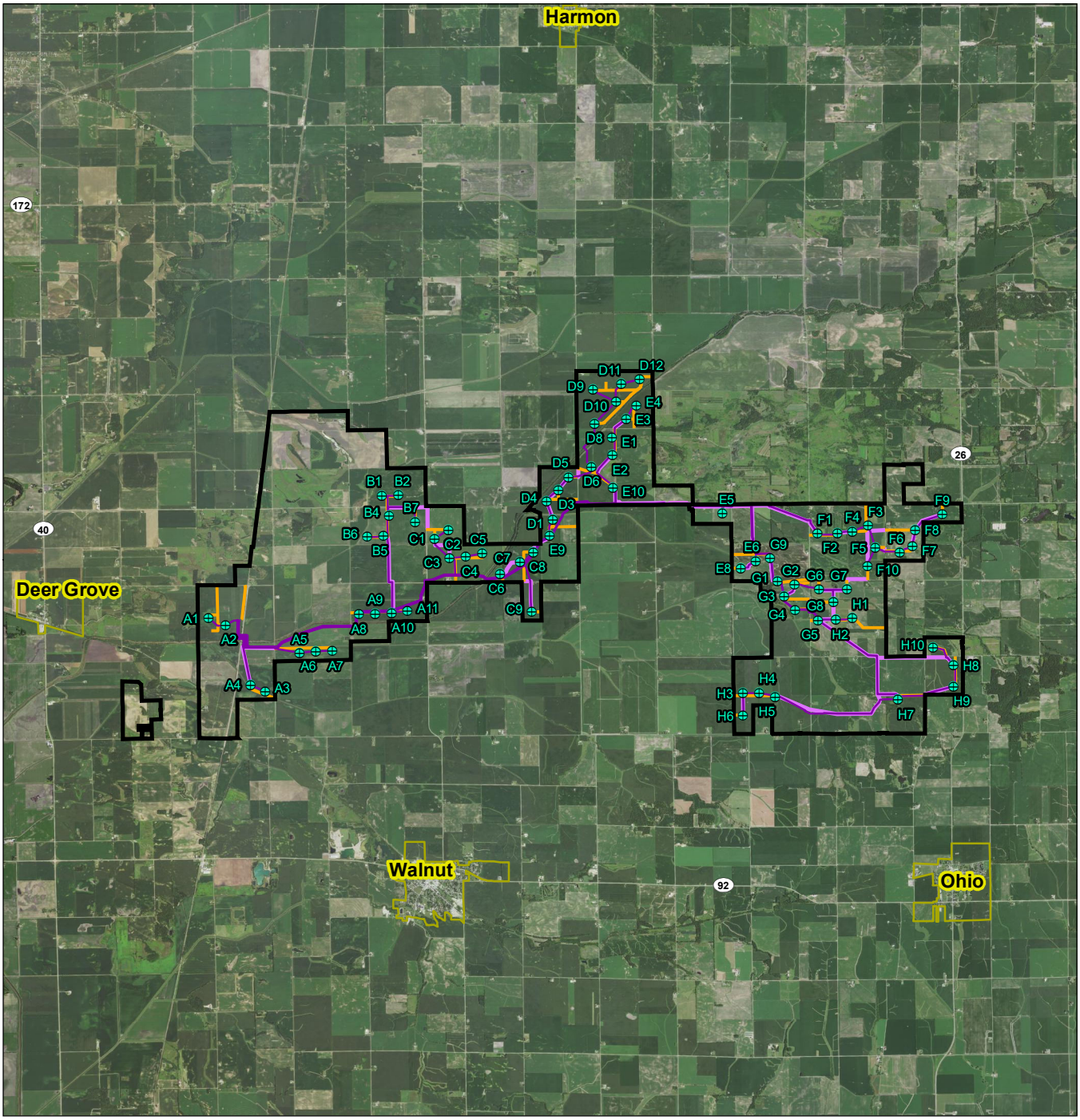

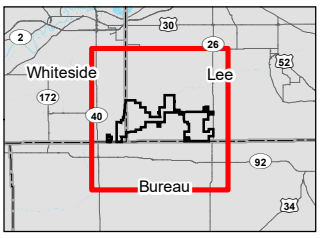

Legend

- Project Boundary/Action Area
- Terrestrial Action Area
- Turbine
- Collection System
- Access Road
- Crane Path

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2017 NAIP

Figure No.
2

Title
Action Area Overview

Client/Project
Green River Wind Farm Phase I, LLC
Green River Wind Farm
Upland Sandpiper Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by AJS on 2020-10-29
Technical Review by DG on 2020-10-29
Independent Review by SP on 2020-10-29

0 1 2 Miles
1:126,720 (at original document size of 8.5x11)

N

Stantec

APPENDIX A – IMPLEMENTING AGREEMENT

Implementing Agreement

Conservation Plan
For the
Upland Sandpiper

Green River Wind Farm Phase 1, LLC
Lee and Whiteside Counties, 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, Green River Wind Farm Phase 1, LLC (Green River) 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. Green River will oversee all avoidance, minimization, and monitoring efforts identified within the Conservation Plan. Furthermore, Green River will be responsible for planning, contract execution, and construction supervision for the entire project.

Green River will implement this Conservation Plan in coordination with the IDNR as required in the ITA. Green River will be responsible for coordinating and overseeing any onsite work that requires knowledge, skills, and expertise related to the listed species. Members of the Green River Operations Department will be Officers of Record for this Conservation Plan and Implementing Agreement and bear the corporate responsibility for compliance with the terms and conditions of the ITA.

Green River hereby certifies that it has authority and funding to complete this project and to implement all proposed monitoring activities and conservation measures included in this Conservation Plan for the upland sandpiper. Green River 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 Green River Project Manager, who will oversee implementation of the Conservation Plan and on-site monitoring as required by the ITA is:

Brett Kreiser
Green River Project Manager
Green River Wind Farm Phase 1, LLC
2723 County Line Road
Deer Grove, IL 61243
952.988.9000

As the Green River Project Manager, I, Brett Kreiser, am responsible for the implementation of this Conservation Plan and the terms and conditions of the ITA.

Signature: Brett Kreiser
Brett Kreiser (Dec 10, 2023 14:53 CST) _____ Date: _____

Brett Kreiser, Green River Project Manager

Conservation Plan

Green River Wind Farm
Lee and Whiteside Counties, Illinois

February 8, 2021

Prepared for:

Green River Wind Farm Phase 1, LLC
8400 Normandale Lake Boulevard
Suite 1200
Bloomington, MN 55437

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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: Green River Wind Farm Phase 1, LLC

PROJECT NAME: Green River Wind Farm

COUNTY: Lee and Whiteside

LOCATION: Approximately 9 Miles Southeast of Sterling, Illinois and 4 Miles North of Walnut, Illinois (Township 19N, Range 7E, Sections 12-13, 24-25, and 35-36; Township 19N, Range 8E, Sections 7-8, 10-31, and 36; Township 19N, Range 9E, Sections 4-6, 16-21, and 28-33)

Directions to the Project from Sterling, Illinois: Travel south along Highway 40 and then east on Hahnaman Road

Directions to the Project from Walnut, Illinois: Travel north on 1400E Street/Indian Head Road

1.0 INTRODUCTION

Green River Wind Farm Phase 1, LLC (Green River or the Applicant) has been operating the Green River Wind Farm (GRWF) in Lee and Whiteside counties in Illinois since November 2019. GRWF was developed and is managed by National Grid Renewables, formerly known as Geronimo Energy. In 2019, Green River prepared a Conservation Plan for the following state-listed species:

- Indiana Bat (*Myotis sodalis*) – Endangered (State and Federal)
- Northern Long-eared Bat (*Myotis septentrionalis*) – Threatened (State and Federal)
- Blanding's Turtle (*Emydoidea blandingii*) – State-Threatened
- Ornate Box Turtle (*Terrapene ornata*) – State-Threatened
- Plains Hog-nosed Snake (*Heterodon nasicus*) – State-Threatened
- Regal Fritillary (*Speyeria idalia*) – State-Threatened

An Incidental Take Authorization (ITA) covering take of the Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary was issued for the Project in March 2020. Issuance of an ITA covering take of the Indiana bat and northern long-eared bat is currently pending completion of a federal Incidental Take Permit (ITP).

A black-billed cuckoo (*Coccyzus erythropthalmus*) carcass was found during post-construction monitoring surveys on May 26, 2020. The species is listed as threatened in the state of Illinois; therefore, the Illinois Department of Natural Resources (Department or IDNR) was notified of the mortality. Following coordination with the Department, this Conservation Plan was prepared in accordance with the Illinois Endangered Species Protection Act (520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080) in support of an ITA application. The purpose of this Conservation Plan is to review the proposed Green River Wind Farm

(Project or Action) in sufficient detail to determine to what extent the proposed action may result in "incidental take" of the black-billed cuckoo.

Based on review of the National Land Cover Database (NLCD), land use within the Project area consists primarily of agricultural lands in rowcrop production (92.5%) and developed space (i.e., developed open spaces, low and high intensity; 3.7%). Deciduous forest makes up approximately 1.8% of the Project area and is typically associated with homesteads, shelterbelts, forested fence lines, and riparian areas near the Green River (Homer et al. 2015).

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROJECT DESCRIPTION

The Project is a 194.25-megawatt (MW) wind farm located in Lee and Whiteside counties, Illinois (Figure 1). The Project is approximately 12,120 acres (ac) in size and consists of 74 Siemens Gamesa G126 (2.625-MW) wind turbine generators (WTGs) and associated access roads, collector lines, crane paths, fiber optic line, substation, and operations and maintenance (O&M) building (Figures 1 and 2). Commercial operation of the Project began in November 2019 and the Project is anticipated to be in operation for 30 years.

Each WTG consists of the tower, a nacelle that houses the generator and gearbox, and a three-blade rotor assembly. From the base of the tower to the tip of the blade, the total maximum height of the WTG is 485 feet (ft). Hub height is approximately 275 ft. Each WTG is anchored to a steel-reinforced concrete foundation. Each turbine pad is approximately 20 ft in diameter.

The Project includes an underground power collection system between the pad-mounted transformers and a collector substation. All collector lines are buried a minimum of 5 ft. The collector system connects to the ComEd Schauff Road switchyard located immediately west of County Line Road and south of Hahnaman Road in Whiteside County. In addition to the WTGs and power collection system, access roads were constructed to provide access to the turbines. These access roads are approximately 16 ft wide and are constructed of crushed gravel/rock.

The Project O&M building is located immediately west of County Line Road and south of Hahnaman Road in Whiteside County. The Project substation pad is approximately 200 ft x 300 ft (approximately 1.5 ac in size).

2.2 COVERED ACTIVITIES

Take coverage is requested for continued commercial operation of the Project.

2.3 ACTION AREA

The black-billed cuckoo may be affected by operation of the Project. Therefore, the Action Area has been defined as the area within the Green River Wind Farm Project boundary (12,120 ac in size; Figures 1 and 2), including 74 2.625-MW WTGs and associated access roads.

2.4 PERMITTING REVIEWS

Green River will continue to comply with all federal, state, and local regulations. Below is a summary of the consultation and permitting that has taken place to-date:

1. Green River is currently coordinating with the U.S. Fish and Wildlife Service (USFWS) to prepare a Habitat Conservation Plan (HCP) in support of a federal ITP for the federally endangered Indiana bat and the federally threatened northern long-eared bat.

2. In 2019, Green River prepared a Conservation Plan that included two bat species (Indiana bat and northern long-eared bat, and four terrestrial species (Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary). An ITA was issued authorizing take of the terrestrial species in March 2020. Issuance of an ITA covering take of the Indiana bat and northern long-eared bat is currently pending issuance of a federal ITP.

3. A Joint Clean Water Act Section 404/401 permit was issued by the U.S. Army Corp of Engineers (USACE) for the Project on March 5, 2018.

4. Green River coordinated with both Lee and Whiteside counties to obtain Special Use Permits for the Project. The Whiteside County Board approved a Special Use Permit for the Project at the August 21, 2012 Board meeting. The Lee County Board approved a Special Use Permit for the Project at the May 21, 2013 Board meeting.

2.5 TIMELINE OF PROJECT ACTIVITIES

Green River proposes to continue operation of the Project for up to 30 years. Commercial operation of the Project began in 2019; therefore, take coverage is requested through 2049.

2.6 OWNERSHIP OF AFFECTED PROPERTIES

Green River has lease agreements or easements for or ownership over each parcel where Project infrastructure occurs. The terms of the individual lease agreements vary but the agreements are valid through the anticipated lifespan of the Project. The Project is anticipated to be operational for 30 years (beginning in 2019), after which time it may be repowered or decommissioned.

2.7 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.

2.8 PROPOSED ACTION AND ALTERNATIVES CONSIDERED

2.8.1 Proposed Action

The Proposed Action includes continued operation of the Project under a curtailment strategy currently being developed in a Habitat Conservation Plan being prepared in support of applications for a federal ITP and a state ITA for the Indiana bat and northern long-eared bat. Once developed, and regardless of the specifics, the final curtailment strategy will not meaningfully affect the take of the black-billed cuckoo (i.e., increase or decrease take) because changing cut-in speed has not been shown to affect bird mortality (Marques et al. 2014).

Additional conservation measures implemented by the Applicant, including measures to avoid and minimize impacts to the black-billed cuckoo, are found in Section 5.2.

2.8.2 Alternatives Considered But Dismissed

The 2019 Conservation Plan for the Project includes a description of those alternatives considered, but ultimately dismissed for construction and operation Project (IDNR ITA #98).

No Action Alternative

The purpose of the Project, which has already been constructed, is electrical energy production. Two No Action Alternatives were considered for the purposes of this Conservation Plan: 1) complete shutdown of the turbines; and 2) shutting down turbines at night during spring and fall migration when rotor strikes are most likely to occur. Neither of these No Action alternatives meets the Project purpose and need; therefore, Green River rejected these alternatives and will continue operation of the Project under the Proposed Action (see Section 2.8.1).

3.0 BIOLOGICAL DATA ON AFFECTED SPECIES

3.1.1 Black-billed Cuckoo

Species Description
Black-billed cuckoos are slim, long-tailed birds. The upper side of the head and body is plain brown, while the underside is white. They have a black bill that curves downward. Adults have a reddish ring around the eyes. Juveniles look similar in appearance; however, they have a yellowish ring around the eyes. Females and males look alike, though females are somewhat larger than males. They are a facultative brood parasite, occasionally laying eggs in nests of the similar species, yellow-billed cuckoo (*Coccyzus americanus*), and other passerine species. The black-billed cuckoo primarily forages on insects in woodlands, edge habitat, and thickets, typically within tree canopies but occasionally on the ground.

Habitat Requirements
Black-billed cuckoos typically nest in extensive tracts of open woodlands and thickets (Spencer 1943). They have been observed nesting in both deciduous and coniferous trees, as well as shrubs (Spencer 1943). They are often associated with older woodland edges, fencerows, riparian areas, and orchards and are less likely to use suburban areas (IDNR 2017; Kleen et al. 2004; Spencer 1943). Nests are made of small twigs lined with leaf scrap and pine needs (Spencer 1943). They are well concealed by overhanging branches and typically located lower to the ground (Spencer 1943). Some black-billed cuckoos nest on the ground, with nests concealed by tall vegetation (NatureServe 2020).

Migration
The black-billed cuckoo is a nocturnal, neotropical migrant species, spending winter in South America (NatureServe 2020). Spring migrants arrive in Illinois in May and breeding occurs between May and August (IDNR 2017). Adult males arrive earlier than females in the spring (NatureServe 2020).

Species Status in Illinois
The black-billed cuckoo is listed as threatened in the state of Illinois. They are a common migrant throughout the state and an uncommon summer resident (IDNR 2017). Local population size and clutch size often directly correlate with infestations of various tent caterpillar species, a primary food source for both adults and nestlings (Graves 2001; Sealy 1978).

Status in the Action Area
The Project is located within the known range of the black-billed cuckoo. Deciduous forest, which provides suitable habitat for this species, makes up approximately 1.8% of the Project area (Homer et al. 2015). One black-billed cuckoo was found at the Project during a scheduled carcass search on May 26, 2020.

4.0 EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

4.1 BLACK-BILLED CUCKOO

4.1.1 Direct Effects

No suitable habitat for the black-billed cuckoo (i.e., woodland or woodland edge) will be lost as a result of Project operation.

Operational impacts of wind facilities on birds include varying degrees of displacement from the wind turbines and surrounding habitat, and fatalities resulting from collisions with turbines, transmission lines, and other project-related structures (Winegrad 2004). Erickson et al. (2005) estimate that 500 million to 1 billion birds are killed annually in the United States due to anthropogenic sources. Fatality estimates at wind farms make up a fraction of that estimate.

Resident and migrating songbirds (passerines) represent the majority of fatalities at wind turbines nationwide (75%, excluding California; Erickson et al. 2001). Collision risk for passerines is likely greatest during take-off and landing, particularly when wind energy facilities abut migratory stopover sites. Additionally, poor weather conditions may lower the flight altitude of migrants which may put them at risk of collision if flying in the rotor swept areas (Kerlinger 1995). Since black-billed cuckoos typically forage and nest at heights below the rotor swept area, collision risk is likely greatest during migration for this species. Avian collision mortality estimates vary across the United States (and have not been calculated for the Project) but generally are not substantial enough to significantly affect passerine populations (Kuvlesky et al. 2007).

Bird mortality at wind facilities has been reported from direct impact with a spinning turbine blade. Barotrauma, involving tissue damage to air-containing structures (e.g., lungs) caused by rapid or excessive pressure change, is not suggested as a cause of bird fatalities (Baerwald et al. 2008). Though barotrauma is a common cause of bat fatalities at wind farms, differences in anatomy suggest that birds are less susceptible to barotrauma (Baerwald et al. 2008).

4.1.2 Indirect Effects

Wind turbines may displace birds from an area due to the creation of edge habitat, introduction of vertical structures, and/or disturbances directly associated with turbine operation (e.g., noise, shadow flicker). Disturbance impacts are often complex, involving shifts in abundance, species composition, and behavioral patterns. The magnitude of these impacts varies across species, habitats, and regions. Strickland et al. (2004) indicated that avoidance impacts to birds generally extend 246 ft to 2,624 ft from a turbine, depending on the environment and bird species affected.

Since the Project is already constructed and no addition of turbines or other infrastructure is proposed, additional disturbance and displacement impacts to birds, including the black-billed cuckoo, are not expected. Additionally, no breeding habitat for the black-billed cuckoo will be modified or lost as a result of ongoing operation of the Project.

Mitigation measures were incorporated into the Project to provide a long-term benefit to the Indiana bat and northern long-eared bat as part of the 2019 Conservation Plan for the Project (IDNR ITA #98). The bat mitigation plan includes protection of 123.4 acres of summer bat habitat (i.e., woodland) in Vermillion County, Illinois. It is anticipated that habitat protections proposed for bats will also protect suitable habitat for the black-billed cuckoo (i.e., woodland and woodland edge habitat).

4.1.3 Take Estimate

Nationwide, a total of 13 black-billed cuckoo fatalities had been reported as of 2019 at 10 facilities, making up 0.2% of all bird fatalities (Allison et al. 2019). At the Project, the black-billed cuckoo has made up 1.4% of all bird fatalities found as of September 3, 2020, though this value will likely decrease as post-construction monitoring continues (assuming no more black-billed cuckoo are found). Two other wind farms in Illinois, California Ridge and Bishop Hill, have published Conservation Plans for the black-billed cuckoo based on known fatalities at both sites, and estimated a black-billed cuckoo species composition for the region of 0.4%. Averaging the three species composition values available (0.2% nationwide, 0.4% regional, and 1.4% to-date at the Project) results in an average species composition of 0.67%. A site-specific bird fatality estimate has not yet been calculated, however, Allison et al. (2019) estimated that wind facilities in the region average 2.63 birds/MW. Using the 2.63 birds/MW estimate and the 194.25 MW capacity of the Project, an estimated 511 birds are predicted to be killed annually, of which, 0.67% are assumed to be black-billed cuckoos, for an estimated annual take of 3.4 black-billed cuckoo per year. Because the site-specific species composition is likely high, and due to the implementation of the conservation measures described in Section 5.2, Green River proposes to round the estimate down to 3 black-billed cuckoo per year.

Green River is applying for a take limit of **3 black-billed cuckoo per year** which is not anticipated to reduce the survival or recovery of the species, the biotic community of which it is a part, or the habitat essential to its existence due to the implementation of conservation measures (see Section 5.2).

5.0 MINIMIZATION MEASURES, MITIGATION, AND MONITORING

5.1 PLANS FOR MANAGEMENT OF THE AREA

The Project began operating in 2019. Green River will continue to maintain existing turbines and Project infrastructure, including existing gravel access roads and pads. The use of cropped areas will be determined by individual landowners; however, it is assumed that most areas will continue to be use for the production of rowcrops.

5.2 MEASURES TO AVOID AND MINIMIZE EFFECTS

The following Conservation Measures have been implemented by Green River to avoid or minimize impacts to the black-billed cuckoo:

- Green River has provided all contractors and employees with training and an environmental information package regarding the state-threatened black-billed cuckoo which has the potential to be affected by Project operation; this package includes information on how to identify the species and the protocols to follow if the species is encountered within the Action Area during operation of the Project.

- During development of the Project, Green River implemented measures to avoid and minimize effects to bird species in accordance with the USFWS Land-Based Wind Energy Guidelines (WEGs; USFWS 2012), including:
    - Minimizing the number of turbines located within 1,000 feet of woodlots
    - Avoiding siting turbines within wetland areas to the extent practicable
    - Constructing tubular towers to eliminate perching opportunities and minimize the risk of rotor collisions;
    - Installation of an underground electrical collection system except in area where it was impractical
    - Marking overhead transmission with bird diverters at 20-foot intervals where crossing habitat resources such as wetlands and woodlots
    - Marking overhead transmission lines/substations in compliance with Avian Power Line Interaction Committee (APLIC) recommendations.

- As part of Project operation, Green River implemented measures to avoid and minimize effects to bird species in accordance with the USFWS WEGs (USFWS 2012), including:
    - Minimizing facility lighting to avoid attracting songbirds by using motion sensors where possible, directing lights downward, and lighting turbines in accordance with Federal Aviation Administration (FAA) minimum requirements
    - Temporary meteorological (MET) towers were replaced with non-guyed lattice towers
    - Spark arrestors were installed on all electrical equipment

- If changed or unforeseen circumstances arise that reduce the effectiveness of the minimization measures described in this Conservation Plan, Green River will coordinate with the Department to determine if additional conservation measures are warranted for the black-billed cuckoo.

5.3 MITIGATION

In addition to implementation of avoidance and minimization measures summarized in Section 5.2, Green River prepared a bat mitigation plan that includes protection of woodland habitat (see Section 4.1.2). It is anticipated that habitat protections proposed for bats would also protect suitable habitat for the black-billed cuckoo (i.e., woodland and woodland edge habitat). Details of the mitigation plan are included in the 2019 Conservation Plan (IDNR ITA #98). Mitigation measures include protection of 123.4 acres of summer bat habitat (i.e., woodland) in Vermillion County, Illinois.

Green River has also 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.

In addition to the mitigation described above, to date, Green River has contributed $75,000 to Illinois Wildlife Preservation Fund for use within protected habitat for the state-listed Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary. In addition, Green River facilitated donation of 12.5 acres of suitable habitat for these species to Middle Rock Conservation Partners, along with $31,250 to support restoration of those acres (IDNR ITA #98). It is anticipated that some of the mitigation designed for other species will also benefit the black-billed cuckoo.

5.4 MONITORING

Post-construction monitoring for the Project began in November 2019 for eagles, and in May 2020 for bats. Bat monitoring protocols are outlined in the 2019 Conservation Plan (IDNR ITA #98). Although the primary

purpose of this monitoring is to detect eagles and listed bat species, all birds detected are also recorded. Any findings of state-listed bird species, including the black-billed cuckoo, are reported to the Department.

Post-construction monitoring plans for the black-billed cuckoo are presented in Table 5-1.

Table 5-1. Summary of Post-construction Monitoring for Black-billed Cuckoo at Green River Wind Farm

Season	Monitoring Dates	Roads and Pads or Full Plots	Search Interval	Monitoring Activities
Spring	May 1 – May 15	Roads and pads (100%; n=74)	Once Annually	Monitoring for black-billed cuckoo will occur concurrent with post-construction monitoring visits for eagles.
Summer/Fall (during the first three years of operation)	May 15 – October 15	Roads and pads (65%; n=48) and full plots (35%; n=26)	Twice weekly	Monitoring for the black-billed cuckoo will occur concurrent with post-construction monitoring visits for bats
Summer/Fall (after the first three years of operation)	May 15 – October 15	Roads and pads (n=23 during summer; n=74 during fall)	Weekly	Monitoring for the black-billed cuckoo will occur concurrent with post-construction monitoring visits for bats

5.5 FUNDING TO SUPPORT MITIGATION AND MONITORING

Funding for the implementation of the conservation measures outlined in this conservation plan has been dedicated as part of Green River's overall budget for the Project.

6.0 ADAPTIVE MANAGEMENT PRACTICES

Adaptive management is a process that will allow Green River to adjust its actions to reflect new information or changing conditions to reach a goal, in this case, minimization of take and conservation of the black-billed cuckoo.

Information used in the adaptive management process will come from the post-construction mortality monitoring activities described above. If the conservation measures are not producing the desired results, adjustments will be made as needed in coordination with the Department.

All black-billed cuckoo fatalities will be reported to the Department within one business day of positive identification of the carcass. If documented take of black-billed cuckoo exceeds the anticipated take level, up to 3 black-billed cuckoo per year, the following measures will be implemented (i.e., if 4 black-billed cuckoos are found within a single year):

- Green River will meet and confer with the Department to determine the potential cause of mortality. If the cause is determined to be related to Project operation, Green River will develop additional conservation measures as needed in coordination with the Department to reduce effects to this species.
- Post-construction monitoring will be conducted again the following year within the season in which the fatality was fatalities were documented to determine if the additional conservation measures were successful at reducing mortality.
- If no spatial, temporal, or weather patterns emerge as potential causes for the fatality, no new conservation measures will be implemented based on one year of exceeding the anticipated take levels. However, if subsequent years also document more than 3 black-billed cuckoo fatalities, Green River will coordinate with the Department to determine the need to implement additional conservation measures, and if needed, pursue an amendment to the ITA.

7.0 CONCLUSIONS AND EFFECTS DETERMINATION

The take to the black-billed cuckoo at the Project is not likely to reduce the survival or recovery of the species in Illinois, the biotic community of which it is a part, or the habitat essential to its existence for the following reasons:

- Although project operation is anticipated to result in black-billed cuckoo take (mortality)., for the purposes of this Illinois Conservation Plan, take of the black-billed cuckoo is estimated to be **3 black-billed cuckoo per year.**

- Due to annual variation in environmental factors that may affect black-billed cuckoo population sizes and migration, annual mortality can be expected to differ from year to year. In an effort to be responsive to this variation, and to ensure that the 30-year take limits are not exceeded, this Conservation Plan includes post-construction monitoring (Section 5.4) and adaptive management take thresholds (summarized in Section 6.0).

- Mitigation measures have been incorporated into the Project to provide a long-term benefit to black-billed cuckoo that will mitigate for the impacts of the permitted levels of take. Mitigation measures include implementation of a bat mitigation plan that includes protection of woodland habitat (see Section 4.1.2). It is anticipated that habitat protections proposed for bats would also protect suitable habitat for the black-billed cuckoo (i.e., woodland and woodland edge habitat). Details of the mitigation plan are included in the 2019 Conservation Plan (IDNR ITA #98). Mitigation measures include protection of 123.4 acres of summer bat habitat (i.e., woodland) in Vermillion County, Illinois.

- Green River has also 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.

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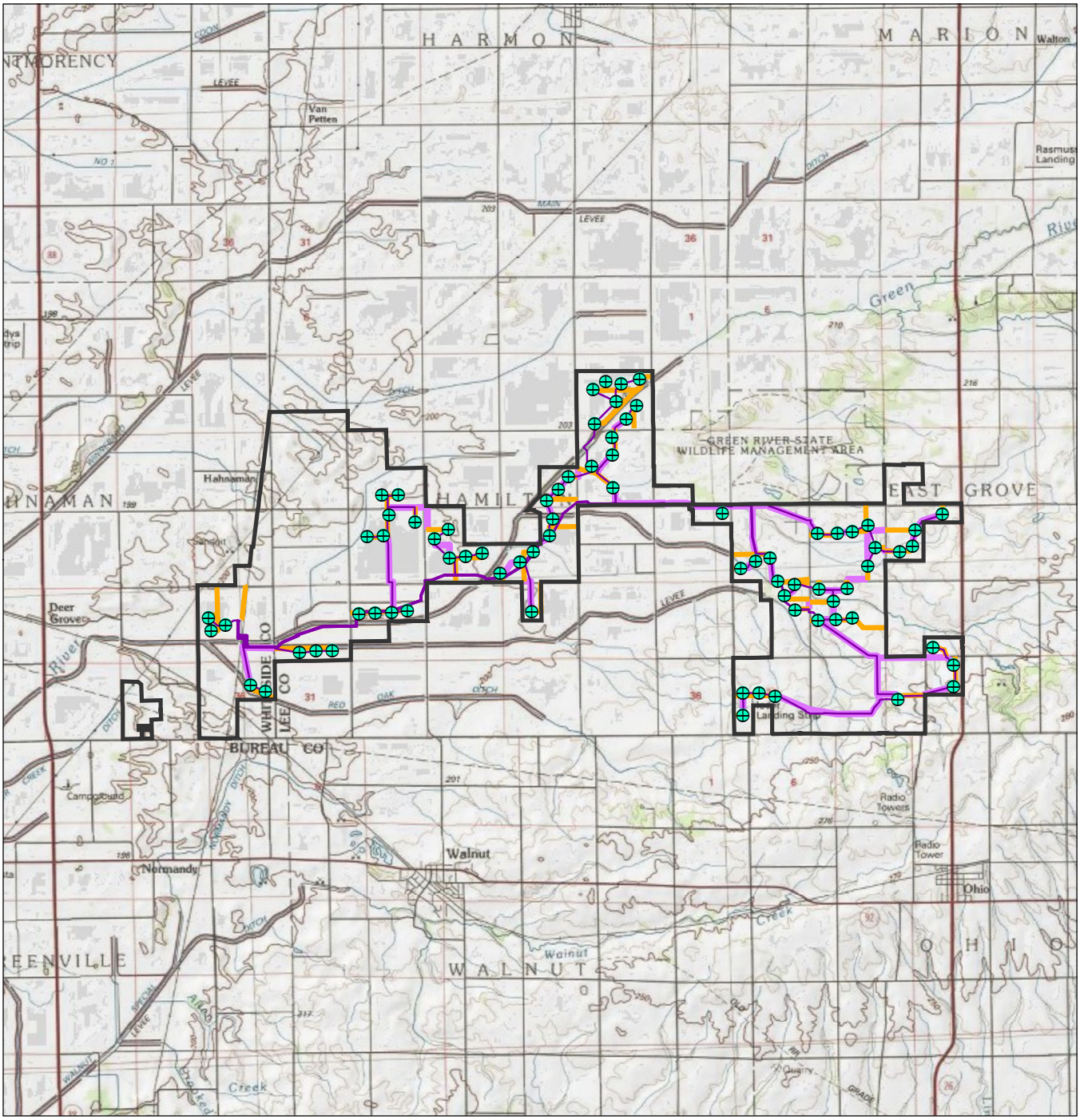

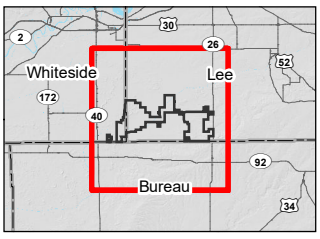

Legend

- Project Boundary/Action Area
- Terrestrial Action Area
- Turbine
- Collection System
- Access Road
- Crane Path

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS
3. Background: USGS 7.5' Topographic Quadrangle

Figure No.
1

Title
Project Location and Project Components

Client/Project
Green River Wind Farm Phase I, LLC
Green River Wind Farm
Black-billed Cuckoo Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by AJS on 2020-10-29
Technical Review by DG on 2020-10-29
Independent Review by SP on 2020-10-29

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1:126,720 (at original document size of 8.5x11)

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Stantec

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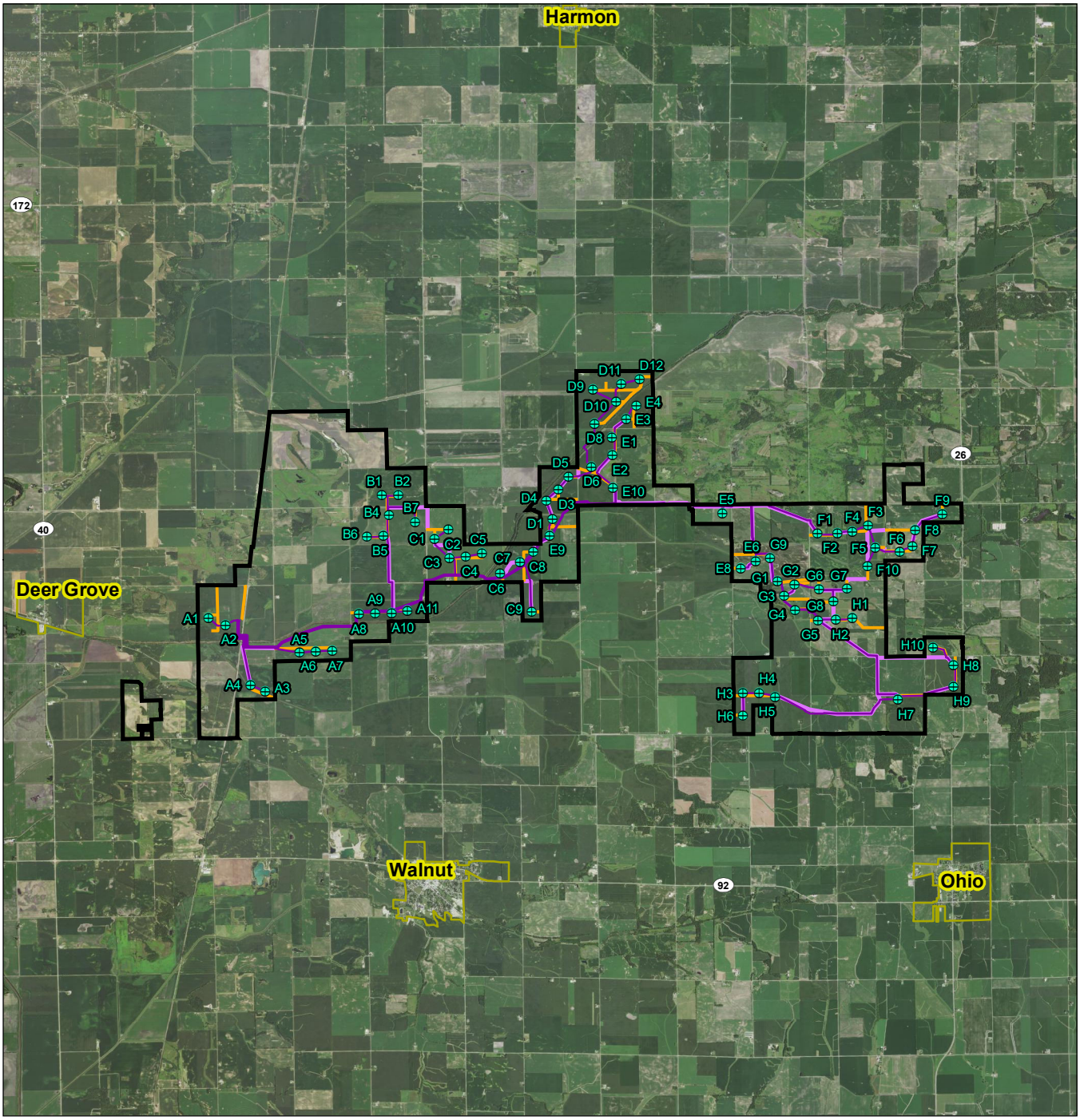

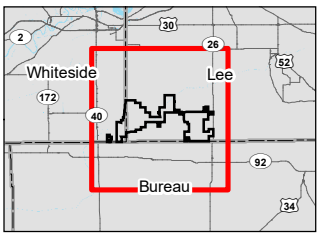

Legend

- Project Boundary/Action Area
- Terrestrial Action Area
- Turbine
- Collection System
- Access Road
- Crane Path

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2017 NAIP

Figure No.
2

Title
Action Area Overview

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APPENDIX A – IMPLEMENTING AGREEMENT

Implementing Agreement

Conservation Plan
For the
Black-Billed Cuckoo

Green River Wind Farm Phase 1, LLC
Lee and Whiteside Counties, 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, Green River Wind Farm Phase 1, LLC (Green River) 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. Green River will oversee all avoidance, minimization, and monitoring efforts identified within the Conservation Plan. Furthermore, Green River will be responsible for planning, contract execution, and construction supervision for the entire project.

Green River will implement this Conservation Plan in coordination with the IDNR as required in the ITA. Green River will be responsible for coordinating and overseeing any onsite work that requires knowledge, skills, and expertise related to the listed species. Members of the Green River Operations Department will be Officers of Record for this Conservation Plan and Implementing Agreement and bear the corporate responsibility for compliance with the terms and conditions of the ITA.

Green River hereby certifies that is has authority and funding to complete this project and to implement all proposed monitoring activities and conservation measures included in this Conservation Plan for the black-billed cuckoo. Green River 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 Green River Project Manager, who will oversee implementation of the Conservation Plan and on-site monitoring as required by the ITA is:

Brett Kreiser
Green River Plant Manager
Green River Wind Farm Phase 1, LLC
2723 County Line Road
Deer Grove, IL 61243
952.988.9000

As the Green River Project Manager, I, Brett Kreiser, am responsible for the implementation of this Conservation Plan and the terms and conditions of the ITA.

Signature: Brett Kreiser
Brett Kreiser (Jan 29, 2021 10:59 CST) Date: January 29, 2021

Brett Kreiser, Green River Project Manager

Conservation Plan

Green River Wind Farm

Lee and Whiteside Counties, Illinois

July 11, 2019

Prepared for:

Green River Wind Farm Phase 1, LLC
7650 Edinborough Way, Suite 725
Edina, MN 55435

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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: **Green River Wind Farm Phase 1, LLC**

PROJECT NAME: **Green River Wind Farm**

COUNTY: **Lee and Whiteside**

LOCATION: **Approximately 9 Miles Southeast of Sterling, Illinois and 4 Miles North of Walnut, Illinois (Township 19N, Range 7E, Sections 12-13, 24-25, and 35-36; Township 19N, Range 8E, Sections 7-8, 10-31, and 36; Township 19N, Range 9E, Sections 4-6, 16-21, and 28-33)**

Directions to the Project from Sterling, Illinois: Travel south along Highway 40 and then east on Hahnaman Road

Directions to the Project From Walnut, Illinois: Travel north on 1400E Street/Indian Head Road

1.0 INTRODUCTION

Green River Wind Farm Phase 1, LLC (Green River or the Applicant), a wholly owned subsidiary of Geronimo Renewable Infrastructure Partners, L.P., is constructing the Green River Wind Farm in Lee and Whiteside counties in Illinois.

This Conservation Plan was prepared in accordance with the Illinois Endangered Species Protection Act (520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080) in support of an Incidental Take Authorization (ITA) application to the Illinois Department of Natural Resources (IDNR or Department). The purpose of this Conservation Plan is to review the proposed Green River Wind Farm (Project or Action) in sufficient detail to determine to what extent the proposed action may result in "incidental take" of the following state-listed species:

- Indiana Bat (*Myotis sodalis*) – Endangered (State and Federal)
- Northern Long-eared Bat (*Myotis septentrionalis*) – Threatened (State and Federal)
- Blanding's Turtle (*Emydoidea blandingii*) – State-Threatened
- Ornate Box Turtle (*Terrapene ornata*) – State-Threatened
- Plains Hog-nosed Snake (*Heterodon nasicus*) – State-Threatened
- Regal Fritillary (*Speyeria idalia*) – State-Threatened

Based on review of the National Land Cover Database (NLCD), land use within the Project area consists primarily of agricultural lands in rowcrop production (92.5%) and developed space (i.e., developed open spaces, low and high intensity; 3.7%). Deciduous forest makes up approximately 1.8% of the Project area

and is typically associated with homesteads, shelterbelts, forested fence lines, and riparian areas near the Green River (Homer et al. 2015).

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROJECT DESCRIPTION

The Project is a 194.25-megawatt (MW) wind farm located in Lee and Whiteside counties, Illinois (Figure 1). The Project is approximately 12,120 acres (ac) in size and consists of 74 Siemens Gamesa G126 (2.625-MW) wind turbine generators (WTGs) and associated access roads, collector lines, crane paths, fiber optic line, substation, operations and maintenance (O&M) building, and laydown yard (Figures 1 and 2). The Project has a planned commercial operation date (COD) of October 2019 (see Section 2.5 for details of the Project timeline).

Each WTG is manufactured off-site and consists of the tower, a nacelle that houses the generator and gearbox, and a three-blade rotor assembly, all of which are shipped to the Project and assembled on-site. From the base of the tower to the tip of the blade, the total maximum height of the WTG is 485 feet (ft). Hub height is approximately 275 ft. Each WTG will be anchored to a steel-reinforced concrete foundation. Each turbine pad is approximately 20 ft in diameter.

The Project includes an underground power collection system between the pad-mounted transformers and a collector substation. All collector lines are buried a minimum of 5 ft. The collector system will connect to the ComEd Schauff Road switchyard located immediately west of County Line Road and south of Hahnaman Road in Whiteside County. In addition to the WTGs and power collection system, access roads will be constructed to provide access to the turbines during and after construction. These access roads will be approximately 16 ft wide and will be constructed of crushed gravel/rock.

The Project O&M building is located immediately west of County Line Road and south of Hahnaman Road in Whiteside County. Construction of the O&M building was completed in December 2018. The Project substation pad is approximately 200 ft x 300 ft (approximately 1.5 ac in size). Permanent and temporary MET towers may be installed at the site and will be used for performance testing of the wind turbines to ensure that they meet the manufacturer's guarantees. Each tower will be approximately 275 ft tall.

2.2 COVERED ACTIVITIES

Activities to be covered under the ITA include:

- **Bat Species** – Take coverage is requested for operation of the Project. No impacts to bat species are anticipated as a result of construction activities; therefore, take coverage for bat species is not requested for construction.
- **Terrestrial Species** – Take coverage is requested for construction of turbines, MET towers (if applicable), crane paths, fiber optic line, substation, access roads, and a laydown yard, as well as miscellaneous excavation and trenching activities for collector lines. Although no impacts to terrestrial species are anticipated as a result of operation of the turbines, operations and maintenance vehicles traveling on Project access roads and parking areas could result in mortality to listed terrestrial species (see Section 1.0); therefore, take coverage is requested for these species during Project operation and maintenance.

Some construction activities have already occurred or are complete, including construction of the O&M building (see Section 2.1), construction of turbine foundations and installation of collector lines. Geronimo

is not requesting take coverage for those activities that have already occurred, but rather those activities that remain to be completed (see Section 2.5).

2.3 ACTION AREA

Listed bat species will be affected by operation of the Project, whereas listed turtle species will primarily be affected by Project construction. In order to identify and quantify risk for these two groups of species, the Action Area has been defined as follows:

- **Bat Action Area** – Defined as the area within the Green River Wind Farm Project boundary (12,120 ac in size; Figures 1 and 2), including up to 74 2.625-MW WTGs and associated access roads.

- **Terrestrial Action Area** – A subset of the Bat Action Area defined as the footprint of the turbines, access roads, collectors, and crane paths, plus a 400-foot buffer at each turbine location, and a 150-foot construction buffer around access roads, collectors, and crane paths (Figures 1 and 2). The Terrestrial Action Area is approximately 1,745.1 ac in size and also includes the proposed fiber optic line west of County Line Road, and the Project substation (1.4 ac in size).

2.4 PERMITTING REVIEWS

Green River will comply with all federal, state, and local regulations. Below is a summary of the consultation and permitting that has taken place to-date:

1. Green River is currently coordinating with the U.S. Fish and Wildlife Service (USFWS) to prepare a Habitat Conservation Plan (HCP) in support of a federal Incidental Take Permit (ITP) for the federally endangered Indiana bat, the federally threatened northern long-eared bat, and the bald eagle. The following provides a summary of coordination between Green River, USFWS, and the Department to date:

   August 31, 2017: *A meeting was held with the Department, USFWS, Green River, Stantec Consulting Services Inc. (Stantec), and Resource Environmental Solutions, LLC (RES). The purpose of the meeting was to present the current Green River Project to the agencies and discuss post-construction monitoring and mitigation requirements of both agencies specific to federal and state-listed bat species and the bald eagle (federal). The Department provided comments on state-specific mitigation requirements.*

   March 12, 2018: *The Department provided comments on the federal HCP concept Green River provided to the USFWS and the Department on February 28, 2018. The concept focused on the federally listed Indiana bat and northern long-eared bat, and the bald eagle (federal). Comments from the Department focused on the requirements of the state threatened and endangered species statute, and specific measures requested by the Department related to bat mitigation to be addressed in the state conservation plan.*

2. A Joint Clean Water Act Section 404/401 permit was issued by the U.S. Army Corp of Engineers (USACE) for the Project on March 5, 2018.

3. Green River coordinated with both Lee and Whiteside counties to obtain Special Use Permits for the Project. The Whiteside County Board approved a Special Use Permit for the Project at the August 21, 2012 Board meeting. The Lee County Board approved a Special Use Permit for the Project at the May 21, 2013 Board meeting.

2.5 TIMELINE OF PROJECT ACTIVITIES

Except for the Project O&M building, construction of the Project began in April 2018 and is expected to have a Commercial Operation Date (COD) of October 2019. The following schedule is planned:

- Substation construction – May 2018 through July 2019
- No activities planned between January and April 2019
- Turbine delivery and erection – May through August 2019
- Miscellaneous excavation and trenching activities (as necessary) – May through August 2019
- Project completion and site restoration – September through October 2019
- COD – October 2019

2.6 OWNERSHIP OF AFFECTED PROPERTIES

Green River has lease agreements or easements for or ownership over each parcel where Project infrastructure will occur. The terms of the individual lease agreements vary but the agreements are valid through the anticipated lifespan of the Project. The Project is anticipated to be operational for 30 years, after which it may be repowered or decommissioned.

2.7 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.

2.8 PROPOSED ACTION AND ALTERNATIVES CONSIDERED

2.8.1 Proposed Action

The Proposed Action would include construction of the Project as described in Section 2.1 (Figures 1 and 2). Under this alternative the following curtailment strategy will be implemented to minimize effects to the Indiana bat and the northern long-eared bat:

- Feather below manufacturer's cut-in speed (3.0 meters per second [m/s]) at night during spring (March 15 to May 15) for all turbines, and when temperatures are below 50ºF[1] at night during the summer (May 16 through July 31) and fall (August 1 through October 31) for all turbines

- Feathering below 5.0 m/s when temperatures are above 50ºF at night during summer (May 16 through July 31) and fall migration (August 1 through October 31) for all turbines

Additional conservation measures proposed by the Applicant, including measures to avoid and minimize impacts to the Indiana bat, northern long-eared bat, Blanding's turtle, ornate box turtle, plains hog-nosed snake, and regal fritillary to be included in the ITA are found in Section 5.2.

[1] While Indiana bat and northern long-eared bat activity is not anticipated below 50^0F, this measure will provide protection to other bat species that may be active.

2.8.2 Alternatives Considered But Dismissed

No Action Alternative
The purpose of the Project is electrical energy production. Under the No Action Alternative, the Project would not be constructed. Impacts associated with the Project would not occur. The No Action Alternative would not satisfy the Project purpose and need; Green River therefore rejected this alternative and continued to develop action alternatives that would satisfy the purpose and need in a manner that would result in minimal environmental impacts.

Alternative Project Layouts
Avoiding negative natural resource and community impacts is a priority for Green River and several alternative layouts were considered during design of the Project. Where possible, Project infrastructure was sited to avoid woodlands, grasslands, and wetlands that may provide habitat for state-listed species; however, due to the presence of other environmental and engineering constraints and landowner lease agreements, not all potential habitat could be avoided. Measures such as limiting the distance within suitable habitat crossed by collector lines, crane paths, etc., were therefore taken during the design phase to minimize impacts to state-listed species. These measures resulted in the final Project layout presented in this Conservation Plan.

Take Avoidance Alternative (Alternative Cut-In Speed Scenario)
Under this alternative, take of Indiana and northern long-eared bats would be completely avoided by raising cut-in speeds to 6.9 m/s (15.4 mph) for the period from March 15 to October 31 each year for the life of the Project.

This alternative was considered but rejected because it did not meet the Project's purpose and need (electrical energy production), and because it was determined to be not practicable or economically sustainable over the projected operating life of the Project.

3.0 BIOLOGICAL DATA ON AFFECTED SPECIES

3.1.1 Indiana Bat

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

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 1999b) 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).

Species Description
The Indiana bat is a small, brownish bat with blackish wings (Kurta 1995) similar in appearance to the little brown bat (*Myotis lucifugus)* and the northern long-eared bat. The Indiana bat can be distinguished from these two species based on the following characteristics: (1) the Indiana bat has smaller feet and shorter hairs on its toes (the hairs do not extend beyond the toenails); (2) the Indiana bat has a distinct keel on the calcar, a spur on the membrane between the foot and the tail; and (3) the Indiana bat has a pinkish colored pug-nose (Mumford and Whitaker 1982; Whitaker and Hamilton 1998).

Habitat Requirements and Life History

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, and its relative location to other trees, as well as 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).

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 to 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).

Species Status in the Bat Action Area

No known Indiana bat hibernacula occur within the Project area. The closest known hibernaculum is Blackball Mine located in LaSalle County, Illinois, approximately 25 miles to the southeast of the site (USFWS 2007). No known maternity colonies or other summer records are known from Lee or Whiteside counties (USFWS 2007).

Acoustic and mist net surveys were conducted in the vicinity of the Project in 2011 as part of pre-construction surveys for an earlier developer. Gehring (2011) indicates acoustic surveys were conducted between March and July 2011. No Indiana bat calls were detected among the acoustic data collected; general detections of *Myotis* species were identified as either little brown bat or northern long-eared bat (Gehring 2011). No Indiana bats were captured during 2011 mist net surveys (Leftwich et al. 2011).

Acoustic monitoring conducted for the Project in 2016 did not confirm the presence of Indiana bats (Ritzer et al. 2017) (see Appendix B). In addition, no Indiana bats were captured during mist net surveys conducted for the Project in 2016 (Ritzert et al. 2016) (see Appendix B).

Green River submitted a request to the IDNR using the Ecological Compliance Assessment Tool (EcoCAT) on December 23, 2015 (IDNR Project Number 1605821). The review indicated no Indiana bat records in the vicinity of the Project.

Habitat Assessment

A desktop review of recent aerial photography and Geographic Information Systems (GIS) data was performed to identify locations within the Project area that contain suitable bat habitat (Figure 3). For the purposes of assessing bat summer habitat suitability (i.e., non-winter), woodlands within the Project area were digitized and then categorized into one of two classifications based on recent literature (Owen et al. 2003; Carter and Feldhammer 2005; Lacki et al. 2009; USFWS 2014 and 2017):

- Suitable habitat – This includes foraging/roosting habitat (woodlands 15 ac or more in size), and commuting/travel corridors (woodlands less than 15 ac in size, but within 1,000 ft of foraging/roosting areas)

- Unsuitable habitat – Woodlands less than 15 ac in size and not within 1,000 ft of foraging/roosting areas

Digitized woodlands were then reviewed, and the classification verified, by a qualified bat biologist who made any necessary revisions. Of the 12,120 ac within the Bat Action Area, approximately 298.6 ac (2.5%) is considered suitable habitat (Figure 3). A limited amount of tree clearing (3.52 ac) was conducted during the winter of 2017-2018 (prior to the bats' active season) to avoid impacts to bats. The clearing was generally associated with stream crossings (3.3 ac). An additional 2.6 ac was cleared in the summer of 2018, but only after a habitat assessment and emergence surveys were conducted to rule out any impacts to Indiana bats. This represents less than 2% of the 298.6 ac of suitable bat habitat within the Bat Action Area. No additional tree clearing is anticipated as a result of construction or operation of the Project. However, if clearing is required it would be limited to minor trimming of branches, and in some cases, clearing of isolated trees in the existing road right-of-way to accommodate the movement of cranes.

3.1.2 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, which includes Illinois. The listing became effective on May 4, 2015, and a final 4(d) rule became effective on January 14, 2015. The final 4(d) rule exempts incidental take occurring at wind projects from ESA section 9 take prohibitions with minor exceptions (81 FR 1900).

On April 26, 2016, the USFWS issued a ruling that designation of critical habitat for the NLEB is not prudent (81 FR 24707); therefore, no critical habitat has been designated for this species. The northern long-eared bat is currently listed as threatened by the State of Illinois.

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.

Habitat Requirements
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 (0 - 9 degrees Celsius) (USFWS 2014). The hibernation season in Illinois is 1 November through 31 March (USFWS 2014). Currently, 21 hibernacula sites with one or more winter records are known in Illinois (USFWS 2016a).

Roosting habitat includes forested areas with live trees and/or snags with a diameter at breast height (DBH) of at least 3 inches with exfoliating bark, cracks, crevices, and/or other cavities. Trees are considered suitable if they meet those requirements and are located within 1000 ft of the nearest suitable roost tree, woodlot, or wooded fencerow (USFWS 2014). Maternity habitat is defined as suitable summer habitat that is used by juveniles and reproductive females. The summer maternity season in Illinois is 1 April through 30 September (USFWS 2014).

Species Status in the Bat Action Area
Four northern long-eared bats were captured during 2016 mist net surveys, including two adult lactating females, one juvenile non-reproductive female, and one adult non-reproductive male (Ritzert et al. 2016) (see Appendix B). Qualitative identification of northern long-eared bat calls recorded during the acoustic survey was not done as presence was confirmed during mist-net surveys (Ritzert et al. 2016 [see Appendix B]; Amber Schorg, USFWS, pers. comm.).

In contrast to the four northern long-eared bats captured in 2016, a total of 47 northern long-eared bats were captured during mist net surveys conducted in July 2011 (Leftwich et al. 2011) (see Appendix B). Although changes to the northern long-eared bat population in the Project area have likely occurred as a result of many factors, including white-nose syndrome (WNS), there are still risks to this species associated with operation of the Project.

The 2015 EcoCAT review (IDNR Project Number 1605821) indicated northern long-eared bat records in the vicinity of the Project.

Habitat Assessment
A habitat assessment for the northern long-eared bat was conducted using the methods described above for the Indiana bat. Of the 12,120 ac within the Bat Action Area, approximately 298.6 ac (2.5%) is considered suitable habitat (Figure 3). A limited amount of tree clearing (3.52 ac) was conducted during the winter of 2017-2018 (prior to the bats' active season) to avoid impacts to bats. The clearing was generally associated with stream crossings (3.3 ac). An additional 2.6 ac was cleared in the summer of 2018, but only after a habitat assessment and emergence surveys were conducted to rule out any impacts to northern long-eared bats. This represents less than 2% of the 298.6 ac of suitable bat habitat within the Bat Action Area. No additional tree clearing is anticipated as a result of construction or operation of the Project. However, if clearing is required it would be limited to minor trimming of branches, and in some cases, clearing of isolated trees in the existing road right-of-way to accommodate the movement of cranes.

3.1.3 Blanding's Turtle

Blanding's turtles are listed as threatened by the State of Illinois.

Species Description
Blanding's turtles are large aquatic turtles with an elongated, smooth, high-domed carapace that is black and commonly marked with light colored spots or irregular lines. The plastron varies from yellow with dark black blotches to almost totally black. A movable hinge is present on the plastron. The top and sides of the head are gray to black and the chin, throat, and neck are bright yellow. The legs are generally black and may contain some yellow scales. Males have dark upper jaws and a slightly concave plastron, and females have yellow upper jaws and a flat plastron.

Habitat Requirements
Blanding's turtles most commonly inhabit areas with clean, shallow, slow-moving water with silty or organic substrates and abundant aquatic vegetation (Ernst and Lovich 2009). In Wisconsin, Ross and Anderson (1990) reported that Blanding's turtles spend more time in marshes than in ponds, and that ponds with sand bottoms and no aquatic vegetation are rarely used. In addition, they found that wetlands covered by cattail (*Typha* spp.) mats are not used either, but areas cleared of cattails by muskrats are used.

Habitat preferences appear to vary between juveniles and adults and between seasons. Small juveniles primarily use emergent sedge habitats and shrub hummocks, larger juveniles use sedge/water interfaces, and the largest juveniles are found in open water (Pappas and Brecke 1992). Blanding's turtles frequently bask on logs, rocks, banks, matted vegetation, stumps, and live trees to absorb heat from the sun (Oldfield and Moriarty 1994). Blanding's turtles hibernate partially buried in the deepest portions of wetlands, ponds, and streams (Ernst and Lovich 2009; Oldfield and Moriarty 1994). In Wisconsin, the turtles were found partially buried in the substrate at mean water depths of 3 ft (Ernst and Lovich 2009).

Suitable nest sites for Blanding's turtles are upland areas with well-drained, sandy loam or sandy soils (Ross and Anderson 1990; Ernst and Lovich 2009; Oldfield and Moriarty 1994). Most nests in Wisconsin and Minnesota are located in grasslands (Ross and Anderson 1990; Linck and Moriarty 1998); however, nesting has also been observed in agricultural fields (Linck et al. 1989; Casper 1998). Female Blanding's turtles may move a considerable distance in search of suitable nest sites (Congdon et al. 1983; Oldfield and Moriarty). However, most nests are located within a few hundred feet of water (Congdon et al. 1983; Linck et al. 1989; Ross and Anderson 1990).

Species Status in the Terrestrial Action Area

The 2015 EcoCAT review (IDNR Project Number 1605821) indicated Blanding's turtle records in the vicinity of the Project.

Habitat Assessment
Within the Terrestrial Action Area, the Green River and some of its tributaries provide suitable summer habitat and travel corridors for the Blanding's turtle; however, emergent wetlands within the Terrestrial Action Area do not provide suitable summer or winter habitat for this species given the lack of nearly permanent inundation throughout the year in most areas. Several farm ponds are located within and adjacent to the Terrestrial Action Area; however, Blanding's turtles rarely use farm ponds (Christiansen and Bailey 1988).

The Green River State Wildlife Area (Figure 4), located north of Maytown Road, provides suitable summer habitat for the Blanding's turtle, therefore there is potential for Blanding's turtles to travel through the Terrestrial Action Area during construction.

3.1.4 Ornate Box Turtle

Species Description
Ornate box turtles are small terrestrial turtles with a high-domed, round or oval carapace with a dark brown color and yellow lines on each scale that radiate downward and forward. The strongly hinged plastron is similarly marked and may be closed completely. Males may be distinguished from females by the presence of an inwardly facing first toe on the hind legs, a concave plastron, and red eyes (Ernst and Lovich 2009).

The turtles are diurnal and their daily activity cycle, as described by Ernst and Lovich (2009), consists of emerging from their night burrow (or form) and basking for a short time before beginning to forage. The turtles eat insects such as beetles, caterpillars, and grasshoppers which account for approximately 90% of their diet, as well as a variety of plants and berries (Ernst and Lovich 2009). Typically, foraging stops by late morning and the turtles seek shelter in day burrows or other shady spots, where they remain until mid- to late afternoon when they begin to forage again. Legler (1960) found the home range of an individual turtle to be approximately 5 ac. Females lay one or more clutches of eggs in May through June and abandon their nests to let the eggs incubate for approximately 80-90 days. Hatchlings emerge in the fall or may overwinter depending on conditions. In mid- to late October, the ornate box turtle burrows two to three feet into the ground to overwinter. They remain in their overwintering burrow until they emerge in late April or early May.

Habitat Requirements
Ornate box turtles are primarily a prairie species, but also inhabit pastures, open woodland areas, and agricultural fields. This species is restricted to areas with soils that allow for easy burrowing. Legler (1960) reported that ornate box turtles prefer bare, well-drained, sloping areas protected from erosion by upslope clumps of rocks or sod for nesting. Preferred hibernation sites are locations well suited to basking and burrowing as well as protected from the wind (Ernst and Lovich 2009).

Status of Species in the Terrestrial Action Area
The 2015 EcoCAT review (IDNR Project Number 1605821) indicated ornate box turtle records in the vicinity of the Project.

Habitat Assessment
A desktop assessment was used to determine the existence and extent of suitable ornate box turtle habitat within the Terrestrial Action Area. Assumptions used in the assessment include:

1. Ornate box turtles are restricted to areas of nearly pure sand.

2. Ornate box turtles use open canopy habitats and do not regularly utilize closed canopy forest or

purely wetland.

3. Ornate box turtles will use actively cropped farmland at times throughout the year, but non-cropped grassland is preferred over actively cropped areas.

The following steps were used for the desktop habitat assessment:

1. Using NRCS soil survey data, map units containing sandy soils were mapped within the Terrestrial Action Area.

2. Using recent aerial photographs, landcover in areas with sandy soils was determined and the suitability of the habitat was rated as follows:

    - Closed Canopy Forest/Woodland or Wetland – Unsuitable
    - Active Cropland – Moderately Suitable
    - Noncropped Land (e.g., pasture, oldfield, open canopy shrubland) – Highly Suitable

The desktop assessment found approximately 119 ac of mapped sandy soils within the Terrestrial Action Area (Figure 5). Approximately 35 ac are mapped as sand, and approximately 84 ac are mapped as loamy sand. No fine sands are mapped within the Terrestrial Action Area.

Though not pure sands, mapped loamy sands combined with the presence of upland grasses and cultivated crops west of County Line Road in Whiteside County provide moderately to highly suitable habitat conditions for the ornate box turtle; however, loamy sands are only mapped within a small area of that grassland community, therefore highly suitable habitat is limited. Highly suitable habitat for the ornate box turtle is also found in the vicinity of a plantation community located west of Pump Factory Road (Lee County) near Turbines G2, G3, and G4 (Figure 6). Cultivated crops adjacent to the plantation community also provide moderately suitable habitat for the ornate box turtle.

Although it is understood that turtles may be forced to use other areas that may be less than suitable, for the purposes of determining the impact areas in this section it was necessary to have measurable criteria from which to start (see above). However, it is possible that this species could occasionally be found at other locations in the Terrestrial Action Area (i.e., non-sandy soils). Therefore, Green River is requesting take coverage for the ornate box turtle within the entire Terrestrial Action Area.

3.1.5 Plains Hog-Nosed Snake

Species Description

The plains hog-nosed snake is a medium sized, stout bodied snake up to 24 inches in total length. It has a grayish brown or light olive green back covered with 35-40 dark blotches. A sharply upturned scale at the tip of the nose is used for digging and burrowing. The belly is white to yellowish, and it is predominantly black on the underside of the tail. The scales are keeled, and the anal plate is divided. A diagonal bar lying between the eyes extends downward behind each eye to the corner of the mouth.

The snakes mate in the spring. In July they lay a clutch of eight to ten eggs which then hatch in August or September. The plains hog-nosed snake feeds on toads and other amphibians, reptiles and their eggs, birds, and small mammals (Phillips et al. 1999; Ernst and Ernst 2003). When frightened, the snake will widen its neck, hiss, and sometimes strike, then roll onto its back and feign death.

Habitat Requirements

The plains hog-nosed snake is a prairie or savanna species, preferring grasslands with well drained sandy or gravelly soils for burrowing (Ernst and Ernst 2003). In Illinois, it is most often observed crossing sandy roads within or near brushy or weedy sand prairie remnants (Phillips et al 1999).

Status of Species in the Terrestrial Action Area

The 2015 EcoCAT review (IDNR Project Number 1605821) indicated records of this species in the vicinity of the Project.

Habitat Assessment

Cropped areas within the Terrestrial Action Area are unsuitable for the plain hog-nosed snake. Based on this species' habitat requirements, suitable Plains hog-nosed snake habitat overlaps with the ornate box turtle habitat located west of County Line Road (Whiteside County).

3.1.6 Regal Fritillary

Species Description

The regal fritillary is a large butterfly with a wingspan of 2.7 to 4.2 inches. The forewing dorsal is orange with black marks; the margins are black with small white markings at the edge. The hind wing dorsal is black with a row of postmedian white spots. The submarginal row has orange spots in the male and white spots in the female.

The regal fritillary has one brood, with flight records from mid-June through mid-September. Adult males emerge in mid-June, with females typically emerging several days to perhaps two weeks later. Males exhibit a meandering, but energetic flight behavior in their search for receptive females. Their flight is from two to five feet above the ground. In contrast to males, which by some account make up 80 to 90 percent of the population, females spend more time in a perching or feeding behavior. After mating, females lay their eggs – as many as 2,000 – on a variety of surfaces, including a wide variety of non-host plants, dead leaves, and pebbles (Vaughan and Shepherd 2005). This level of fecundity in the number of eggs and the wide, random dispersal of the individual eggs throughout the landscape is unusual among Lepidoptera.

Although the caterpillars hatch in late summer, they do not feed on their host plants, Bird's-foot violet (*Viola pedata*), prairie violet (*V. pedatifida*), arrowleaf violet (*V. sagitatta*), and other violets, until the following spring. Winter is spent under leaves and in leaf litter on the ground. Adult nectar sources include milkweeds (*Asclepias* sp.), thistles (*Cirsium* sp.), blazing stars (*Liatris* sp.), butterfly weed (*Asclepias tuberosa*), red clover (*Trifolium pretense*), alfalfa (*Medicago sativa*), ironweed (*Vernonia* sp.), pale-purple coneflower (*Echinacea pallida*), and mountain mint (*Pycnanthemum* sp.) (NatureServe 2016). In Illinois, regals have been observed using the Eurasian species, Johnny-jump-up (*Viola tricolor*) (Wisconsin DNR 2011).

Habitat Requirements

The regal fritillary is adapted to several habitats ranging from drier sand prairies, old field grasslands, meadows, and railroad rights-of-way to more hydric sites like mesic prairies and marshy or boggy areas with grasslands (NatureServe 2016). The species is able disperse to other suitable habitats at considerable distances. Frequently, the butterflies are found near woodlands in these same areas. Although it tolerates a variety of landscapes, three conditions are mandatory for regal fritillary's continued existence including 1) the presence of its host plants (i.e. violet species), 2) nectar sources for the adults, and 3) large site size (e.g. >100 acres; the greater the size of the site, the greater likelihood of continued viability of the species).

Some research (Swengel 2001) indicates even highly degraded areas can hold sizeable regal fritillary populations, provided the above conditions are met.

Status of Species in the Terrestrial Action Area

Populations of this species are extremely localized throughout the landscape and occur in a small number of sites in Illinois. Historically the regal fritillary has been recorded in more than two dozen counties in Illinois, but in the last decade observations have been confined to just fifteen counties, including Whiteside County (NatureServe 2016). The 2015 EcoCAT review (IDNR Project Number 1605821) indicated records of this species in the vicinity of the Project.

Habitat Assessment

A parcel located in Whiteside County (west of County Line Road and east of an existing railroad line) may provide limited a suitable habitat for the regal fritillary if the host plant (i.e., violets) is present. This parcel consists of a complex of upland grasses and emergent wetlands bordered by fields planted in rowcrops (Figure 2). The grassland communities consist of some native prairie species and may provide suitable habitat for the regal fritillary if violets are present; however, habitat suitability is limited given the isolated location and small size of this community (approximately 28 acres total). A host plant survey was not conducted at this location prior to construction.

4.0 EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

4.1 INDIANA BAT AND NORTHERN LONG-EARED BAT

4.1.1 Direct Effects

Construction Impacts
A limited amount of tree clearing (3.52 ac) was conducted during the winter of 2017-2018, generally associated with stream crossings (3.3 ac). An additional 2.6 ac was cleared in the summer of 2018, but only after a habitat assessment and emergence surveys were conducted to rule out any impacts to Indiana or northern long-eared bat species. This represents less than 2% of the 298.6 ac of suitable bat habitat within the Project Area. No additional tree clearing is anticipated within suitable summer bat habitat as a result of the Project; therefore, no impacts to bat species will occur as a result of construction and the Applicant is not requesting take coverage for bats during construction.

Operation Impacts
Bat mortality, including the Indiana bat and the northern long-eared bat, may occur as a result of operation of the Project. Acoustic monitoring conducted for the Project in 2016 did not confirm the presence of Indiana bats (Ritzer et al. 2017) and no Indiana bats were captured during mist net surveys conducted for the Project in 2016 (Ritzert et al. 2016); however, given the presence of the Project within the known range of this species, there is potential for Indiana bat mortality to occur as a result of Project operation. Four northern long-eared bats were captured during 2016 mist net surveys (Ritzert et al. 2016), therefore there is potential for northern long-eared bat mortality to occur as a result of Project operation. Take estimates for Indiana and northern long-eared bats as a result of Project operation are discussed in Section 4.1.3.

Bat mortality at wind facilities has been reported from direct impact with a spinning turbine blade or from barotrauma. 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).

Mitigation Impacts
The mitigation associated with the Project (see Section 5.3 and Appendix C) would directly benefit each of the target bat species by increasing restoration and protection of summer habitat, enhancing species viability.

4.1.2 Indirect Effects

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 2011).

Indiana bats have not been confirmed present within the Bat Action Area and would only be at risk of disturbance/displacement while migrating through the Project Area, whereas northern long-eared bats have been confirmed present and would be at risk of disturbance/displacement throughout the bat active season. 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.

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 with the potential to slow the effects of climate change on species including Indiana and northern long-eared bats. However, the specific level of such benefit attributable to the Green River facility is not readily quantifiable.

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

4.1.3 Take Estimates – Indiana Bat and Northern Long-eared Bat

In order to evaluate risk and predict levels of take of the Indiana and northern long-eared bat at the Project, Green River considered three take estimation methods that rely on regional, national, and site-specific data. Green River used each of these methods to develop take estimates for the Project prior to implementing minimization measures. Each method is described in detail in the sections below.

MSHCP Approach
The Draft Midwest Wind Multi-Species Habitat Conservation Plan (MSHCP) used post-construction monitoring data from wind farms within the Midwest 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. Applying this to Green River (194.25 MW total) results in an all bat fatality estimate of 3,417 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 in the MSHCP. Applying these species composition rates to the overall take estimate results in a take estimate of 3.1 Indiana bats and 3.1 northern long-eared bats per year before implementation of any minimization measures.

Arnett-Baerwald Approach
The Arnett-Baerwald Approach uses rates of Indiana and northern long-eared bat take from wind projects across the nation, including projects with no take of either species. Based on Arnett and Baerwald (2013), there were 13,361 installed MW of wind energy in the Midwestern Deciduous Forest-Agricultural Region (Southern Ontario, Minnesota, Wisconsin, Iowa, Michigan, Illinois, Missouri, Indiana, and Ohio) as of September 30, 2011. This area had 23 studies at 14 sites with data on bat fatalities, resulting in a mean number of fatalities of 7.94 (95% CI: 4.92-10.96) bats/MW. Across all regions, northern long-eared bats and

Indiana bats make up less than 0.01% of all fatalities in the studies, though this number was revised to 0.5% for northern long-eared bats by Western EcoSystems Technology in a presentation at the National Wind Coordinating Collaborative meeting in December 2014. Applying the 7.94 bats per MW rate to Green River (194.25 MW total) results in an all bat fatality estimate of 1,543 bats per year. Considering that Indiana bats make up <0.01% of all fatalities and northern long-eared bats make up 0.5%, GRWF estimates take of 0.2 IBAT and 7.7 NLEBs per year before implementation of any minimization measures.

Acoustic Approach

The acoustic approach uses site-specific data from the pre-construction acoustic surveys conducted for the Project by WEST (Ritzert et al. 2017). Of the 11,185 bat calls identified by Kaleidoscope during 2016 acoustic monitoring at MET towers, 16.5% were *Myotis* calls (Ritzert et al. 2017). Qualitative analysis was done on 95 Indiana bat calls from this study, which found that 45.3% of the calls identified as Indiana bat calls were eastern red bat calls, while only 13.7% were identified as *Myotis* (either little brown bat or unknown *Myotis*; Ritzert et al. 2017). Assuming that only 13.7% of all *Myotis* calls are actually *Myotis* in nature results in an estimated *Myotis* composition of 2.3% (13.7% of the original 16.5%). Assuming that 2.3% of all fatalities will also be Myotis in nature and applying this to the average estimated all bat fatality from the MSHCP and Arnett-Baerwald approaches of 3,252 bats per year (average of 1,543 and 3,417) results in a *Myotis* fatality estimate of 75 *Myotis* per year. These fatalities would include Indiana, northern long-eared, and little brown bats. Based on data from the MSHCP, within the Midwest, there have been 339 little brown bat fatalities, 8 northern long-eared bat fatalities, and 6 Indiana bat fatalities, for a total of 353 *Myotis* fatalities (excluding the eastern small-footed myotis [*Myotis leibii*], whose range does not include the Project area). Of these 353 fatalities, 2.3% were northern long-eared bats, and 1.7% were Indiana bats. Applying these to the estimated 75 *Myotis* fatalities per year would result in an estimated annual fatality of 1.3 Indiana bats and 1.7 northern long-eared bats per year before implementation of any minimization measures.

Average Take Estimate

To estimate the amount of northern long-eared and Indiana bat take that would occur at the Project prior to implementing minimization measures, Green River averaged the take estimates resulting from these three approaches. The averages by species of these approaches are 1.5 Indiana bats and 4.2 northern long-eared bats per year.

Take Estimate Adjusted for Minimization Measures

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). Applying this reduction to the averaged take estimates of 1.5 Indiana bats and 4.2 northern long-eared bats yields a rounded estimated take of 1 Indiana bat and 3 northern long-eared bats per year, or a total of 30 Indiana bats and 90 northern long-eared bats over the 30-year term of the ITA.

Proposed Take Limit

The only Project activity anticipated to result in Indiana or northern long-eared bat take (mortality) is operation. Green River proposes to apply for a take limit for the unminimized estimated level of take, and use adaptive management (including increasing the mitigation, as well as changes to cut-in speeds) to stay within the permitted levels of take.

For the purposes of the federal ITP and this Illinois Conservation Plan, Green River is applying for a take limit of **2 Indiana bats and 5 northern long-eared bats per year**, despite the conservative measure of feathering below the manufacturer's cut-in speed and raising the cut-in speed to 5.0 m/s during period of higher bat activity to reduce risk.

Due to annual variation in environmental factors that may affect Indiana and northern long-eared bat population sizes and migration, annual mortality can be expected to differ from year to year. In an effort to

be responsive to this variation, and to ensure that take limits are not exceeded, this Conservation Plan includes post-construction monitoring (Section 5.4) and adaptive management take thresholds (summarized in Section 6.0).

4.2 BLANDING'S TURTLE

4.2.1 Direct Effects

Green River is requesting take coverage for this species for the duration of the take permit because the risk to turtles exists anytime the turtles are above ground (i.e., not hibernating). Direct mortality of Blanding's turtles may occur as a result of being hit by construction equipment or vehicles within the Terrestrial Action Area; however, conservation measures will be implemented within 0.6 mile of the Green River State Wildlife Area (Figure 4) to exclude Blanding's turtles from the Terrestrial Action Area and thereby avoid direct take of Blanding's turtles on land (see Section 5.2.3).

Mortality of Blanding's turtles may occur as a result of construction of permanent and temporary stream crossings. If the stream crossings are constructed during the turtles' active season (April through October) it is likely the turtle will simply avoid construction and swim away from the area. If stream crossings are constructed during the turtles' inactive season (November through March) there is the potential for mortality to individuals that may be hibernating within the stream.

Green River, in coordination with their construction contractor, has minimized the number of stream crossings within the Terrestrial Action Area by implementing directional boring for collector line crossings. No impacts to Blanding's turtle summer or winter habitat would occur as a result of directional boring activities.

Construction of permanent stream crossings for access roads, and temporary crossings for crane paths would directly impact suitable Blanding's turtle summer (and potentially winter) habitat. The permanent access-road crossings will consist of minor grading and shaping for placement of a culvert within the stream channel at four locations (Figure 7); riprap will be placed below the ordinary high water mark at each stream to stabilize the culvert. Conservation measures will be implemented so that placement of the culverts does not restrict the movement of aquatic life (e.g., fish and invertebrates; see Section 5.2.3).

Amount of Suitable Habitat Affected by Project Activities

Within the Terrestrial Action Area, suitable summer and winter habitat for this species is found within streams and tributaries to the Green River. Impacts to suitable summer and winter habitat was minimized by implementation of directional boring of all collector crossings of streams. Furthermore, take of individuals and suitable habitat will be minimized through a number of conservation measures outlined in Section 5.2.3. Despite these best efforts, the number of Blanding's turtles that could be impacted as a result of Project activities are unknown. As such, the footprint of permanent and temporary impacts to suitable summer habitat (i.e., streams) is used as a surrogate for estimating take to individuals (take estimates provided in Section 4.2.3). Table 1 summarizes direct impacts to Blanding's turtle summer/winter habitat as a result of the Project.

Table 1. Summary of habitat impacts to suitable summer and winter Blanding's turtle habitat at the Green River Wind Farm.

Infrastructure Type[a]	Permanent Habitat Impacts	Temporary Habitat Impacts	Total Habitat Impacts
Access Roads	0.03 ac[b]	0.0	0.03
Crane Paths	0.0	0.46 ac[c]	0.46
Total	**0.03ac**	**0.46 ac**	**0.49 ac**

[a]No impacts to suitable Blanding's turtle will occur as a result of construction of turbines or collector lines.
[b]Two crossings impacting 0.007 ac each; two crossings impacting 0.009 ac each.
[c]18 crane path crossings ranging from 0.02 to 0.05 ac of habitat at each crossing

Approximately 0.49 ac of suitable summer/winter Blanding's turtle habitat will be impacted as a result of Project construction. Approximately, 0.03 ac of suitable Blanding's turtle habitat will be permanently impacted (i.e., within the footprint of the access road) as a result of construction of four permanent access roads (Figure 7). Permanent impacts at each of the four crossings would be less than 0.01 ac per crossing. Temporary impacts to 0.46 ac of suitable summer/winter Blanding's turtle habitat would occur as a result of temporary crane crossings of streams.

4.2.2 Indirect Effects

Placement of permanent access roads at stream crossings could affect the movement of Blanding's turtles following construction. Turtles may avoid swimming through the new culverts and may need/prefer to leave the stream to walk across land. This could result in mortality as a result of vehicular traffic as they cross the access road. While this road mortality is an unlikely event, it cannot be ruled out.

4.2.3 Take Estimate

Take of the Blanding's turtle is estimated to range from one to five individuals, but is not anticipated to reduce the survival or recovery of the species, the biotic community of which it is a part, or the habitat essential to its existence due to the implementation of conservation measures (see Section 5.2.3) for this species.

4.3 ORNATE BOX TURTLE

4.3.1 Direct Effects

Direct mortality of the ornate box turtle may occur as a result of construction of the Project, including grading and construction of access roads, miscellaneous excavation and trenching activities, including a proposed fiber optic cable, and movement of construction vehicles, including cranes, within the Terrestrial Action Area. Individual turtles or nests could be accidentally crushed and killed if they are struck by a vehicle or dug up during ground disturbance activities. Conservation measures will be implemented to exclude ornate box turtles from construction areas adjacent to highly suitable ornate box turtle habitat and thereby avoid direct take of ornate box turtles (see Section 5.2.4).

A discussion of criteria used to evaluated habitat suitability for the ornate box turtle is found in Section 3.1.4. Though not pure sands, mapped loamy sands combined with the presence of upland grasses and cultivated crops west of County Line Road in Whiteside County provide moderately to highly suitable habitat conditions for the ornate box turtle; however, loamy sands are only mapped within a small area of that grassland community, therefore highly suitable habitat is limited. Highly suitable habitat for the ornate box turtle is also found in the vicinity of a plantation community located west of Pump Factory Road (Lee County) near Turbines G2, G3, and G4 (Figure 6). Cultivated crops adjacent to the plantation community also provide moderately suitable habitat for the ornate box turtle.

Although it is understood that turtles may be forced to use other areas that may be less than suitable, for the purposes of determining the impact areas in this section it was necessary to have measurable criteria from which to start (see Section 3.1.4). However, it is possible that this species could occasionally be found at other locations in the Terrestrial Action Area (i.e., non-sandy soils). Therefore, Green River is requesting take coverage for the ornate box turtle within the entire Terrestrial Action Area.

Amount of Suitable Ornate Box Turtle Habitat Affected by the Project

Take of individuals and suitable habitat will be minimized through a number of conservation measures as outlined in Section 5.2.4. Despite these best efforts, the number of individuals that could be impacted or taken as a result of Project activities is unknown. As such, the footprint of permanent and temporary impacts to suitable habitat is used as a surrogate for estimating take to individuals (see take estimate in Section 4.3.3). Table 2 summarizes direct impacts to ornate box turtle habitat as a result of the Project.

Table 2. Summary of habitat impacts to suitable ornate box turtle habitat at the Green River Wind Farm.

Infrastructure Type	Permanent Habitat Impacts[a]	Temporary Habitat Impacts[b]	Total Habitat Impacts
Access Roads	2.2 ac[c]	0.0	2.2 ac
Turbines	15.1 ac[d]	0.0 ac	15.1 ac
Collector Lines	0.0	5.5 ac[e]	5.5 ac
Crane Paths	0.0	9.7 ac[f]	9.7 ac
Fiber Optic Line	0.0	0.6 ac[g]	0.6 ac
Total	**17.3 ac**	**15.8 ac**	**33.1 ac**

[a] Permanent loss of ornate box turtle habitat
[b] No permanent loss of ornate box turtle habitat; disturbed areas will be restored after construction
[c] 4,712 ft of access roads through sandy soil x 20 ft wide = 2.2 ac of habitat affected by access road construction
[d] 3.3 ac of sandy soil within 400' buffer of Turbine H1; 2.1 ac at Turbine B2; 7.3 ac at G4; and 2.4 ac at G5
[e] 11,948 ft of collector lines through sandy soil x 20 ft wide = 5.5 ac of habitat temporarily affected by collector line installation
[f] 6,215 ft through sandy soil x 68 ft wide = 9.7 ac of habitat temporarily affected as a result of crane paths
[g] 1,900 ft through sandy soil x 15 ft wide = 0.6 ac of habitat temporarily affected by fiber optic cable installation

Up to 33.1 ac of suitable ornate box turtle habitat (i.e., sandy soils) will be directly impacted by construction activities within the Terrestrial Action Area, of which, up to 17.3 ac (Table 2) will be permanently impacted as a result of construction of turbines and access roads within moderately suitable habitat (i.e., sandy soils

within cropped areas). This makes up 14.5% of total suitable habitat within the Terrestrial Action Area (119 ac). For reference, the permanent impact of 17.3 ac makes up approximately 1.5% of suitable ornate box turtle habitat (i.e., sandy soils) within the Project boundary (1,177 ac).

Up to 15.8 ac of suitable ornate box turtle habitat (i.e., sandy soils) will temporarily disturbed as a result of Project construction (Table 2). Impacts will be short-term and limited to the duration required for miscellaneous excavation and trenching activities, movement of cranes, and installation of a fiber optic cable west of County Line Road. Areas temporarily disturbed as a result of construction will be restored to pre-construction conditions once construction is complete and the areas will remain available for use by ornate box turtles.

Mitigation Impacts
The mitigation associated with the Project (see Section 5.3) would directly benefit the ornate box turtle by restoring and creating suitable ornate box turtle habitat in the Project vicinity and is expected to enhance species viability.

4.3.2 Indirect Effects

Following construction, the risk of mortality as a result of vehicles could remain on Project access roads, and a parking area near the Project O&M building.

4.3.3 Take Estimate

Take of the ornate box turtle is estimated to range from one to five individuals, but is not anticipated to reduce the survival or recovery of the species, the biotic community of which it is a part, or the habitat essential to its existence due to the implementation of conservation measures (see Section 5.2.4).

4.4 PLAINS HOG-NOSED SNAKE

4.4.1 Direct Effects

Conservation measures will be implemented during installation of a proposed fiber optic cable line west of County Line Road (Whiteside County) to exclude this species from the construction area and thereby avoid direct take of the plains hog-nosed snake (see Section 5.2.5). No additional construction activities will occur within areas of suitable habitat for this species; however, mortality of individuals could occur as a result of the movement of Project vehicles in the vicinity of the fiber optic cable line and the Project O&M building.

Amount of Suitable Plains Hog-Nosed Snake Habitat Affected by the Project
Take of individuals will be minimized through implementation of conservation measures as outlined in Section 5.2.5 and no permanent habitat effects to this species will occur. Despite these best efforts, the number of individuals that could be impacted or taken as a result of Project activities is unknown. As such, the footprint of temporary impacts to suitable habitat is used as a surrogate for estimating take to individuals (see take estimate in Section 4.4.3). Approximately 0.6 ac of suitable plains hog-nosed snake habitat would be temporarily affected by the installation of a proposed fiber optic cable west of County Line Road (approximately 1,900 ft through sandy soil x 15 ft wide=0.6 ac). Areas temporarily disturbed as a result of installation of the fiber optic cable will be restored to pre-construction conditions once installation is complete and the areas will remain available for use by terrestrial species, including the plains hog-nosed snake.

Mitigation Impacts
The mitigation proposed for the ornate box turtle (see Section 5.3) would directly benefit the plain hog-nosed snake by restoring and creating suitable habitat in the Project vicinity and is expected to enhance species viability.

4.4.2 Indirect Effects

Following construction, the risk of mortality as a result of vehicles could remain on Project access roads, and a parking area near the Project O&M building.

4.4.3 Take Estimate

Take of the plains hog-nosed snake is estimated to range from one to five individuals, but is not anticipated to reduce the survival or recovery of the species, the biotic community of which it is a part, or the habitat essential to its existence due to the implementation of conservation measures (see Section 5.2.5).

4.5 REGAL FRITILLARY

4.5.1 Direct Effects

Mortality to adult butterflies in flight, if present, could occur as a result of the movement of Project vehicles near the fiber optic cable line and the Project O&M building. In addition, eggs and larvae, if present within the leaf litter, could be crushed by construction vehicles or dug up during installation of the fiber optic cable line.

Amount of Suitable Regal Fritillary Habitat Affected by the Project
Take of individuals will be minimized through implementation of conservation measures as outlined in Section 5.2.6 and no permanent habitat effects to this species will occur. Despite these best efforts, the number of individuals that could be impacted or taken as a result of Project activities is unknown. As such, the footprint of temporary impacts to suitable habitat is used as a surrogate for estimating take to individuals (see take estimate in Section 4.5.3). Although a host plant survey was not conducted, it is conservatively estimated that up to 0.11 ac of suitable regal fritillary habitat would be temporarily affected by the installation of a proposed fiber optic cable west of County Line Road (approximately 350 ft through non-cropped/grassland habitat x 15 ft wide=0.11 ac). Areas temporarily disturbed as a result of installation of the fiber optic cable will be restored to pre-construction conditions once installation is complete and the areas will remain available for use by terrestrial species, including the regal fritillary, if present.

Mitigation Impacts
The mitigation proposed for the ornate box turtle (see Section 5.3) would directly benefit the regal fritillary by restoring and creating suitable habitat in the Project vicinity and is expected to enhance species viability.

4.5.2 Indirect Effects

No indirect effects to the regal fritillary are anticipated to result from the Project. All areas of temporary disturbance will be restored to pre-construction conditions once construction is complete and vegetation is expected to reestablish following construction.

Following construction, the risk of mortality to adult butterflies in flight as a result of vehicles could remain on Project access roads, and a parking area near the Project O&M building.

4.5.3 Take Estimate

Take of the regal fritillary is estimated to range from one to five individuals, but is not anticipated to reduce the survival or recovery of the species, the biotic community of which it is a part, or the habitat essential to its existence due to the implementation of conservation measures (see Section 5.2.6).

5.0 MINIMIZATION MEASURES, MITIGATION, AND MONITORING

5.1 PLANS FOR MANAGEMENT OF THE AREA

Upon completion of construction, areas temporarily disturbed by the Project as a result of miscellaneous excavation and trenching activities, fiber optic cable, and crane paths will be return to pre-construction conditions. Non-cropped areas will be seeded to native vegetation. Use of the cropped areas will be determined by individual landowners, and it is assumed these areas would again be used for production of rowcrops.

5.2 MEASURES TO AVOID AND MINIMIZE EFFECTS

5.2.1 Best Management Practices

The following Conservation Measures will be implemented by Green River to avoid or minimize impacts to species identified in this Conservation Plan:

- Green River will provide all contractors and employees with training and an environmental information package regarding threatened and endangered species with the potential to be affected by Project construction; this package will include at a minimum information on how to identify these species and the protocols to follow if these species are encountered within the Bat or Terrestrial Action Areas during construction, operation, or maintenance of the Project.

- Green River will post signage in construction areas (e.g., turbine access roads, construction access routes, laydown areas, etc.), and if deemed necessary on public roads, alerting construction personnel to the presence of turtles in the area.

- Construction personnel shall be made aware of the possible presence of Blanding's turtles, ornate box turtles, and plains hog-nosed snakes in the vicinity of the Project and asked to watch for turtles and snakes within the construction zone or on access roads and adjacent public roadways.

- Once the applicable permits have been obtained, if turtles or snakes of any species are found in the construction area, they will simply be picked up and moved to a safer location outside of the construction area. If observed on public roads, contractors and staff will be instructed to avoid running the animal over. Any Blanding's turtle, plains hog-nosed snake, or ornate box turtle observations will be immediately reported to the Green River site manager. Prior to implementation of this measure, Green River will prepare a turtle relocation plan that will be submitted to the IDNR for approval.

5.2.2 Measures to Minimize Effects to Bat Species

The following Conservation Measures will be implemented by Green River to avoid or minimize impacts to the listed bat species:

- The Proposed Action includes implementation of the 5.0 m/s cut-in speed curtailment strategy (see Section 2.8.1). The Proposed Action includes operational adjustments that dictate when turbines are feathered (i.e., to reduce the blade angle to the wind to slow or stop the turbine from spinning). Below the cut-in speed, turbine blades would be feathered so that they do not spin until a designated cut-in speed is reached. This type of curtailment has been shown to reduce bat mortality (e.g., Good et al. 2012; Young et al. 2011; Baerwald et al. 2009; Arnett et al. 2011; Good et al.

2011; Hein et al. 2013, 2014; Young et al. 2013). The turbines will be feathered at night below the manufacturer's cut-in speed (3.0 m/s) during the spring migration period (March 15 to May 15) and during the rest of the bat active season (May 16 to October 31) when temperatures are below 50^0F.[2] Between May 16 and October 31, when temperatures are above 50^0F at night, the cut-in speed will be raised to 5.0 m/s at all turbines. The feathering/cut-in process will be computer-controlled on a real-time basis. Accordingly, turbines will cut-in or feathered throughout the night as the wind speed fluctuates above and below the specified cut-in speed.

- Curtailment actions 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.

- A nighttime cut-in speed of 3.0 to 5.0 m/s during the entire bat activity season is therefore expected to minimize take of Indiana and northern long-eared bats. 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 percent, although the actual reduction in mortality may be greater.

5.2.3 Measures to Avoid and Minimize Effects to the Blanding's Turtle

The following Conservation Measures will be implemented by Green River to avoid or minimize impacts to the Blanding's turtle during the turtles' active season (May 1 – July 15):

- Construction activities, including turbine erection and any miscellaneous excavation or trenching that could be required, at turbines within 0.6 mile of the Green River State Wildlife Area (Figure 4; Turbines E1, E2, E3, E4, E5, E10, D10, D11, D12, F1, F2, F3, and F4), exclusion fence (silt fence) shall be installed around the perimeter of the work space to exclude turtles from the construction area. The fencing shall be installed with turn-back wings at each end facing away from the construction area. The silt fence shall be buried six (6) inches in the ground and staked and maintained in an upright position.

- Once the silt fence is installed, and prior to further activities the biological monitor shall conduct a final pass through the area inside the silt fence to locate turtles within the isolation area and re-locate them outside the construction area.

- If miscellaneous excavation or trenching is required within 0.6 mile of the Green River State Wildlife Area (Figure 4; Turbines E1, E2, E3, E4, E5, E10, D10, D11, D12, F1, F2, F3, and F4), a biological monitor shall accompany construction crew to re-locate turtles found during installation activities. The biological monitor shall conduct a visual encounter search within the construction corridor immediately ahead of the construction crew to locate turtles within the construction corridor and re-locate them outside the construction area. In the event that a turtle nest is unearthed by the trenching activities, trenching would cease at that location, and the biological monitor will report the observation to the Green River site manager.

- For construction of crane paths within 0.6 mile of the Green River State Wildlife Area (Figure 4; Turbines E1, E2, E3, E4, E5, E10, D10, D11, D12, F1, F2, F3, and F4), a biological monitor shall accompany the construction crew to re-locate turtles found in the construction area. The biological

[2] While Indiana bat and northern long-eared bat activity is not anticipated below 50^0F, this measure will provide protection to other bat species that may be active.

monitor shall conduct a visual encounter search within the construction corridor immediately ahead of the construction crew to locate turtles within the construction corridor and re-locate them outside the construction area.

- Once a crane path is no longer in use, if allowed by the landowner and if doing so will not damage environmentally sensitive areas, the area may be de-compacted to restore the loose soil conditions required by the turtles.

- In areas where silt fence is used for exclusion fencing, the fence shall be removed only after all construction and restoration activities in that area have been completed or the nesting season (May 1 through July 15) ends.

- Temporary and permanent stream crossings have been designed to allow for unrestricted movement of aquatic life, including the Blanding's turtle.

- Directional boring will be implemented at all proposed collector line crossings. As a result, stream impacts, and impacts to Blanding's turtle summer/winter habitat will be avoided as a result of construction of collector lines. In addition, no directional boring would occur in the winter months when the turtles are hibernating.

- Temporary stream crossings will be removed following construction, and each stream crossing will be returned to pre-construction conditions.

5.2.4 Measures to Minimize Effects to the Ornate Box Turtle

For construction activities during the ornate box turtle's active season (April 15 – October 30), the following conservation measures will be implemented by Green River to avoid or minimize impacts to the ornate box turtle:

- No construction in areas identified as highly suitable for ornate box turtles shall take place until the area has been cleared by a biological monitor trained in ornate box turtle identification.

- For construction activities, including turbine erection and miscellaneous excavation or trenching that could be required, at Turbines G2, G3, and G4 (Figure 6), silt fence shall be installed around the perimeter of the work space to exclude turtles from the construction area. The fencing shall be installed with turn-back wings at each end facing away from the construction area. The silt fence shall be buried six (6) inches in the ground and staked and maintained in an upright position.

    - The biological monitor shall visually search the area in an attempt to locate turtles within the work space and re-locate them outside the work space. All applicable permits will be obtained.

    - Once the silt fence is installed, and prior to further excavation activities the biological monitor shall conduct a final pass through the area inside the silt fence to locate turtles within the isolation area and re-locate them outside the construction area.

- If miscellaneous excavation or trenching is required for underground collector lines associated with Turbines G2, G3, and G4 (Figure 6), and a proposed fiber optic cable line located west of County Line Road, where trenching is the primary installation method, the biological monitor shall accompany the collector line or fiber optic installation crew to re-locate turtles found during these activities. The biological monitor shall conduct a visual encounter search within the construction corridor immediately ahead of the installation crew to locate turtles within the construction corridor and re-locate them outside the construction area.

- For construction of crane paths associated with G2, G3, and G4 (Figure 6), the biological monitor shall accompany the construction crew to re-locate turtles found in the construction area. The biological monitor shall conduct a visual encounter search within the construction corridor immediately ahead of the construction crew to locate turtles within the construction corridor and re-locate them outside the construction area. All applicable permits will be obtained.

- Once a crane path is no longer in use, if allowed by the landowner and if doing so will not damage environmentally sensitive areas, the area may be de-compacted to restore the loose soil conditions required by the turtles.

- In areas where silt fence is used for exclusion fencing, the fence shall be removed only after all construction and restoration activities in that area have been completed or the active season (April 15 – October 30) ends.

For construction activities outside of the ornate box turtle's active season (October 30 – April 14):

- Although ornate box turtle habitat does include cropped areas, the turtles are less likely to use actively cropped areas for hibernation. Therefore, where excavation is occurring between October 30 and April 14 in areas field-verified as actively cropped the growing season prior to construction, the presence of a biological monitor will not be required.

- A biological monitor will be present during all excavation activities at Turbines G2, G3, and G4 (Figure 6), and trenching activities west of County Line Road (fiber optic line). If turtles are unearthed, the biological monitor will report the observation to the Green River site manager. The IDNR will be contacted by Green River to determine proper care for the turtle until it can be released.

- For installation of underground collector lines, where trenching is the primary installation method, the biological monitor will be present during trenching in the event that turtles are unearthed by the trenching activities. If turtles are found, the biological monitor will report the observation to the Green River site manager. The IDNR will be contacted by Green River to determine proper care for the turtle until it can be released.

5.2.5 Measures to Minimize Effects to the Plains Hog-Nosed Snake

- Construction and maintenance personnel will be informed of the possible presence of plains hog-nosed snakes in the construction work area and will be asked to avoid and report all observed snakes to the Green River site manager.
- Conservation measures will be implemented during installation of a proposed fiber optic cable line located west of County Line Road. The biological monitor shall conduct a visual encounter search within the construction corridor immediately ahead of the installation crew to locate snakes within the construction corridor and re-locate them outside the construction area.

- Areas temporarily disturbed as a result of installation of the fiber optic cable will be restored to pre-construction conditions once installation is complete and the areas will remain available for use by terrestrial species.

5.2.6 Measures to Minimize Effects to the Regal Fritillary

- Areas temporarily disturbed as a result of installation of the fiber optic cable will be restored to pre-construction conditions once installation is complete and the areas will remain available for use by the regal fritillary, if present.

5.3 MITIGATION

Indiana Bat and Northern Long-eared Bat

Mitigation measures will be incorporated into the Project to provide a long-term benefit to both species that will mitigate for the impacts of the permitted levels of take. The proposed mitigation plan for bat species is provided in Appendix C and includes protection of 123.4 ac of summer Indiana and northern long-eared bat habitat in Vermillion County, Illinois. The mitigation plan includes details on site selection, baseline site information, maintenance, performance standards, monitoring, financial assurance, long-term management, and changed circumstances.

The USFWS REA models for the Indiana bat (USFWS 2016b) and northern long-eared bat (USFWS 2016c) were used to calculate the necessary mitigation (acres of protection of summer roosting and foraging habitat) for each species. This resulted in 73.4 acres for Indiana bats and 116.2 acres for the northern long-eared bat. Although mitigation requirements are identified separately for each species, a mitigation site may be credited as mitigation for both species if the habitat requirements for both species are present, an approach called "mitigation stacking". The USFWS has determined that Indiana bats and northern long-eared bats utilize similar habitat, but due to competition between the species, request a 10% stacking discount to account for this competition. Utilizing a 10% stacking discount, mitigation requirements were calculated as follows:

$$Mitigation = 116.2\ acres + (73.4\ acres * 0.1) = 123.5\ acres$$

Protection of 123.5 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.

Adaptive management (Section 7.4) will be used to increase the amount of mitigation if take occurs at higher-than-anticipated levels, up to the permitted level of take. At the permitted level of take, the maximum amount of mitigation for the Project was calculated to be 149 acres for Indiana bats and 194 acres for northern long-eared bats. Utilizing a 10% stacking discount, mitigation requirements were calculated as follows:

$$Mitigation = 194\ acres + (149\ acres * 0.1) = 208.9\ acres$$

The proposed mitigation plan is provided in Appendix C and includes protection of 123.4 acres of summer Indiana and northern long-eared bat habitat in Vermillion County, Illinois. The mitigation plan includes details on site selection, baseline site information, maintenance, performance standards, monitoring, financial assurance, long-term management, and changed circumstances. Mitigation may increase by 85.5 acres through the use of adaptive management (see Section 6.0), which is the difference between the mitigation requirement for the permitted level of take and the mitigation that will be implemented upon issuance of the ITP for the predicted level of take after minimization measures.

Terrestrial Species

In addition to the avoidance and minimization measures to be implemented as summarized above, Green River will provide compensatory mitigation for the permanent loss of 17.3 ac of suitable ornate box turtle habitat (i.e., permanent impacts) in the form of a monetary contribution to a private landowner who owns a 360-ac site just southwest of the Project in Whiteside County. This property contains sand prairie habitat

with known populations of ornate box turtles and plains hog-nosed snakes and likely provides suitable nesting habitat for the Blanding's turtle given its proximity to suitable Blanding's turtle summer habitat. This property also provides suitable habitat for the regal fritillary.

Green River has committed to a monetary contribution of $75,000 to assist with management and restoration of prairie habitat at this property to be payable over a 10-year period beginning January 1, 2018. The landowner is working with a third-party contractor to perform the management activities.

In addition, Green River contributed $450,300 to purchase half of a former agricultural field north of Jersey Road, which is the site of a ComEd switchyard currently under construction and immediately adjacent to the prairie restoration described above. The parcel is 40 ac in size, and the switchyard is going to occupy approximately 5 ac on that parcel. The remaining 35 acres will be donated to Middle Rock Partners, a nonprofit organization arranged by The Nature Conservancy in consultation with the IDNR and other parties, with the understanding that the remaining portions of the parcel not affected by switchyard construction will be restored to a sand prairie complex similar to conditions currently found on the prairie restoration property described above.

The total dedicated resources for restoration of half of the 35-acre restoration parcel and restoration/maintenance of the 360-acre site are intended to further offset acreage impacts to suitable Blanding's and ornate box turtle habitat resulting from Project construction.

5.4 MONITORING

5.4.1 Bat Species

Intense Bat Monitoring

Intense bat monitoring will be conducted from May 15 through October 15 during the first three years of operation. Green River targeted an overall detection probability of at least 20% for the Intense Monitoring periods. The variables, which were evaluated within the Evidence of Absence (EofA) "Design Tradeoffs" function, included the search interval (how often searches are being conducted at each turbine) and the proportion of road and pad searches to full plot searches (80x80-m cleared plots). To achieve an overall detection probability equal to or above 0.2, Green River proposes:

- Twice-weekly searches at all turbines (search interval of 3.5 days)
- 35% full plots (n=26)
- 65% roads and pads (n=48)

Green River will use the results of each year's monitoring to inform the monitoring protocols for the following year, with a goal of an overall detection probability between equal to or above 0.2 for each year of Intense Bat Monitoring. If no Indiana bat and/or northern long-eared bat carcasses are found after the first 3 years of intense monitoring, this results in 90% confidence that 6 or fewer Indiana bats and/or 6 or fewer northern long-eared bats have been taken over the course of the 3 years.

Concurrent with the first year of Intense Monitoring, Green River proposes to conduct one night of mist net surveys at or near the four sites where mist net surveys were conducted in 2016 (Ritzert et al. 2016) to determine if either of the listed bat species are present in the vicinity of the Project. These surveys will be conducted during the summer months when bats are most likely to be present. The results of the mist net survey will be provided to the IDNR upon completion.

Annual Bat Monitoring

The results of the initial three years of Intense Bat Monitoring will be used to inform the Annual Bat Monitoring protocols. At this point, it is assumed that the Intense Bat Monitoring will confirm that summer

risk to the covered bat species is limited to northern long-eared bats at turbines within 1,000 ft of suitable habitat (23 turbines). Therefore, Green River proposes to conduct Annual Bat Monitoring at those 23 turbines from May 15 through July 31, and at all Project turbines from August 1 through October 15.

Green River targeted an overall detection probability equal to or above 5% for the Annual Bat Monitoring periods. The variables, which were evaluated within the EofA "Design Tradeoffs" function, included the search interval (how often searches are being conducted at each turbines) and the proportion of road and pad searches to full plot searches (80x80-m cleared plots). To achieve an overall detection probability equal to or above 0.05, Green River proposes:

- Once-weekly searches at all turbines (search interval of 7 days)
- 100% roads and pads (n=23 during summer and 74 during fall migration)

Green River will use the results of each year's monitoring to inform the monitoring protocols for the following year, with a goal of an overall detection probability equal to or above 0.05 for each year of Annual Bat Monitoring.

5.4.2 Monitoring – Terrestrial Species

- Biological monitoring for Blanding's turtles will occur immediately prior to construction activities at all turbines within 0.6 mile of the Green River State Wildlife Area (Turbines E1, E2, E3, E4, E5, E10, D10, D11, D12, F1, F2, F3, and F4). The biological monitor shall conduct a visual encounter searches immediately ahead of construction activities to locate turtles within the construction corridor and re-locate them outside the construction area.

- Biological monitoring for ornate box turtles will occur immediately prior to construction activities at Turbines G2, G3, and G4 (and associated infrastructure) (Lee County).

- Biological monitoring for ornate box turtles and plains hog-nosed snakes during installation (trenching) of a proposed fiber optic line immediately west of County Line Road in Whiteside County.

- Monitoring for turtle and snake species during construction will occur in the form of routine observations and reporting of road kills by the biological monitor and/or construction staff in conjunction with their normal duties. The Department shall be notified of any Blanding's turtle, ornate box turtle, or plain hog-nosed snake observations or road kills in the Action Area.

- Post-construction monitoring for terrestrial species will occur in the form of routine observations and reporting of road kills by operations staff in conjunction with their normal duties. The Department shall be notified of any Blanding's turtle, ornate box turtle, or plains hog-nosed snake observations or road kills in the Action Area.

- Green River will fund a post-construction presence/absence survey for Blanding's turtle and ornate box turtles within or adjacent to the project area at a cost of up to $20,000. The surveys will utilize either turtle dogs or trapping surveys and will be conducted on private or state-owned property that contains highly suitable habitat. A study plan including specific survey methods will be submitted to IDNR prior to the start of the survey and the survey will be conducted within the permit term.

5.5 FUNDING TO SUPPORT MITIGATION AND MONITORING

Funding for the implementation of the conservation measures outlined in this conservation plan has been dedicated as part of Green River's overall budget for the Project. Additional financial assurances specific to the bat mitigation plan are included in Appendix C.

6.0 ADAPTIVE MANAGEMENT PRACTICES

Adaptive management is a process that will allow Green River to adjust its actions to reflect new information or changing conditions to reach a goal, in this case, minimization of take and conservation of the Indiana bat, northern long-eared bat, Blanding's turtle, and ornate box turtle. Green River will use adaptive management processes to minimize take related to the Project.

Indiana Bat and Northern Long-eared Bat

In order to minimize the take of Indiana bats and northern long-eared bats while minimizing effects on the operation of the Project, Green River will use adaptive management to modify operational protocols or mitigation measures to reflect new information or changing conditions. Information used in the adaptive management process will come from the post-construction mortality monitoring activities described above. Monitoring data will be analyzed in Evidence of Absence (Dalthorp et al. 2017; $\alpha = 0.5$) to determine if the objectives of the HCP and ITA are being met. If the conservation measures are not producing the desired results, adjustments will be made as needed (Table 3).

Table 3. Adaptive management triggers and responses for the Indiana bat and northern long-eared bat at the proposed Green River Wind Farm. The average annual fatality rate (λ) and the projected future take (M) is used for both species.

Trigger Type	Trigger	Response
The average annual take rate is between the estimated minimized take and the permitted take, and projected take over the 30-year permit term is between the estimated minimized take and the permitted take.	$1 < \lambda_{IBAT} < 2$ or $3 < \lambda_{NLEB} < 5$ AND $30 < M_{IBAT\_projcted} < 60$ or $90 < M_{NLEB\_projected} < 150$	Increase mitigation to account for the higher level of take OR Increase cut-in speeds by 0.5 m/s to stay within mitigated levels

Table 3. Adaptive management triggers and responses for the Indiana bat and northern long-eared bat at the proposed Green River Wind Farm. The average annual fatality rate (λ) and the projected future take (M) is used for both species.

The average annual take rate is above the permitted take, and projected take over the 30-year permit term is above the permitted take.	$\lambda_{IBAT} > 2$ or $\lambda_{NLEB} > 5$ AND $M_{IBAT\_projected} > 60$ or $M_{NLEB\_projected} > 150$ or $M_{NLEB\_projected} > 150$	Increase cut-in speeds by 0.5 m/s to stay within permitted levels, and increase mitigation (if needed). Conduct two years of "Intense Monitoring" to ensure that take reduces by enough to keep the Project below permitted levels.
The average annual take rate is below the estimated minimized take, and projected take over the 30-year permit term is below the estimated minimized take.	$\lambda_{IBAT} < 1$ AND $\lambda_{NLEB} < 3$	Decrease cut-in speeds by 0.5 m/s. Conduct two years of "Intense Monitoring" to ensure that take remains below the minimized levels.

Blanding's Turtle, Ornate Box Turtle, and Plains Hog-Nosed Snake

Adaptive-management measures specific to the Blanding's turtle, ornate box turtle, and plains hog-nosed snake include:

- An onsite biological monitor will be present at specific locations that provide suitable habitat for these species (see Section 5.4.2). By conducting monitoring during construction, Green River will be able to quickly react to unforeseen circumstances that may occur.
- If changed or unforeseen circumstances arise that reduce the effectiveness of the minimization measures described in this Conservation Plan, Green River will coordinate with the Department to determine if additional measures are warranted.
- If turtles or snakes are injured as a result of Project activities, Green River will immediately stop work, contact the Green River site manager, and coordinate directly with the Department. Arrangements will be made to take the individual to a licensed wildlife rehabilitator.

7.0 CONCLUSIONS AND EFFECTS DETERMINATION

7.1 INDIANA BAT AND NORTHERN LONG-EARED BATS

The risk of take to the Indiana bat and northern long-eared bat is not likely to reduce the survival or recovery of either species in Illinois, the biotic community of which it is a part, or the habitat essential to its existence for the following reasons:

- A limited amount of tree clearing (3.52 ac) was conducted during the winter of 2017-2018. An additional 2.6 ac was cleared in the summer of 2018, but only after a habitat assessment and emergence surveys were conducted to rule out any impacts to Indiana and northern long-eared bat species. This represents less than 2% of the 298.6 ac of suitable bat habitat within the Project Area. No additional tree clearing is anticipated within suitable summer bat habitat as a result of the Project; therefore, no impacts to bat species will occur as a result of construction and the Applicant is not requesting take coverage for bats during construction.

- Project operation is anticipated to result in Indiana or northern long-eared bat take (mortality). Green River proposes to apply for a take limit for the unminimized estimated level of take, and use adaptive management (including increasing the mitigation, as well as changes to cut-in speeds) to stay within the permitted levels of take.

- For the purposes of the federal ITP and this Illinois Conservation Plan, Green River is applying for a take limit of **2 Indiana bats and 5 northern long-eared bats per year**, despite the conservative measure of feathering below the manufacturer's cut-in speed and raising the cut-in speed to 5.0 m/s during period of higher bat activity to reduce risk.

- Due to annual variation in environmental factors that may affect Indiana and northern long-eared bat population sizes and migration, annual mortality can be expected to differ from year to year. In an effort to be responsive to this variation, and to ensure that the 30-year take limits are not exceeded, this Conservation Plan includes post-construction monitoring (Section 5.4) and adaptive management take thresholds (summarized in Section 6.0).

- Mitigation measures have been incorporated into the Project to provide a long-term benefit to both species that will mitigate for the impacts of the permitted levels of take. The proposed mitigation plan for bat species (Appendix C) includes protection of 123.4 ac of summer Indiana and northern long-eared bat habitat in Vermillion County, Illinois.

7.2 BLANDING'S TURTLE

The risk of take to the Blanding's turtle is not likely to reduce the survival or recovery of the species in Illinois, the biotic community of which it is a part, or the habitat essential to is existence for the following reasons:

- For the purposes of this Illinois Conservation Plan, take of the Blanding's turtle is estimated to range from one to five individuals.
- Conservation measures will be implemented within 0.6 mile of the Green River State Wildlife Area to exclude Blanding's turtles from the Terrestrial Action Area and thereby avoid direct take of Blanding's turtles on land.

- Approximately 0.49 ac of suitable Blanding's turtle summer and winter habitat will be directly affected by the Project, of which 0.03 ac would be permanently impacted as a result of construction of four access roads within the Terrestrial Action Area. Temporary impacts to 0.46 acre of suitable habitat would be impacted as a result of 18 temporary crane path crossings.

- Permanent impacts at each of the four crossings would be less than 0.01 ac per crossing.

- Conservation measures will be implemented so that placement of the culverts does not restrict the movement of aquatic life (e.g., fish and invertebrates; see Section 5.2.3).

- Directional boring would be implemented at all collector line crossings; therefore, no impacts to Blanding's turtle summer or winter habitat would occur as a result of installation of collector lines. In addition, no directional boring would occur in the winter months when the turtles are hibernating.

- Construction and maintenance personnel will be informed of the possible presence of turtles in the construction work area and will be asked to avoid and report all observed turtles to the Green River site manager.
- Biological monitoring for Blanding's turtles will occur immediately prior to construction activities at all turbines within 0.6 mile of the Green River State Wildlife Area. The biological monitor shall conduct a visual encounter searches immediately ahead of construction activities to locate turtles within the construction corridor and re-locate them outside the construction area. All applicable permits will be obtained.

- Post-construction monitoring for turtle species will occur in the form of routine observations and reporting of road kills by operations staff in conjunction with their normal duties. The Department shall be notified of any Blanding's turtle or ornate box turtle observations or road kills in the Action Area.

- Green River will provide compensatory mitigation for the permanent loss of 17.3 ac of suitable ornate box turtle habitat (i.e., permanent impacts) in the form of a monetary contribution to a private landowner who owns a 360-ac site with a known population of ornate box turtles; this sand prairie community also likely provides suitable nesting habitat for the Blanding's turtle given its proximity to suitable Blanding's turtle summer habitat. Green River has committed to a monetary contribution of $75,000 to assist with management and restoration of prairie habitat at this property to be payable over a 10-year period beginning January 1, 2018.

- Green River will fund a post-construction presence/absence survey for Blanding's turtle and ornate box turtles within or adjacent to the project area at a cost of up to $20,000. The surveys will utilize either turtle dogs or trapping surveys and will be conducted on private or state-owned property that contains highly suitable habitat. A study plan including specific survey methods will be submitted to IDNR prior to the start of the survey and the survey will be conducted within the permit term.

7.3 ORNATE BOX TURTLE

The risk of take to the ornate box turtle is not likely to reduce the survival or recovery of the species in Illinois, the biotic community of which it is a part, or the habitat essential to is existence for the following reasons:

- For the purposes of this Illinois Conservation Plan, take of the ornate box turtle is estimated to range from one to five individuals.

- Approximately 119 ac of suitable ornate box turtle habitat is present within the Terrestrial Action Area, of which up to 33.1 ac will be directly impacted by construction of the Project.
- The construction of access roads and turbine foundations will permanently impact 17.3 ac of suitable ornate box turtle habitat.

- Up to 15.8 ac of suitable ornate box turtle habitat will be temporarily impacted as a result of installation of collector lines, crane paths, and a proposed fiber optic cable line west of County Line Road in Whiteside County. All areas of temporary disturbance will be restored to pre-construction conditions once construction is complete and the areas will remain available for use by ornate box turtles.

- Construction and maintenance personnel will be informed of the possible presence of turtles in the construction work area and will be asked to avoid and report all observed turtles to the Green River site manager.
- Biological monitoring for ornate box turtles will occur immediately prior to construction activities at Turbines G2, G3, and G4 (and associated infrastructure) (Lee County), and during installation (trenching) of a proposed fiber optic line immediately west of County Line Road in Whiteside County.
- Post-construction monitoring for turtle species will occur in the form of routine observations and reporting of road kills by operations staff in conjunction with their normal duties. The Department shall be notified of any Blanding's turtle or ornate box turtle observations or road kills in the Action Area.
- Green River will provide compensatory mitigation for the permanent loss of 17.3 ac of suitable ornate box turtle habitat (i.e., permanent impacts) in the form of a monetary contribution to a private landowner who owns a 360-ac site with a known population of ornate box turtles. Green River has committed to a monetary contribution of $75,000 to assist with management and restoration of prairie habitat at this property to be payable over a 10-year period beginning January 1, 2018.
- Green River contributed $450,300 to purchase half of a former agricultural field north of Jersey Road located immediately adjacent to the prairie restoration described in the previous bullet to host a ComEd switchyard. The parcel is 40 ac in size, and the switchyard is going to occupy approximately 5 ac on that parcel. The remaining 35 acres will be donated to Middle Rock Partners, a nonprofit organization arranged by The Nature Conservancy in consultation with the IDNR and other parties, with the understanding that the remaining portions of the parcel not affected by switchyard construction will be restored to a sand prairie complex similar to conditions currently found on the prairie restoration property.
- Green River will fund a post-construction presence/absence survey for Blanding's turtle and ornate box turtles within or adjacent to the project area at a cost of up to $20,000. The surveys will utilize either turtle dogs or trapping surveys and will be conducted on private or state-owned property that contains highly suitable habitat. A study plan including specific survey methods will be submitted to IDNR prior to the start of the survey and the survey will be conducted within the permit term.

7.4 PLAINS HOG-NOSED SNAKE

The risk of take to the plains hog-nosed snake is not likely to reduce the survival or recovery of the species in Illinois, the biotic community of which it is a part, or the habitat essential to is existence for the following reasons:

- For the purposes of this Illinois Conservation Plan, take of the plains hog-nosed snake is estimated to range from one to five individuals.
- Conservation measures will be implemented during installation of a proposed fiber optic cable line west of County Line Road (Whiteside County) to exclude this species from the construction area and thereby avoid direct take of the plains hog-nosed snake.
- No permanent impacts to suitable habitat for this species will occur.
- Approximately 0.6 ac of suitable plains hog-nosed snake habitat would be temporarily affected by the installation of a proposed fiber optic cable west of County Line Road.

- Areas temporarily disturbed as a result of installation of the fiber optic cable will be restored to pre-construction conditions once installation is complete and the areas will remain available for use by terrestrial species, including the plains hog-nosed snake.

- Mitigation proposed to compensate for the loss of ornate box turtle habitat would also benefit the plains hog-nosed snake; however, given the limited amount of habitat (0.6 ac) temporarily affected by construction, no additional mitigation is proposed for this species.

7.5 REGAL FRITILLARY

The risk of take to the regal fritillary is not likely to reduce the survival or recovery of the species in Illinois, the biotic community of which it is a part, or the habitat essential to is existence for the following reasons:

- For the purposes of this Illinois Conservation Plan, take of the regal fritillary is estimated to range from one to five individuals.

- No permanent impacts to suitable habitat for this species will occur.

- Approximately 0.11 ac of suitable regal fritillary habitat would be temporarily affected by the installation of a proposed fiber optic cable west of County Line Road.

- Areas temporarily disturbed as a result of installation of the fiber optic cable will be restored to pre-construction conditions once installation is complete and the areas will remain available for use by terrestrial species, including the regal fritillary.

- Mitigation proposed to compensate for the loss of ornate box turtle habitat would also benefit the regal fritillary; however, given the limited amount of habitat (0.11 ac) temporarily affected by construction, no additional mitigation is proposed for this species.

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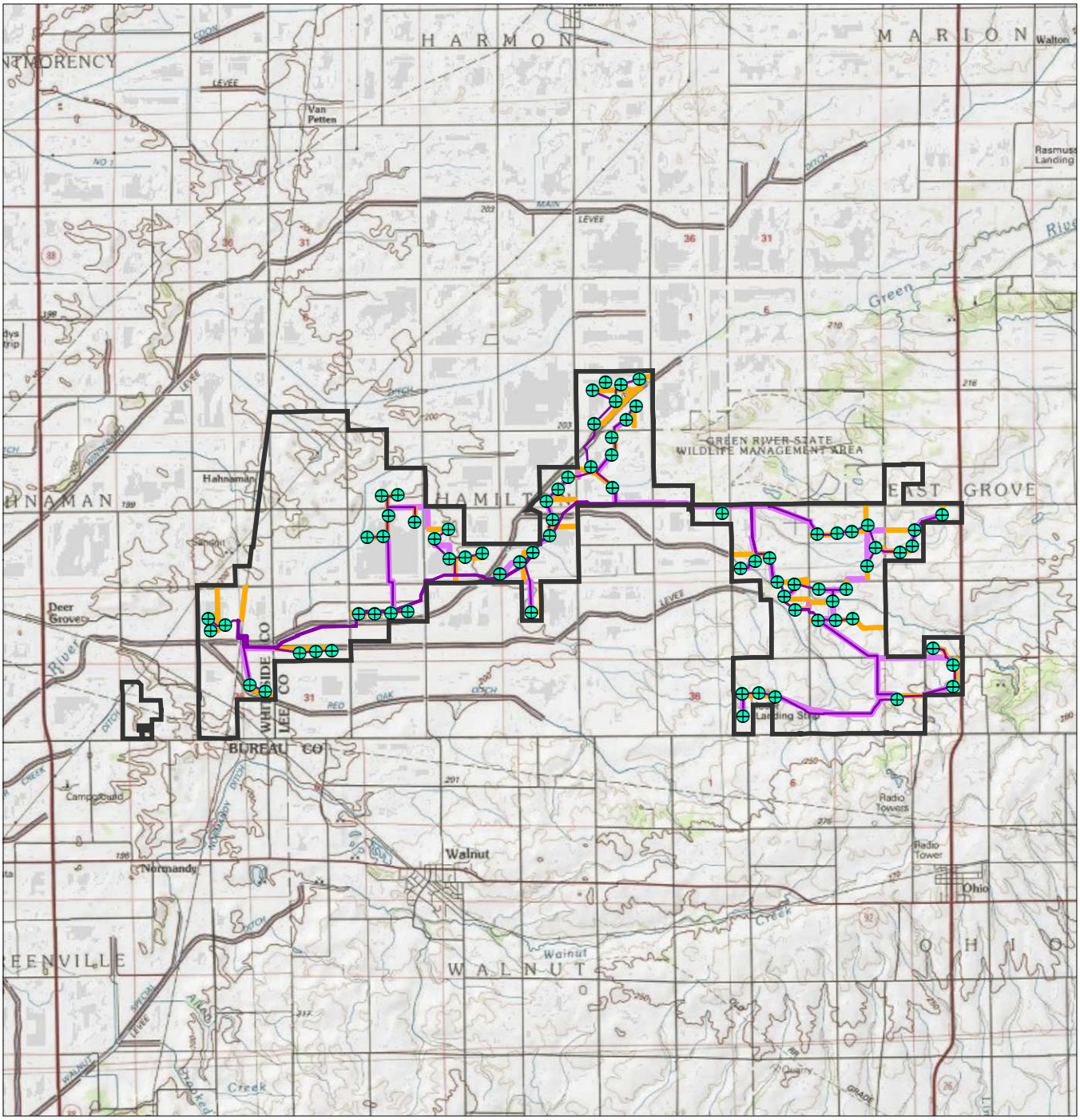

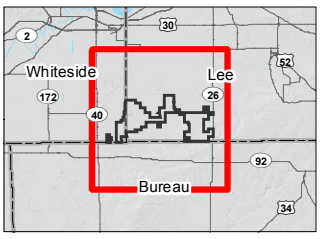

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS
3. Background: USGS 7.5' Topographic Quadrangle

Legend

- Project Boundary/Bat Action Area
- Terrestrial Action Area
- Turbine 20180529
- Collection System 20180529
- Access Road 20180529
- Crane Path 20180529

Figure No.
1

Title
Project Location and Project Components

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2018-03-21
Technical Review by KV on 2018-04-09
Independent Review by SP on 2019-02-01

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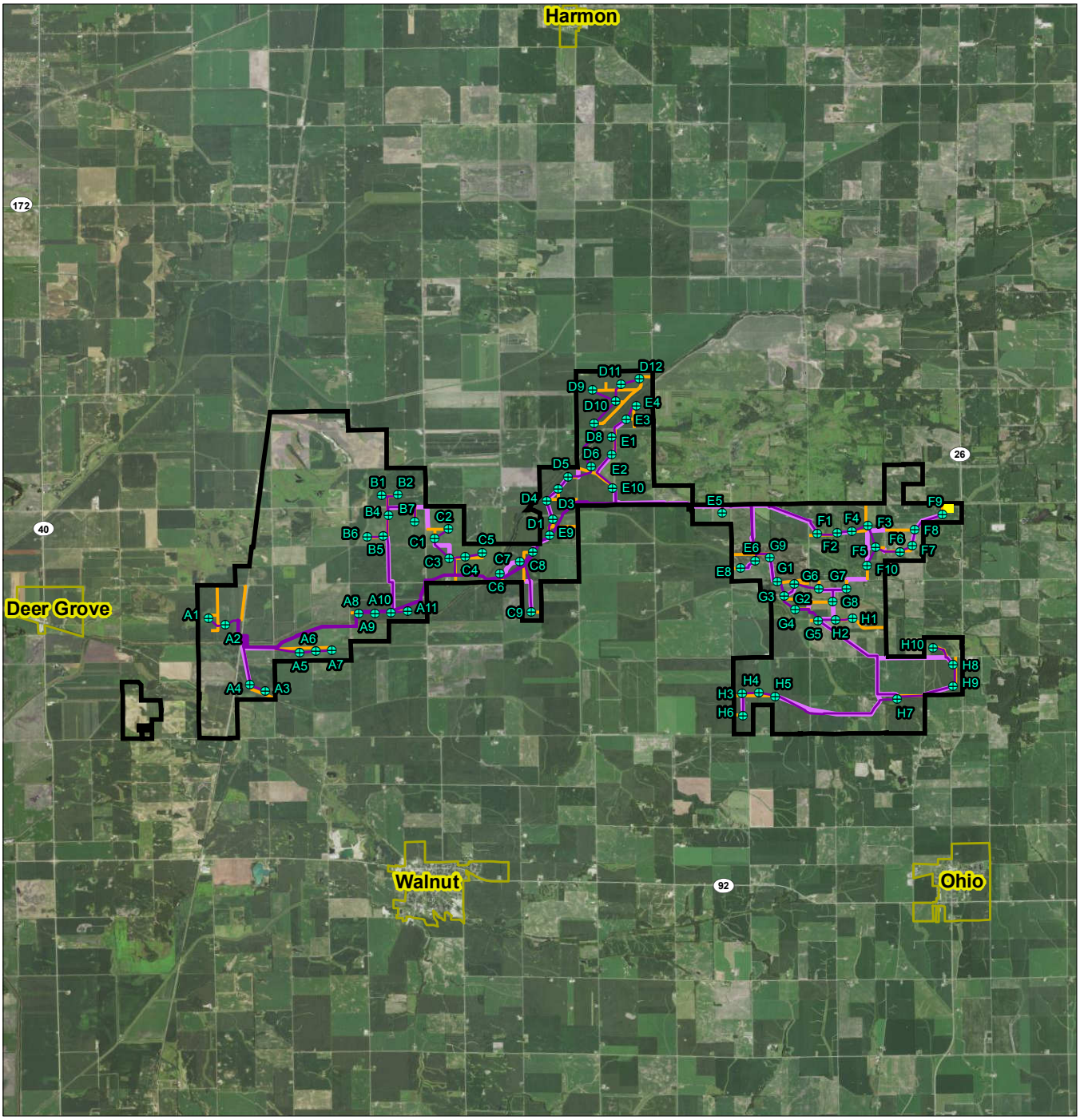

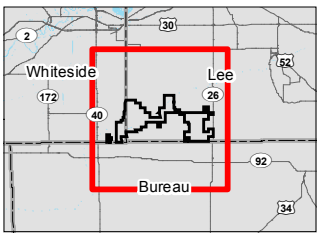

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1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2015 NAIP

Legend

- Project Boundary/Bat Action Area
- Terrestrial Action Area
- Turbine 20180529
- Collection System 20180529
- Access Road 20180529
- Crane Path 20180529
- Proposed Laydown Yard

Figure No.
2

Title
Action Area Overview

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2018-04-06
Technical Review by KV on 2018-04-09
Independent Review by SP on 2019-02-01

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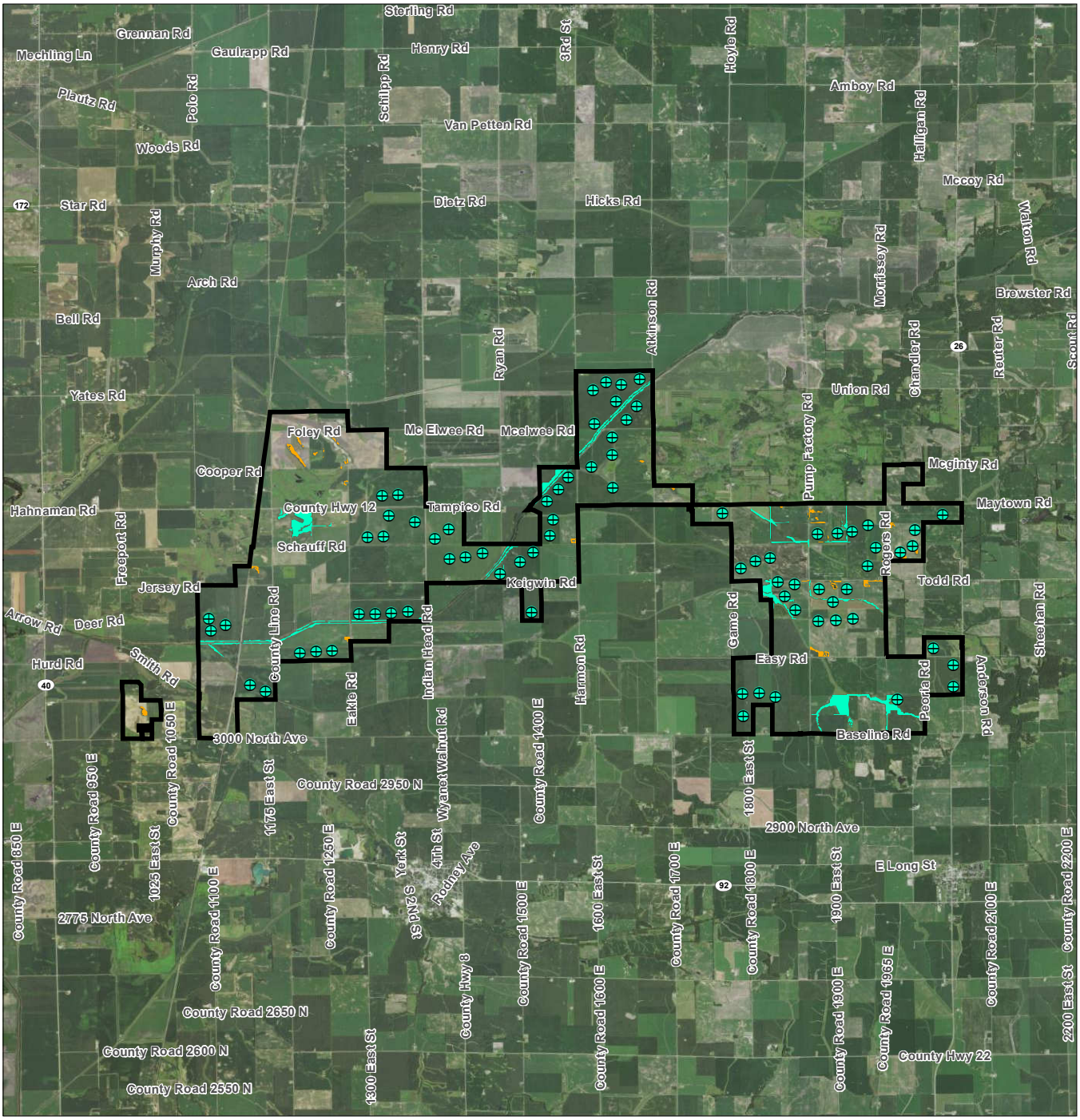

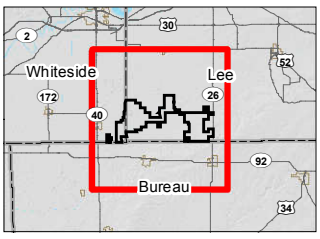

Legend

- Project Boundary/Bat Action Area

Terrestrial Action Area

- Turbine 20180529

Bat Habitat Assessment

- Suitable
- Unsuitable

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2015 NAIP

Figure No.
3

Title
Bat Habitat Assessment

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2018-04-06
Technical Review by KV on 2018-04-09
Independent Review by SP on 2019-02-01

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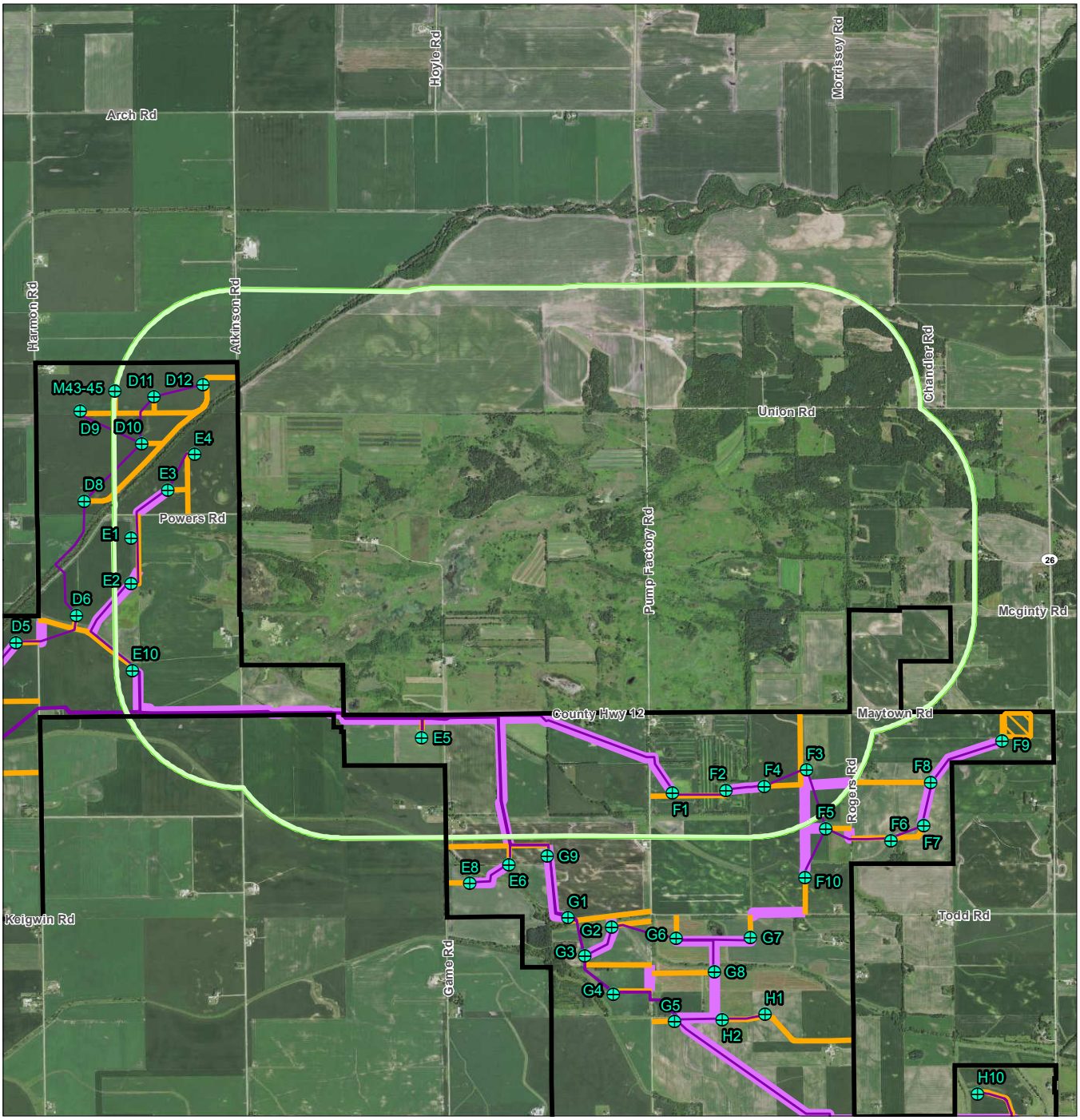

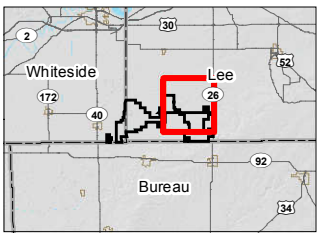

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2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2015 NAIP

Legend

- Project Boundary/Bat Action Area
- Terrestrial Action Area
- Turbine 20180529
- Collection System 20180529
- Access Road 20180529
- Crane Path 20180529
- Proposed Laydown Yard
- Green River State Wildlife Area 1km Buffer

Figure No.
4

Title
Blanding's Turtle Conservation Measures

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2018-04-06
Technical Review by KV on 2018-04-09
Independent Review by SP on 2019-02-01

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Figure No.
5

Title

Ornate Box Turtle Habitat Assesment
NRCS Data - Mapped Sandy Soils

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2018-14-06
Technical Review by KV on 2018-04-09
Independent Review by SP on 2019-02-01

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WHITESIDE COUNTY

LEE COUNTY

BUREAU COUNTY

Green River

Walnut Creek

Lime Creek

Legend

- Project Boundary/Bat Action Area

Terrestrial Action Area

- Turbine 20180529
- Collection System 20180529
- Access Road 20180529
- Crane Path 20180529
- Proposed Laydown Yard

NRCS Soil Survey Data

Surface Texture

- Fine Sand
- Loamy Sand
- Sand

National Hydrography Data

- Perennial Stream
- Intermittent Stream
- Waterbody

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Geronimo, Stantec, USGS, USFWS, NADS
3. Background: 2015 NAIP

Stantec

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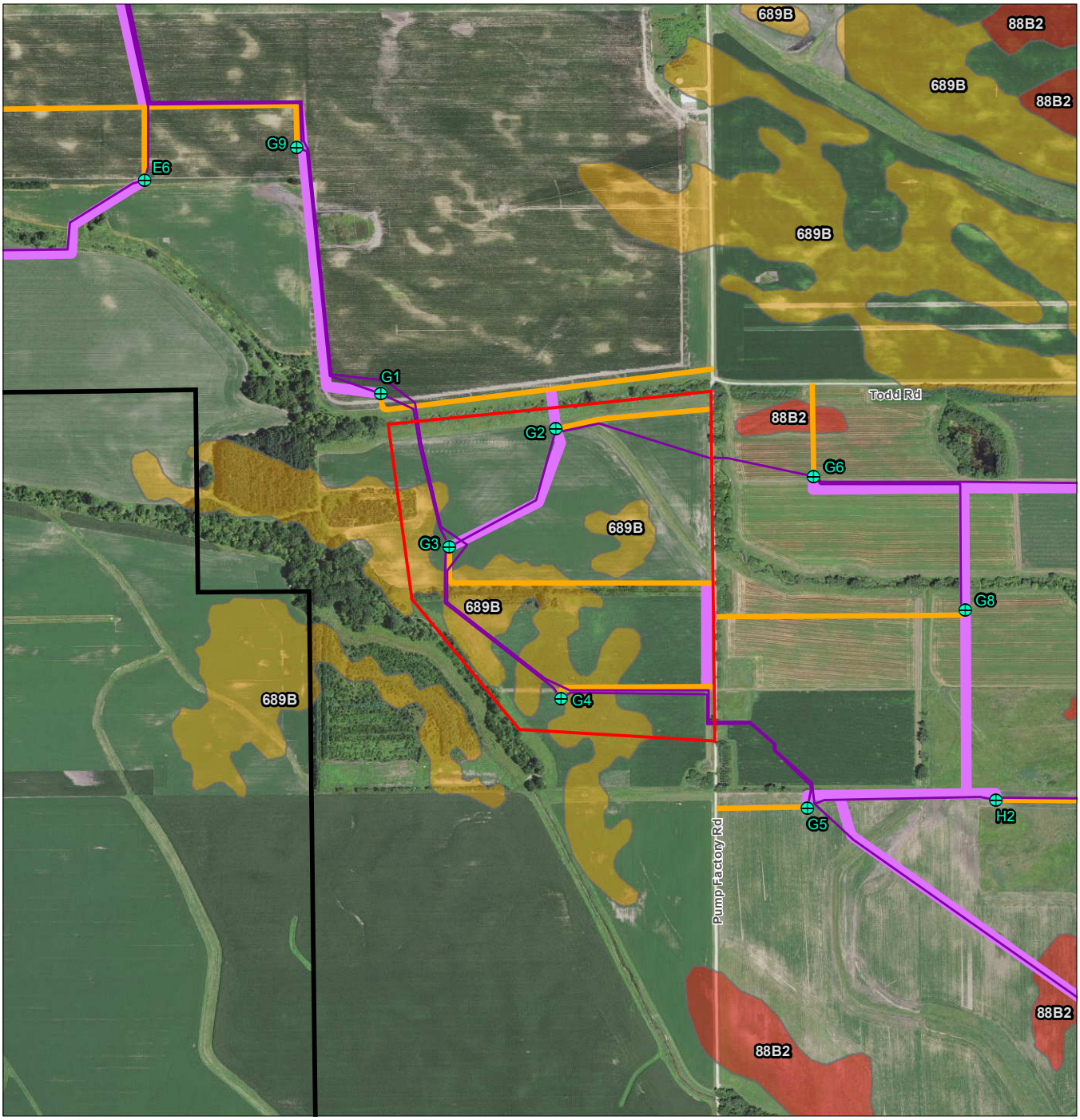

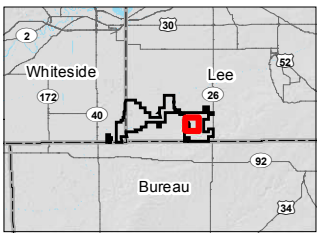

Notes
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2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2015 NAIP

Legend

- Project Boundary/Bat Action Area
- Ornate Box Turtle Conservation Measures

Terrestrial Action Area

- Turbine 20180529
- Collection System 20180529
- Access Road 20180529
- Crane Path 20180529
- Proposed Laydown Yard

NRCS Soil Survey Data

Surface Texture

- Fine Sand
- Loamy Sand
- Sand

Figure No.
6

Title
Ornate Box Turtle Conservation Measures

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2018-04-06
Technical Review by KV on 2018-04-09
Independent Review by SP on 2019-02-01

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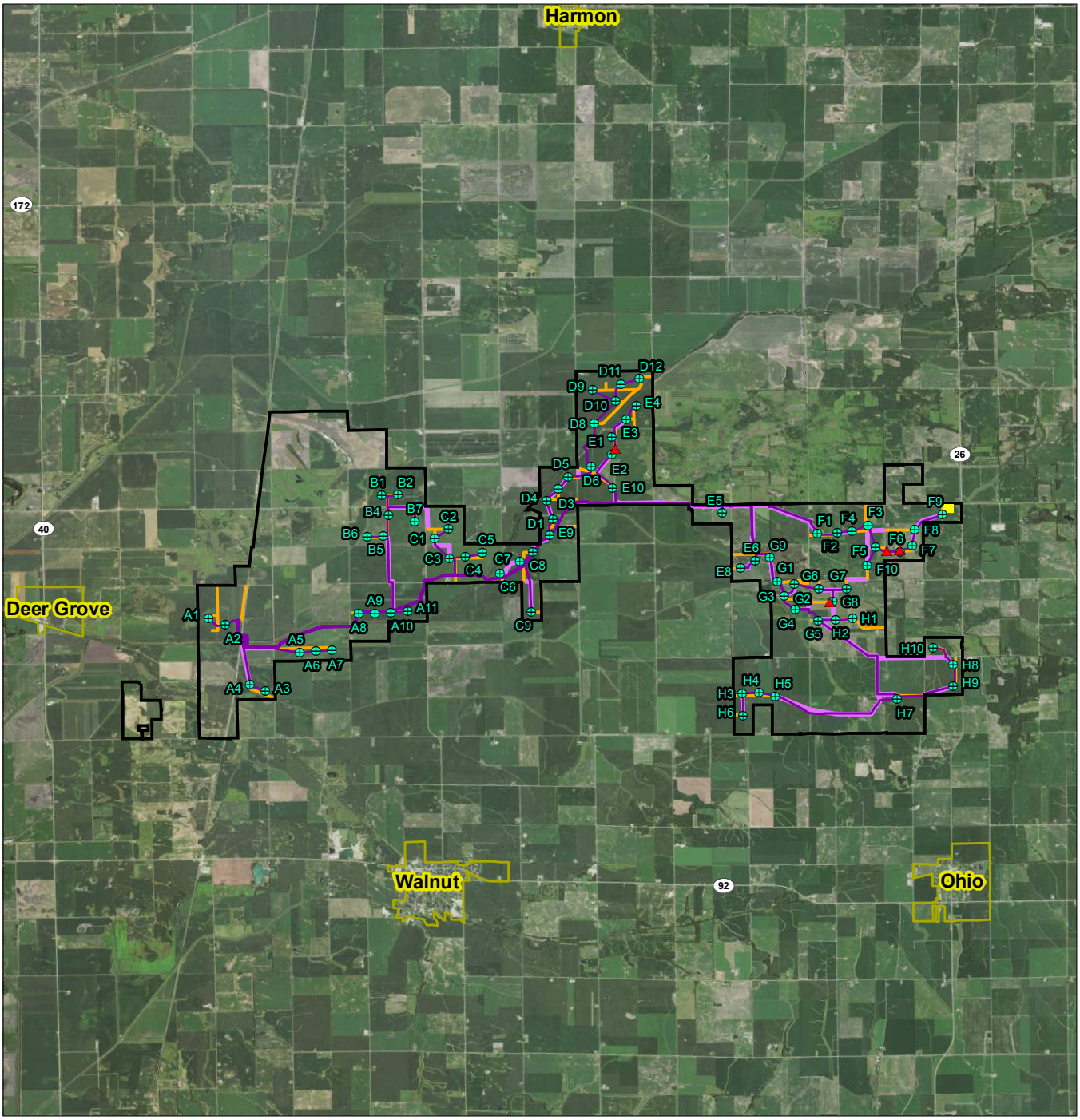

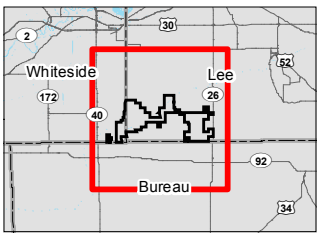

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Data Sources Include: Stantec, Geronimo, NADS, USGS
3. Orthophotography: 2015 NAIP

Legend

- Project Boundary/Bat Action Area

Terrestrial Action Area

- Turbine 20180529
- Permanent Stream Crossing
- Collection System 20180529
- Access Road 20180529
- Crane Path 20180529
- Proposed Laydown Yard

Figure No.
7

Title
Permanent Stream Crossings

Client/Project
Geronimo Energy
Green River Wind Farm
Illinois Conservation Plan

Project Location
Whiteside and Lee Counties, IL

193704450
Prepared by SF on 2019-01-18
Technical Review by BT on 2019-01-18
Independent Review by SP on 2019-02-01

0 1 2 Miles
1:126,720 (at original document size of 8.5x11)

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Stantec

APPENDIX A – IMPLEMENTING AGREEMENT

Implementing Agreement

Conservation Plan
for
Indiana Bat, Northern Long-eared Bat, Blanding's Turtle, Ornate Box Turtle, Plains Hog-Nosed Snake, and Regal Fritillary

Green River Wind Farm Phase 1, LLC
Lee and Whiteside Counties, 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, Green River Wind Farm Phase 1, LLC (Green River) 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. Green River will oversee all avoidance, minimization, and monitoring efforts identified within the Conservation Plan. Furthermore, Green River will be responsible for planning, contract execution, and construction supervision for the entire project.

Green River will implement this Conservation Plan in coordination with the IDNR as required in the ITA. Green River will be responsible for coordinating and overseeing any onsite work that requires knowledge, skills, and expertise related to the listed species. Members of the Green River Operations Department will be Officers of Record for this Conservation Plan and Implementing Agreement and bear the corporate responsibility for compliance with the terms and conditions of the ITA.

The following schedule is planned for construction activities, monitoring, and progress reports to be provided to the IDNR:

- Substation construction – May 2018 through July 2019
- No activities planned between January and April 2019
- Turbine delivery and erection – May through August 2019
- Miscellaneous excavation and trenching activities (as necessary) – May through August 2019
- Project completion and site restoration – September through October 2019
- COD – October 2019

A monthly report summarizing construction activities within the monitored areas, and documentation of any observations of the target species, will be submitted to the IDNR.

Green River 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 four state-listed species covered by the ITA. Green River 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 Green River Project Manager who will oversee implementation of the Conservation Plan and onsite monitoring as required by the ITA is:

Jeff Ringblom
Chief Financial Officer
Green River Wind Farm Phase 1, LLC
7650 Edinborough Way, Suite 725
Minneapolis, MN 55435
952.988.9000
info@geronimoenergy.com

As the Green River Project Manager, I, Jeff Ringblom, am responsible for the implementation of this Conservation Plan and the terms and conditions of the ITA.

Signature: _____ Date: 2/1/19

Jeff Ringblom, Green River Wind Farm Phase 1, LLC

APPENDIX B – BAT SURVEY REPORTS

FINAL REPORT

Mist-Net and Telemetry Surveys
Green River Wind Project
July 6 – 23, 2016

Prepared for:

Green River Wind Farm Phase I, LLC

7650 Edinborough Way, Suite 725
Edina, Minnesota 55435

Prepared by:

Jason Ritzert, Rebecca Schmitt, Benjamin Hale, and Scott Conover

Western EcoSystems Technology, Inc.

1017 Mumma Road, Suite 103
Lemoyne, Pennsylvania 17043

September 19, 2016

EXECUTIVE SUMMARY

Green River Wind Farm Phase I, LLC (Green River) is developing the Green River Wind Project (Project) in Lee and Whiteside counties, Illinois. Green River contracted Western EcoSystems Technology, Inc. (WEST) to conduct mist-net surveys for the endangered Indiana bat (INBA) and threatened northern long-eared bat (MYSE) in the Project during summer 2016. The principal objectives of the surveys were to: 1) determine the presence or probable absence of INBA and MYSE in the Project, and 2) document maternity roost trees in the Project.

Mist-net surveys were completed at four sites (GR1-GR4) at the Project from July 6-14, 2016. A total of 57 bats were captured, including 45 big brown bats, four eastern red bats, four MYSE, three little brown bats, and one evening bat. The four MYSE included two adult lactating females, one juvenile non-reproductive female, and one adult non-reproductive male. No INBA were captured.

Telemetry surveys were completed from July 8-23, 2016 on three female MYSE. Seven roost trees were identified; two occurred on accessible land parcels and five occurred on inaccessible parcels. The maximum number of bats emerging from roost trees on accessible parcels was one bat. Emergence counts were not completed on inaccessible parcels.

STUDY PARTICIPANTS

Western EcoSystems Technology, Inc.

Jason Ritzert	Project Manager
Rebecca Schmitt	Project Coordinator/Report Writer/Technical Editor
Benjamin Hale	Bat Biologist/Research Biologist
April McKay	Mist-Net Technician
Larissa Gleason	Telemetry Technician
Rachael Pruitt	Telemetry Technician
Kristen Klaphake	GIS Specialist
Michael McKenzie	Data Manager

REPORT REFERENCE

Ritzert, J., Schmitt, R., B. Hale, and S. Conover. 2016. Draft Report: Indiana Bat and Northern Long-Eared Bat Mist-Net and Telemetry Surveys, Green River Wind Project, July 6-23, 2016. Prepared for Geronimo Energy, LLC (Geronimo). Prepared by Western EcoSystems Technology, Inc. (WEST), Lemoyne, Pennsylvania.

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BACKGROUND AND PROJECT OVERVIEW

Green River Wind Farm Phase I, LLC (Green River) is developing the Green River Wind Project (Project) in Lee and Whiteside counties, Illinois (Figure 1). Green River contracted Western EcoSystems Technology, Inc. (WEST) to conduct mist-net surveys to determine the presence/probable absence the Indiana bat (INBA; *Myotis sodalis*) and northern long-eared bat (MYSE; *Myotis. septentrionalis*) following the U.S. Fish and Wildlife Service (USFWS) 2016 Range-Wide Indiana Bat Summer Survey Guidelines (USFWS 2016b) and USFWS Northern Long-Eared Bat Interim Conference and Planning Guidance (USFWS 2014). The principal objectives of the surveys were to: 1) determine the presence or probable absence of INBA and MYSE in the Project, and 2) document maternity roost trees in the Project.

TECHNICAL APPROACH

Mist-Net Surveys

A study plan was submitted to the USFWS for review and approval. Site specific authorization was received from the USFWS on June 29, 2016 under WEST's Native Endangered and Threatened Species Recovery Permit (Permit No. TE234121-8). WEST's Illinois Department of Natural Resources (IDNR) Scientific Collection Permit (Permit No. NH16.5223) and WEST's IDNR Permit for Possession of Endangered or Threatened Species (Permit No. 11-14S) were amended to include the Project. Mist-net surveys were completed at four sites (GR1-GR4) from July 6-14, 2016 (Figure 1). Each site was surveyed for nine net-nights using three nets at each site for three nights.

Standard 2-ply, 50-denier, nylon mist-nets with a mesh size of 38 millimeters (mm; 1.30 inches [in]) were used at all sites. Mist-nets were placed in suitable bat habitat and positioned perpendicularly across flight corridors filling the corridor from side-to-side and extending from ground-level up to the overhanging canopy. Mist-net sites were selected based on the following criteria: 1) suitable travel corridors, 2) contiguous forested areas, 3) water resources, 4) suitable bat habitat, and 5) access to leased lands. Net locations were established at least 30 meters (m; 98.4 feet [ft]) apart within each mist-net site. Mist-netting began at sunset and continued for at least five hours. Nets were checked every 10 minutes. Disturbance in the form of noise, light, or movement were minimized at all net locations.

For each mist-net night, the following information was collected:

- Date,
- Start and end time,
- Site description,
- Site Global Positioning System (GPS) coordinates,
- Mist-net specifics (height, width, etc.),
- Temperature (degrees Fahrenheit [F]),

- Cloud cover (percent),
- Wind speed (miles per hour),
- Precipitation,
- And moon phase were recorded.

For all bats capture, the following information was collected:

- Species,
- Sex,
- Age,
- Reproductive condition,
- Body mass (grams),
- Forearm length (millimeters),
- Reichard wind damage index score
- Capture status (recapture or new).

Reichard wing damage index score (0-3) were recorded for all captured bats to assess exposure to White-Nose Syndrome (WNS) in individual bats (Reichard 2009). The USFWS WNS decontamination protocol was followed to prevent cross contamination of captured bats with *Pseudogymnoascus destructans*, the fungus that causes WNS (USFWS 2016a). Captured bats of species other than INBA and MYSE were processed immediately and released within 15 minutes of capture. INBA and MYSE were held for up to 30 minutes in order to attach radio-transmitters. Photographs were taken of all bat captures. Forearm bands were attached to captured *Myotis* species.

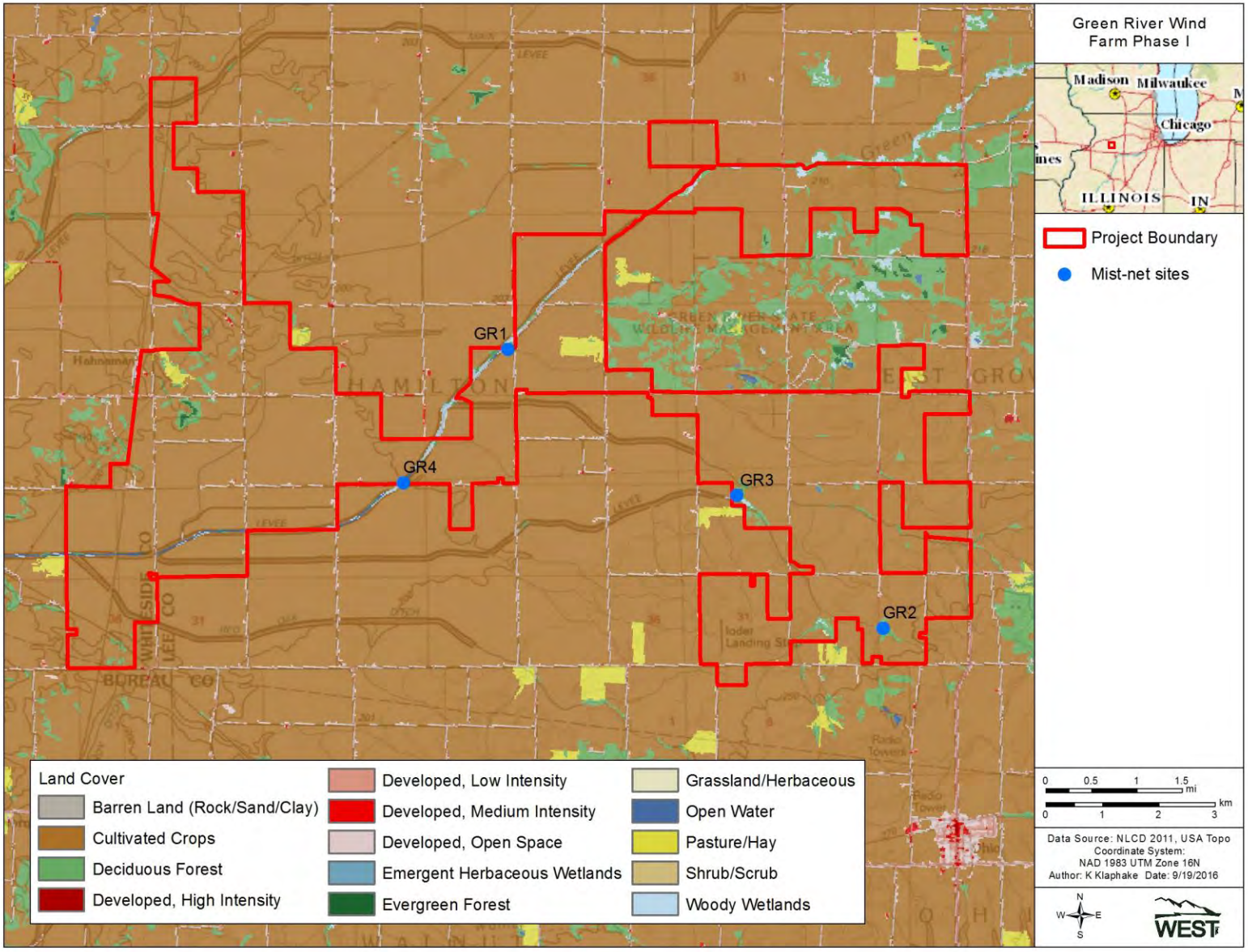


Figure 1. Location of mist-net sites at the Green River Wind Project, July 6 – 14, 2016.

Telemetry Surveys

Telemetry surveys were conducted from July 8-23, 2016, to determine if transmittered bats were utilizing roost trees in or near the Project. Bats outfitted with a radio-transmitter were tracked for a maximum of seven days or until the transmitter signal was lost (i.e., no signal heard for two days). Transmitter signals were followed during daylight hours to locate roost trees within leased lands. If the bat was located outside of leased lands, day roost locations were determined using triangulation from accessible parcels and public roads. For each roost tree, the following information was collected:

- Photographs of the roost tree,
- Global Positioning System (GPS) coordinates,
- Roost type,
- Tree species,
- Tree type (live, snag),
- Tree diameter at breast height (DBH),
- Roost height (meters),
- Roost location (e.g., cavity, crevice, bark),
- Stand age,
- Vegetation community type.

Emergence Surveys

Emergence surveys were performed on each roost tree on accessible parcels to determine the number of bats in the roost. Emergence surveys began 30 minutes before sunset and continued for at least 60 minutes after sunset or until it was otherwise too dark to see emerging bats. Emergence surveys were not conducted when:

- Temperatures were below 50°F,
- Precipitation (rain or fog) persisted for more than 30 minutes or continued intermittently during the survey period,
- Sustained winds greater than 9 mph,
- Roosts were located on inaccessible parcels.

For each emergence survey, the following information was collected:

- Date,
- Start and end times,
- Roost name,
- Number of bats exiting,
- General weather conditions (e.g. temperature, precipitation, wind speed).

RESULTS

Mist-Net Surveys

Mist-net surveys were completed at four sites (GR1-GR4) in Lee and Whiteside counties, Illinois, from July 6-14, 2016 (Figure 1). Locations and site descriptions of mist-net surveys are included in Table 1, and photographs of mist-net sites are included in Appendix A. A total of 57 bats were captured, including 45 big brown bats (EPFU; *Eptesicus fuscus*), four eastern red bats (LABO; *Lasiurus borealis*), four MYSE, three little brown bats (MYLU; *Myotis lucifugus*), and one evening bat (NYHU; *Nycticeius humeralis*). No INBA were captured. Capture sites for MYSE are included in Figure 2. A summary of bat captures by site is included in Table 2. Photographs of representative species of bats are included in Appendix B, and photographs of all MYSE and MYLU captures are included in Appendices C and D. Details for four MYSE captures are included in Table 3, and capture details for all bats are included in Appendix E.

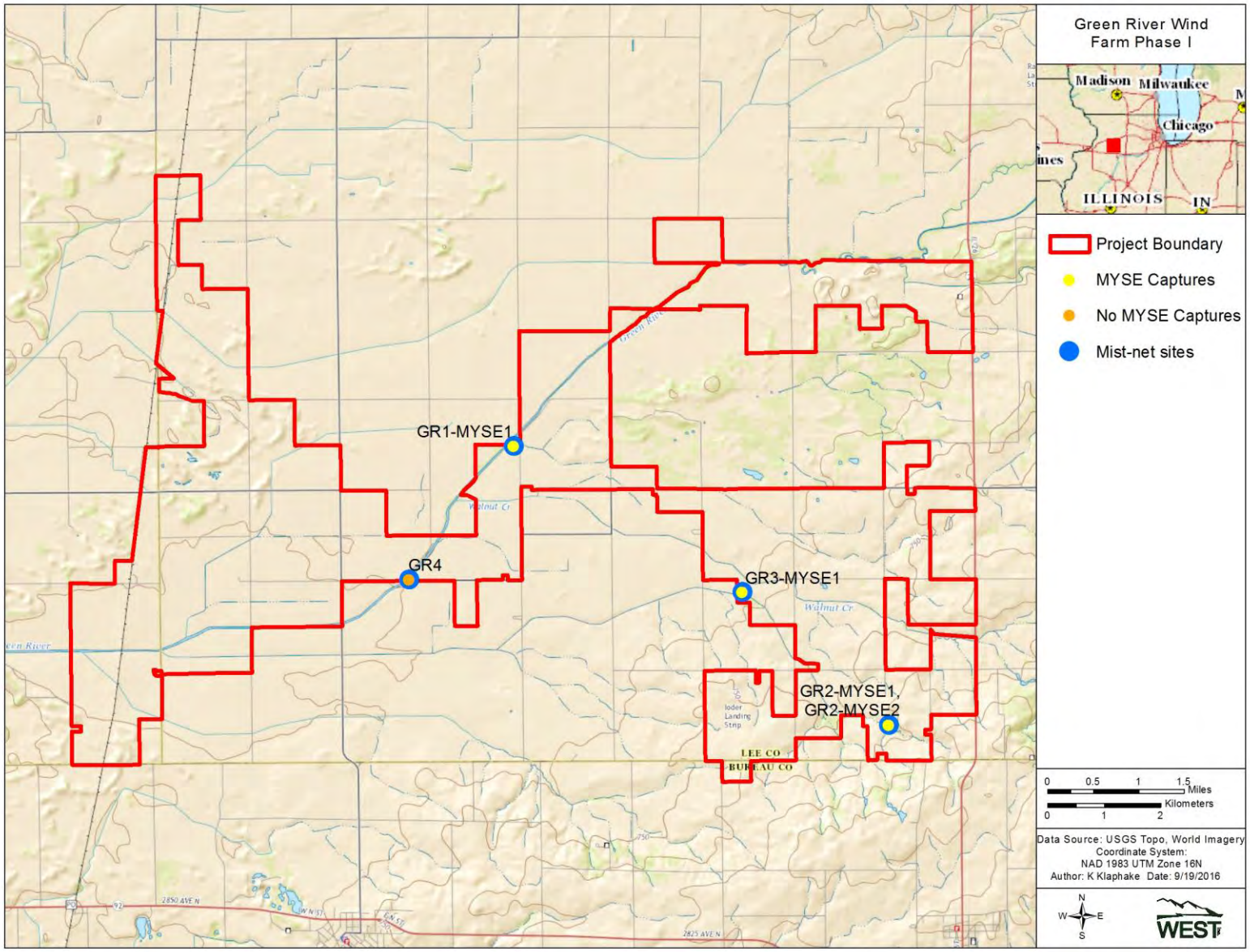


Figure 2. Locations of northern long-eared bat captures at the Green River Wind Project, July 6 – 14, 2016.

Table 1. Locations and site descriptions of mist-net surveys at the Green River Wind Project, July 6 – 14, 2016.

Mist-Net Site ID	Net	UTM*		Site Description
	A	287124	4612477	Creek/riparian
	B	287070	4612470	Creek/riparian
GR1	C	286976	4612438	Field edge
	A	293566	4607292	Field edge
	B	293518	4607308	Forest corridor
GR2	C	293512	4607263	Creek/riparian
	A	290961	4609777	Field edge
	B	290985	4609669	Creek/riparian
GR3	C	291113	4609694	Forest corridor
	A	285146	4610160	Field edge
	B	285094	4610142	Bridge
GR4	C	285101	4610183	Creek/riparian

*UTM Zone 16, North American Datum 1983

Table 2: Summary of 2016 bat mist-net captures at the Green River Wind Project, July 6 – 14, 2016.

Site ID	Big Brown Bat	Eastern Red Bat	Northern Long-Eared Bat	Little Brown Bat	Evening Bat	Total
GR1	27	1	1	0	1	**30**
GR2	6	0	2	1	0	**9**
GR3	11	2	1	1	0	**15**
GR4	1	1	0	1	0	**3**
Total	**45**	**4**	**4**	**3**	**1**	**57**

Table 3. Details for northern long-eared bats captured at the Green River Wind Project, July 6 – 14, 2016.

Bat ID	Band Number	Site	Survey Night	Bat Information	UTM*	
GR1-MYSE1	A0081	GR1	7/7/2016	Adult lactating female	287124	4612477
GR3-MYSE1	A0083	GR3	7/10/2016	Adult non-reproductive male	290961	4609777
GR2-MYSE1	A0086	GR2	7/16/2016	Juvenile non-reproductive female	293518	4607308
GR2-MYSE2	A0087	GR2	7/18/2016	Adult lactating female	293518	4607308

*UTM Zone 16, North American Datum 1983
**Radio-tracked bats are in bold font.

Telemetry Surveys

Three MYSE, including two adult lactating females (GR1-MYSE1 and GR2-MYSE2) and one juvenile non-reproductive female (GR2-MYSE1) were radio-tracked to document roost sites. No male MYSE were tracked per the approved study plan.

GR1-MYSE1

GR1-MYSE1 was tracked to two roost trees during the survey. GR1-MYSE1 was tracked to the same roost tree on days 1-3 and to a second roost tree on day 5 (Appendix F). The bat was

triangulated to a tree on an inaccessible parcel on day 4 and no signal was heard on days 6 and 7.

Both documented roost trees were silver maples (*Acer saccharinum*) and located in sparse forest edge along the Green River surrounded by cropland on both sides (Appendix F). The forest was dominated by thick underbrush with some scattered mature trees. The distance from the first roost tree (RT1) to capture site was 540 m (1,771 feet [ft]), and the distance from the second roost tree (RT2) to capture site was 260 m (853 ft). Roost tree locations, characteristics, and emergence counts are included in Table 4.

Table 4. Details of northern long-eared bat roost trees documented at the Green River Wind Project, July 8 – 23, 2016.

Roost Tree ID	Species	Type	Height (m)	DBH (cm)	UTM*		Maximum # Bats during Emergence Counts
GR1-MYSE1-RT1	*Acer saccharinum*	Live	42.9	114.5	287336	4612853	1
GR1-MYSE1-RT2	*Acer saccharinum*	Live	8	28.5	286843	4612429	1

*UTM Zone 16, North American Datum 1983

GR2-MYSE1

No signal was detected for GR2-MYSE1 on days 1 and 5 (Table 5). GR2-MYSE1 was triangulated to the same off-site parcel on days 2-4, and days 6-7 (Figure 3)

GR2-MYSE2

GR2-MYSE2 was triangulated to the same inaccessible parcel for days 1 and 2; however, no signal was detected after day 2. The locations for triangulated roosts are included in Table 5 and Figure 3

Table 5. Northern long-eared bat roost locations on inaccessible parcels at the Green River Wind Project, July 8 – 23, 2016.

Triangulation ID	Capture Site	Bat Information	UTM*	
GR1-MYSE1-T1	GR1	GR1-MYSE1	287012	4612528
GR2-MYSE1-T1	GR2	GR2-MYSE1	293811	4606020
GR2-MYSE1-T2	GR2	GR2-MYSE1	293948	4606071
GR2-MYSE1-T3	GR2	GR2-MYSE1	293720	4606197
GR2-MYSE1-T4	GR2	GR2-MYSE1	294068	4606206
GR2-MYSE1-T5	GR2	GR2-MYSE1	293852	4606237
GR2-MYSE2-T1	GR2	GR2-MYSE2	293807	4606261

*UTM Zone 16, North American Datum 1983

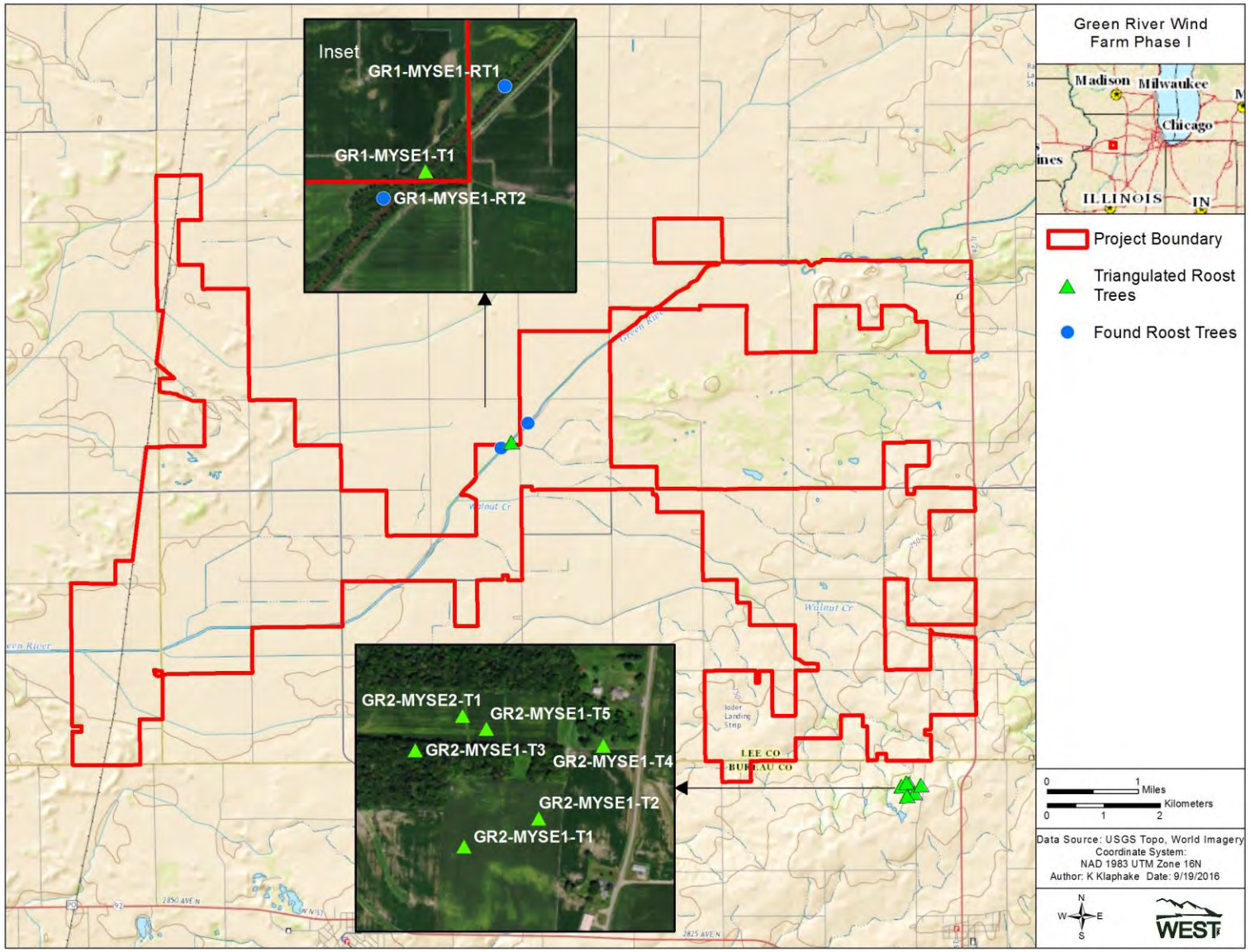


Figure 3. Northern long-eared bat roost tree locations documented at the Green River Wind Project, July 8 – 23, 2016.

Emergence Surveys

WEST conducted emergence surveys or “exit” counts at each found roost tree to determine the number of bats using the trees and to confirm the specific roost tree type and location. The maximum number of bats exiting a single tree was one bat per tree. Results of emergence surveys for roost trees are included in Table 4. Photographs of roost trees are included in Appendix F.

REFERENCES

Reichard, J.E. 2009. Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-Nose Syndrome. Center for Ecology and Conservation, Boston University, Boston, Massachusetts.

US Fish and Wildlife Service (USFWS). 2016a. National White-Nose Syndrome Decontamination Protocol April 2016. Available online at: https://www.whitenosesyndrome.org/resource/national-white-nose-syndrome-decontamination-protocol-april-2016

US Fish and Wildlife Service (USFWS). 2016b. Range-Wide Indiana Bat Summer Survey Guidelines. Endangered Species, Midwest Region, US Fish and Wildlife Service. Last updated April 2016. 48 pp.

US Fish and Wildlife Service (USFWS). 2014. Northern Long-Eared Bat Interim Conference and Planning Guidance. USFWS Regions 2, 3, 4, 5, & 6. January 6, 2014.

Appendix A. Photographs of Mist-Net Survey Sites

Appendix B. Photographs of Representative Species of Bat Captures

Appendix C. Photographs of Northern Long-Eared Bat (*Myotis septentrionalis*) Captures

Appendix D. Photographs of Little Brown Bat (*Myotis lucifugus*) Captures

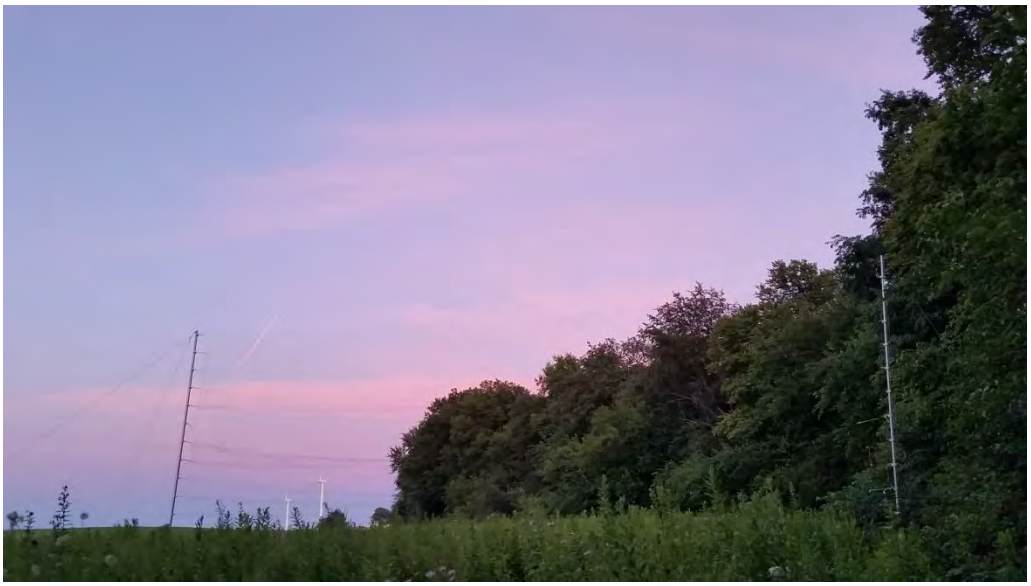
Appendix E. Bat Capture Details

Appendix F. Photographs of Northern Long-Eared Bat (*Myotis septentrionalis*) Roost Trees

GR1 – Net A

GR1 – Net B

GR1 – Net C



GR2 – Net A

GR2 – Net B

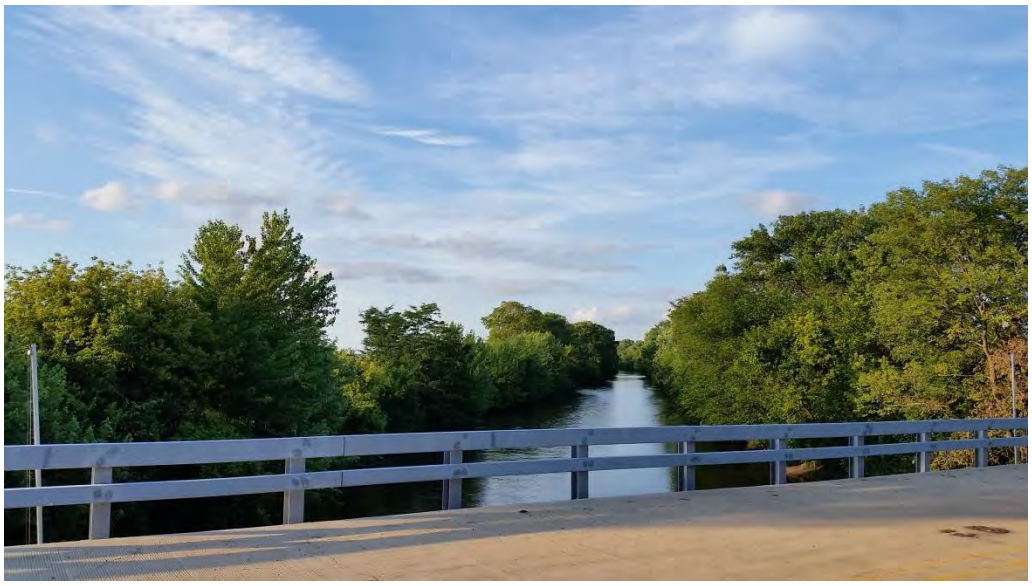
GR2 – Net C

GR3 – Net A

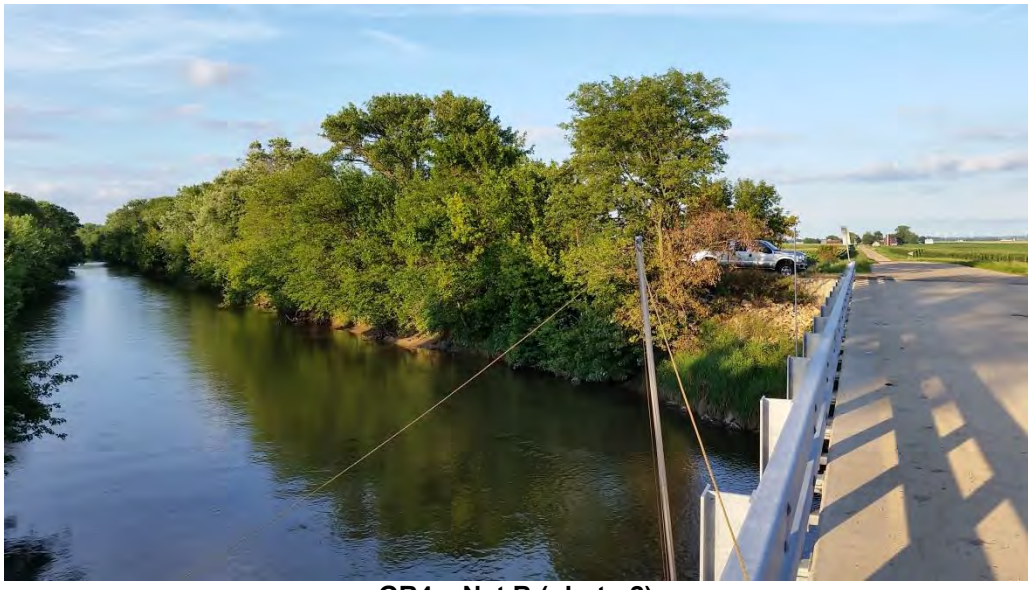
GR3 – Net B

GR3 – Net C

GR4 – Net A



GR4 – Net B (photo 1)



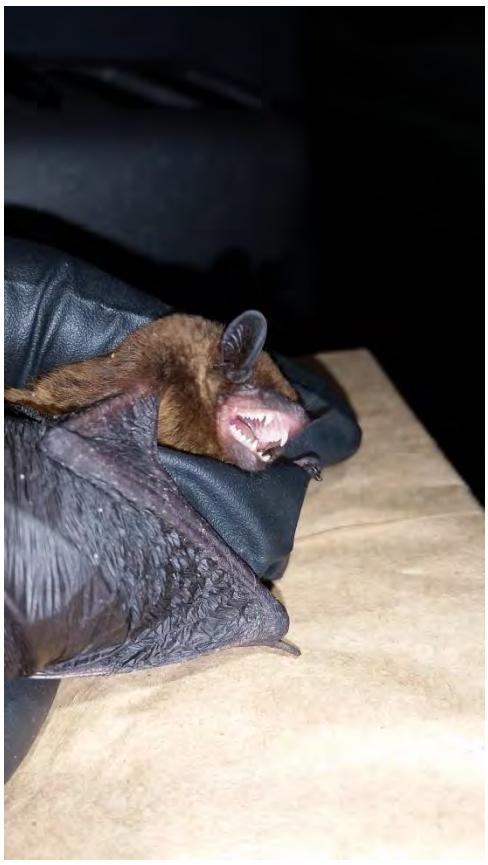
GR4 – Net B (photo 2)

GR4 – Net B (photo 3)

GR4 – Net C

Big Brown Bat

Eastern Red Bat



Evening Bat

Little Brown Bat

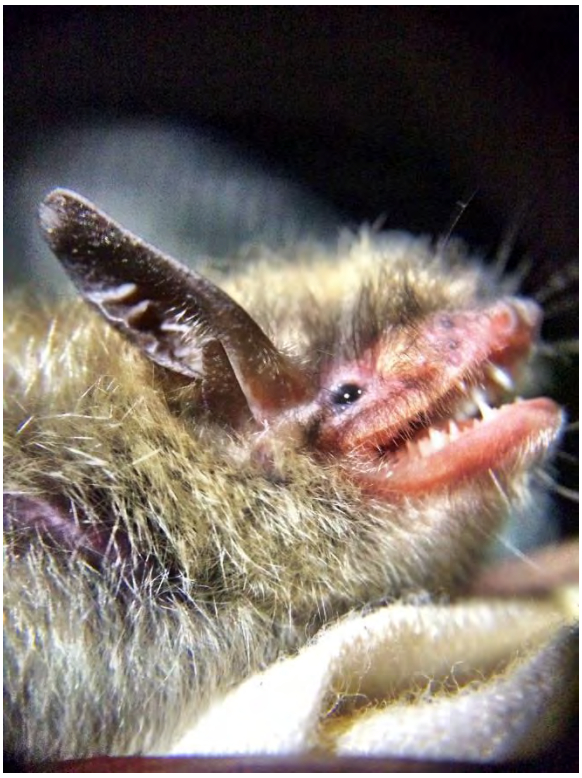
Northern Long-Eared Bat

GR1-MYSE1

GR2-MYSE1

GR2-MYSE2

GR3-MYSE1



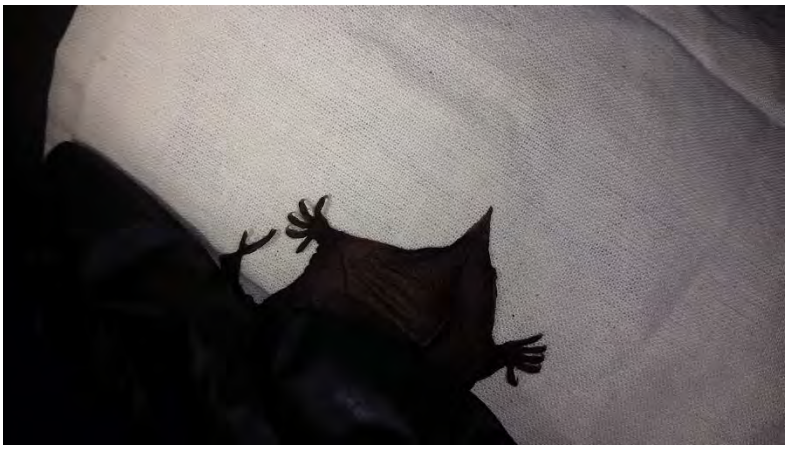
GR2-MYLU1 - Face

GR2-MYLU1 - Toehairs

GR2-MYLU1 – Calcar

GR3-MYLU1 – Face

GR3-MYLU1 – Toehairs



GR3-MYLU1 – Calcar

GR4-MYLU1 – Face

GR4-MYLU1 – Toehairs

GR4-MYLU1 - Calcar

Appendix E1: Details of Bats Captured at Site GR1 (July 6-8, 2016).

Site	Survey Night	Time	Species	Sex*	Age**	Reproductive Status***	Reichard Score	Forearm Length (mm)	Weight (g)
GR1	7/6/2016	21:50	Big brown bat	M	A	TD	0	46.1	19
GR1	7/6/2016	0:25	Big brown bat	F	A	P	0	43.2	20.5
GR1	7/6/2016	0:50	Evening bat	F	A	L	0	37.5	11
GR1	7/7/2016	22:00	Big brown bat	M	J	TD	0	47.5	16
GR1	7/7/2016	22:00	Big brown bat	M	A	NR	0	46.3	19.5
GR1	7/7/2016	22:00	Northern long-eared bat	F	A	L	0	35.9	7
GR1	7/7/2016	22:20	Big brown bat	M	A	NR	0	45.5	20
GR1	7/7/2016	22:20	Big brown bat	F	A	NR	0	49	23.5
GR1	7/7/2016	22:25	Big brown bat	F	A	L	0	51	22
GR1	7/7/2016	0:00	Big brown bat	M	A	TD	0	46.1	19
GR1	7/7/2016	0:00	Big brown bat	F	A	L	0	50.5	24.75
GR1	7/7/2016	0:00	Big brown bat	F	A	L	0	49.6	21.5
GR1	7/7/2016	0:05	Big brown bat	M	J	NR	0	47.3	16.5
GR1	7/7/2016	0:10	Big brown bat	M	A	NR	0	45	19.5
GR1	7/7/2016	0:10	Big brown bat	M	A	TD	0	46.9	19.5
GR1	7/7/2016	0:10	Big brown bat	F	J	NR	0	47	17
GR1	7/7/2016	0:10	Big brown bat	F	A	NR	0	45.1	17
GR1	7/7/2016	0:15	Big brown bat	F	A	P	0	50.9	22.5
GR1	7/7/2016	0:20	Big brown bat	F	A	L	0	46.6	19
GR1	7/7/2016	0:20	Big brown bat	F	A	L	0	51.5	22.75
GR1	7/7/2016	0:25	Big brown bat	F	A	L	0	21.5	49
GR1	7/7/2016	1:40	Big brown bat	M	A	NR	0	17	46.5
GR1	7/7/2016	1:40	Big brown bat	M	A	NR	0	17.5	44.3
GR1	7/8/2016	21:50	Eastern red bat	F	J	NR	0	40.7	9
GR1	7/8/2016	22:10	Big brown bat	M	A	TD	0	47	20
GR1	7/8/2016	22:35	Big brown bat	F	A	L	0	50	23
GR1	7/8/2016	22:40	Big brown bat	M	A	TD	0	45.1	19.75
GR1	7/8/2016	0:00	Big brown bat	F	A	NR	0	51	23
GR1	7/8/2016	0:35	Big brown bat	M	A	TD	0	48.3	18.5
GR1	7/8/2016	0:35	Big brown bat	F	J	NR	0	47.5	15.25

*M=male, F=female

Appendix E1: Details of Bats Captured at Site GR1 (July 6-8, 2016).

Site	Survey Night	Time	Species	Sex*	Age**	Reproductive Status***	Reichard Score	Forearm Length (mm)	Weight (g)

**A=adult, J=juvenile
***L=lactating, NR=non-reproductive, P=pregnant, TD=testes descended

Appendix E2: Details of Bats Captured at Site GR2 (July 15, 16, and 18, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR2	7/15/2016	22:50	Big brown bat	M	A	TD	0	41	16.5
GR2	7/15/2016	0:15	Little brown bat	F	A	NR	0	36.7	8.5
GR2	7/16/2016	21:50	Big brown bat	M	A	TD	0	37.6	16
GR2	7/16/2016	21:50	Big brown bat	F	J	NR	0	47.8	13.5
GR2	7/16/2016	23:15	Big brown bat	F	J	NR	0	47.2	14.5
GR2	7/16/2016	23:20	Big brown bat	M	A	NR	0	44.3	17.5
GR2	7/16/2016	0:30	Northern long-eared bat	F	J	NR	0	43.7	6
GR2	7/18/2016	21:40	Northern long-eared bat	F	A	L	0	37.3	7.25
GR2	7/18/2016	0:30	Big brown bat	F	A	L	0	47	19.5

*M=male, F=female
**A=adult, J=juvenile
***L=lactating, NR=non-reproductive, TD=testes descended

Appendix E3: Details of Bats Captured at Site GR3 (July 9-11, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR3	7/9/2016	22:15	Big brown bat	M	A	TD	0	46.8	17.75
GR3	7/9/2016	22:15	Big brown bat	M	A	NR	0	46.5	21
GR3	7/9/2016	22:15	Big brown bat	M	A	TD	0	46.3	18
GR3	7/9/2016	22:15	Big brown bat	F	A	L	0	48.5	20
GR3	7/9/2016	22:15	Big brown bat	M	A	TD	0	44.1	15.75
GR3	7/9/2016	22:50	Big brown bat	F	A	P	0	47.6	22
GR3	7/9/2016	23:20	Big brown bat	F	A	P	0	48	21.25

Appendix E3: Details of Bats Captured at Site GR3 (July 9-11, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR3	7/9/2016	0:45	Big brown bat	F	A	L	0	47.4	19.5
GR3	7/9/2016	0:45	Big brown bat	M	A	TD	0	44.9	19
GR3	7/9/2016	0:45	Little brown bat	F	J	NR	0	39.7	8.25
GR3	7/10/2016	21:45	Eastern red bat	F	J	NR	0	40.2	9.5
GR3	7/10/2016	23:20	Big brown bat	M	A	TD	0	46.2	18.5
GR3	7/10/2016	23:40	Northern long-eared bat	M	A	NR	0	36.2	6.5
GR3	7/11/2016	0:20	Big brown bat	F	A	L	0	44.1	20.25
GR3	7/11/2016	1:10	Eastern red bat	M	A	TD	0	38.9	14

*M=male, F=female
**A=adult, J=juvenile
***L=lactating, NR=non-reproductive, P=pregnant, TD=testes descended

Appendix E4: Details of Bats Captured at Site GR4 (July 12-14, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR4	7/13/2016	1:10	Eastern red bat	M	J	NR	0	38.1	8
GR4	7/14/2016	21:50	Little brown bat	M	A	TD	0	39.2	8.5
GR4	7/14/2016	23:55	Big brown bat	M	J	NR	0	46.6	17

*M=male
**A=adult, J=juvenile
*** NR=non-reproductive, TD=testes descended

GR1-MYSE1-RT1

GR1-MYSE1-RT2

FINAL REPORT

Mist-Net and Telemetry Surveys
Green River Wind Project
July 6 – 23, 2016

Prepared for:

Green River Wind Farm Phase I, LLC

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September 19, 2016

EXECUTIVE SUMMARY

Green River Wind Farm Phase I, LLC (Green River) is developing the Green River Wind Project (Project) in Lee and Whiteside counties, Illinois. Green River contracted Western EcoSystems Technology, Inc. (WEST) to conduct mist-net surveys for the endangered Indiana bat (INBA) and threatened northern long-eared bat (MYSE) in the Project during summer 2016. The principal objectives of the surveys were to: 1) determine the presence or probable absence of INBA and MYSE in the Project, and 2) document maternity roost trees in the Project.

Mist-net surveys were completed at four sites (GR1-GR4) at the Project from July 6-14, 2016. A total of 57 bats were captured, including 45 big brown bats, four eastern red bats, four MYSE, three little brown bats, and one evening bat. The four MYSE included two adult lactating females, one juvenile non-reproductive female, and one adult non-reproductive male. No INBA were captured.

Telemetry surveys were completed from July 8-23, 2016 on three female MYSE. Seven roost trees were identified; two occurred on accessible land parcels and five occurred on inaccessible parcels. The maximum number of bats emerging from roost trees on accessible parcels was one bat. Emergence counts were not completed on inaccessible parcels.

STUDY PARTICIPANTS

Western EcoSystems Technology, Inc.

Jason Ritzert	Project Manager
Rebecca Schmitt	Project Coordinator/Report Writer/Technical Editor
Benjamin Hale	Bat Biologist/Research Biologist
April McKay	Mist-Net Technician
Larissa Gleason	Telemetry Technician
Rachael Pruitt	Telemetry Technician
Kristen Klaphake	GIS Specialist
Michael McKenzie	Data Manager

REPORT REFERENCE

Ritzert, J., Schmitt, R., B. Hale, and S. Conover. 2016. Draft Report: Indiana Bat and Northern Long-Eared Bat Mist-Net and Telemetry Surveys, Green River Wind Project, July 6-23, 2016. Prepared for Geronimo Energy, LLC (Geronimo). Prepared by Western EcoSystems Technology, Inc. (WEST), Lemoyne, Pennsylvania.

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BACKGROUND AND PROJECT OVERVIEW

Green River Wind Farm Phase I, LLC (Green River) is developing the Green River Wind Project (Project) in Lee and Whiteside counties, Illinois (Figure 1). Green River contracted Western EcoSystems Technology, Inc. (WEST) to conduct mist-net surveys to determine the presence/probable absence the Indiana bat (INBA; *Myotis sodalis*) and northern long-eared bat (MYSE; *Myotis. septentrionalis*) following the U.S. Fish and Wildlife Service (USFWS) 2016 Range-Wide Indiana Bat Summer Survey Guidelines (USFWS 2016b) and USFWS Northern Long-Eared Bat Interim Conference and Planning Guidance (USFWS 2014). The principal objectives of the surveys were to: 1) determine the presence or probable absence of INBA and MYSE in the Project, and 2) document maternity roost trees in the Project.

TECHNICAL APPROACH

Mist-Net Surveys

A study plan was submitted to the USFWS for review and approval. Site specific authorization was received from the USFWS on June 29, 2016 under WEST's Native Endangered and Threatened Species Recovery Permit (Permit No. TE234121-8). WEST's Illinois Department of Natural Resources (IDNR) Scientific Collection Permit (Permit No. NH16.5223) and WEST's IDNR Permit for Possession of Endangered or Threatened Species (Permit No. 11-14S) were amended to include the Project. Mist-net surveys were completed at four sites (GR1-GR4) from July 6-14, 2016 (Figure 1). Each site was surveyed for nine net-nights using three nets at each site for three nights.

Standard 2-ply, 50-denier, nylon mist-nets with a mesh size of 38 millimeters (mm; 1.30 inches [in]) were used at all sites. Mist-nets were placed in suitable bat habitat and positioned perpendicularly across flight corridors filling the corridor from side-to-side and extending from ground-level up to the overhanging canopy. Mist-net sites were selected based on the following criteria: 1) suitable travel corridors, 2) contiguous forested areas, 3) water resources, 4) suitable bat habitat, and 5) access to leased lands. Net locations were established at least 30 meters (m; 98.4 feet [ft]) apart within each mist-net site. Mist-netting began at sunset and continued for at least five hours. Nets were checked every 10 minutes. Disturbance in the form of noise, light, or movement were minimized at all net locations.

For each mist-net night, the following information was collected:

- Date,
- Start and end time,
- Site description,
- Site Global Positioning System (GPS) coordinates,
- Mist-net specifics (height, width, etc.),
- Temperature (degrees Fahrenheit [F]),

- Cloud cover (percent),
- Wind speed (miles per hour),
- Precipitation,
- And moon phase were recorded.

For all bats capture, the following information was collected:

- Species,
- Sex,
- Age,
- Reproductive condition,
- Body mass (grams),
- Forearm length (millimeters),
- Reichard wind damage index score
- Capture status (recapture or new).

Reichard wing damage index score (0-3) were recorded for all captured bats to assess exposure to White-Nose Syndrome (WNS) in individual bats (Reichard 2009). The USFWS WNS decontamination protocol was followed to prevent cross contamination of captured bats with *Pseudogymnoascus destructans*, the fungus that causes WNS (USFWS 2016a). Captured bats of species other than INBA and MYSE were processed immediately and released within 15 minutes of capture. INBA and MYSE were held for up to 30 minutes in order to attach radio-transmitters. Photographs were taken of all bat captures. Forearm bands were attached to captured *Myotis* species.

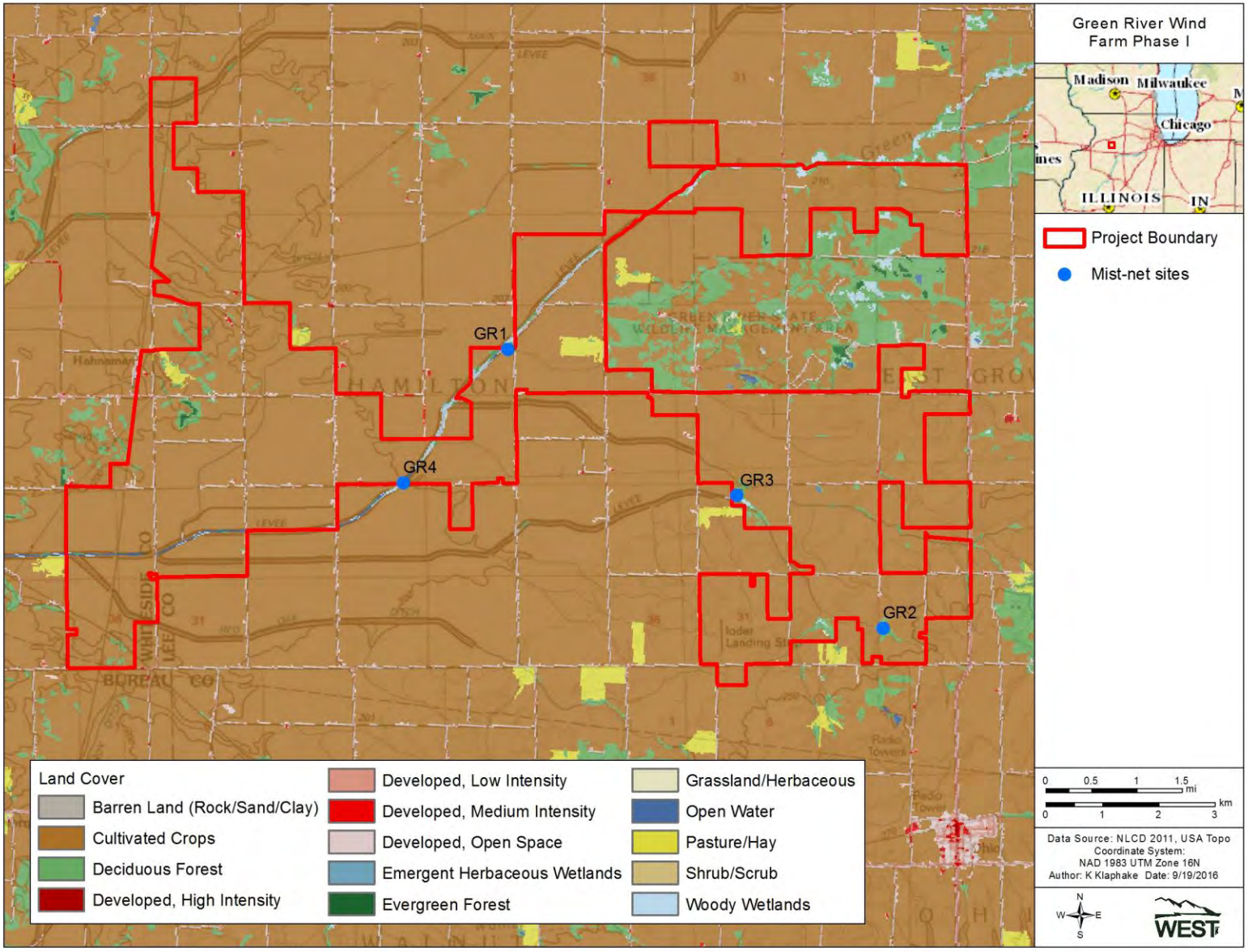

Figure 1. Location of mist-net sites at the Green River Wind Project, July 6 – 14, 2016.

Telemetry Surveys

Telemetry surveys were conducted from July 8-23, 2016, to determine if transmittered bats were utilizing roost trees in or near the Project. Bats outfitted with a radio-transmitter were tracked for a maximum of seven days or until the transmitter signal was lost (i.e., no signal heard for two days). Transmitter signals were followed during daylight hours to locate roost trees within leased lands. If the bat was located outside of leased lands, day roost locations were determined using triangulation from accessible parcels and public roads. For each roost tree, the following information was collected:

- Photographs of the roost tree,
- Global Positioning System (GPS) coordinates,
- Roost type,
- Tree species,
- Tree type (live, snag),
- Tree diameter at breast height (DBH),
- Roost height (meters),
- Roost location (e.g., cavity, crevice, bark),
- Stand age,
- Vegetation community type.

Emergence Surveys

Emergence surveys were performed on each roost tree on accessible parcels to determine the number of bats in the roost. Emergence surveys began 30 minutes before sunset and continued for at least 60 minutes after sunset or until it was otherwise too dark to see emerging bats. Emergence surveys were not conducted when:

- Temperatures were below 50°F,
- Precipitation (rain or fog) persisted for more than 30 minutes or continued intermittently during the survey period,
- Sustained winds greater than 9 mph,
- Roosts were located on inaccessible parcels.

For each emergence survey, the following information was collected:

- Date,
- Start and end times,
- Roost name,
- Number of bats exiting,
- General weather conditions (e.g. temperature, precipitation, wind speed).

RESULTS

Mist-Net Surveys

Mist-net surveys were completed at four sites (GR1-GR4) in Lee and Whiteside counties, Illinois, from July 6-14, 2016 (Figure 1). Locations and site descriptions of mist-net surveys are included in Table 1, and photographs of mist-net sites are included in Appendix A. A total of 57 bats were captured, including 45 big brown bats (EPFU; *Eptesicus fuscus*), four eastern red bats (LABO; *Lasiurus borealis*), four MYSE, three little brown bats (MYLU; *Myotis lucifugus*), and one evening bat (NYHU; *Nycticeius humeralis*). No INBA were captured. Capture sites for MYSE are included in Figure 2. A summary of bat captures by site is included in Table 2. Photographs of representative species of bats are included in Appendix B, and photographs of all MYSE and MYLU captures are included in Appendices C and D. Details for four MYSE captures are included in Table 3, and capture details for all bats are included in Appendix E.

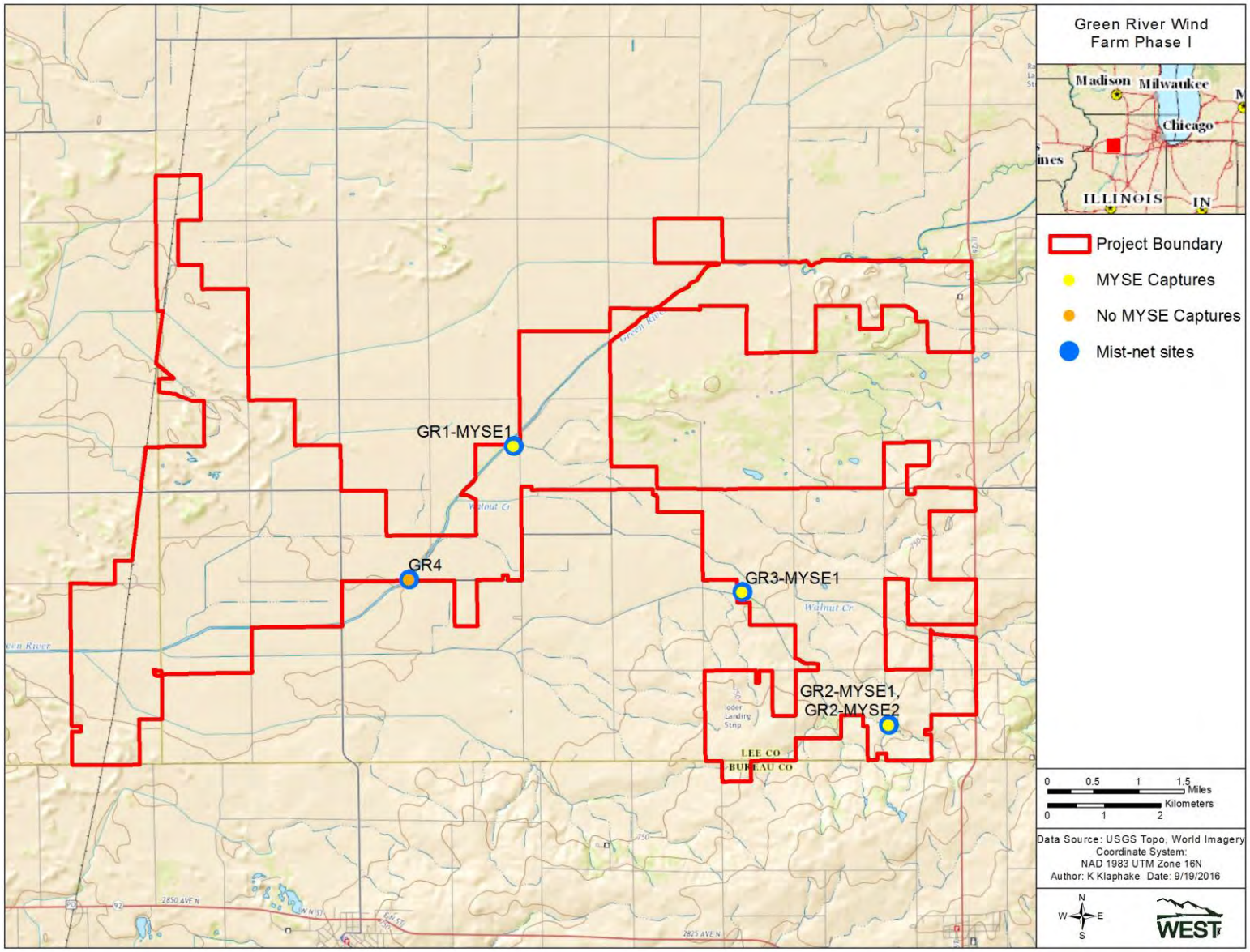

Figure 2. Locations of northern long-eared bat captures at the Green River Wind Project, July 6 – 14, 2016.

Table 1. Locations and site descriptions of mist-net surveys at the Green River Wind Project, July 6 – 14, 2016.

Mist-Net Site ID	Net	UTM*		Site Description
	A	287124	4612477	Creek/riparian
	B	287070	4612470	Creek/riparian
GR1	C	286976	4612438	Field edge
	A	293566	4607292	Field edge
	B	293518	4607308	Forest corridor
GR2	C	293512	4607263	Creek/riparian
	A	290961	4609777	Field edge
	B	290985	4609669	Creek/riparian
GR3	C	291113	4609694	Forest corridor
	A	285146	4610160	Field edge
	B	285094	4610142	Bridge
GR4	C	285101	4610183	Creek/riparian

*UTM Zone 16, North American Datum 1983

Table 2: Summary of 2016 bat mist-net captures at the Green River Wind Project, July 6 – 14, 2016.

Site ID	Big Brown Bat	Eastern Red Bat	Northern Long-Eared Bat	Little Brown Bat	Evening Bat	Total
GR1	27	1	1	0	1	**30**
GR2	6	0	2	1	0	**9**
GR3	11	2	1	1	0	**15**
GR4	1	1	0	1	0	**3**
Total	**45**	**4**	**4**	**3**	**1**	**57**

Table 3. Details for northern long-eared bats captured at the Green River Wind Project, July 6 – 14, 2016.

Bat ID	Band Number	Site	Survey Night	Bat Information	UTM*	
GR1-MYSE1	A0081	GR1	7/7/2016	Adult lactating female	287124	4612477
GR3-MYSE1	A0083	GR3	7/10/2016	Adult non-reproductive male	290961	4609777
GR2-MYSE1	A0086	GR2	7/16/2016	Juvenile non-reproductive female	293518	4607308
GR2-MYSE2	A0087	GR2	7/18/2016	Adult lactating female	293518	4607308

*UTM Zone 16, North American Datum 1983
**Radio-tracked bats are in bold font.

Telemetry Surveys

Three MYSE, including two adult lactating females (GR1-MYSE1 and GR2-MYSE2) and one juvenile non-reproductive female (GR2-MYSE1) were radio-tracked to document roost sites. No male MYSE were tracked per the approved study plan.

GR1-MYSE1

GR1-MYSE1 was tracked to two roost trees during the survey. GR1-MYSE1 was tracked to the same roost tree on days 1-3 and to a second roost tree on day 5 (Appendix F). The bat was

triangulated to a tree on an inaccessible parcel on day 4 and no signal was heard on days 6 and 7.

Both documented roost trees were silver maples (*Acer saccharinum*) and located in sparse forest edge along the Green River surrounded by cropland on both sides (Appendix F). The forest was dominated by thick underbrush with some scattered mature trees. The distance from the first roost tree (RT1) to capture site was 540 m (1,771 feet [ft]), and the distance from the second roost tree (RT2) to capture site was 260 m (853 ft). Roost tree locations, characteristics, and emergence counts are included in Table 4.

Table 4. Details of northern long-eared bat roost trees documented at the Green River Wind Project, July 8 – 23, 2016.

Roost Tree ID	Species	Type	Height (m)	DBH (cm)	UTM*		Maximum # Bats during Emergence Counts
GR1-MYSE1-RT1	*Acer saccharinum*	Live	42.9	114.5	287336	4612853	1
GR1-MYSE1-RT2	*Acer saccharinum*	Live	8	28.5	286843	4612429	1

*UTM Zone 16, North American Datum 1983

GR2-MYSE1

No signal was detected for GR2-MYSE1 on days 1 and 5 (Table 5). GR2-MYSE1 was triangulated to the same off-site parcel on days 2-4, and days 6-7 (Figure 3)

GR2-MYSE2

GR2-MYSE2 was triangulated to the same inaccessible parcel for days 1 and 2; however, no signal was detected after day 2. The locations for triangulated roosts are included in Table 5 and Figure 3

Table 5. Northern long-eared bat roost locations on inaccessible parcels at the Green River Wind Project, July 8 – 23, 2016.

Triangulation ID	Capture Site	Bat Information	UTM*	
GR1-MYSE1-T1	GR1	GR1-MYSE1	287012	4612528
GR2-MYSE1-T1	GR2	GR2-MYSE1	293811	4606020
GR2-MYSE1-T2	GR2	GR2-MYSE1	293948	4606071
GR2-MYSE1-T3	GR2	GR2-MYSE1	293720	4606197
GR2-MYSE1-T4	GR2	GR2-MYSE1	294068	4606206
GR2-MYSE1-T5	GR2	GR2-MYSE1	293852	4606237
GR2-MYSE2-T1	GR2	GR2-MYSE2	293807	4606261

*UTM Zone 16, North American Datum 1983

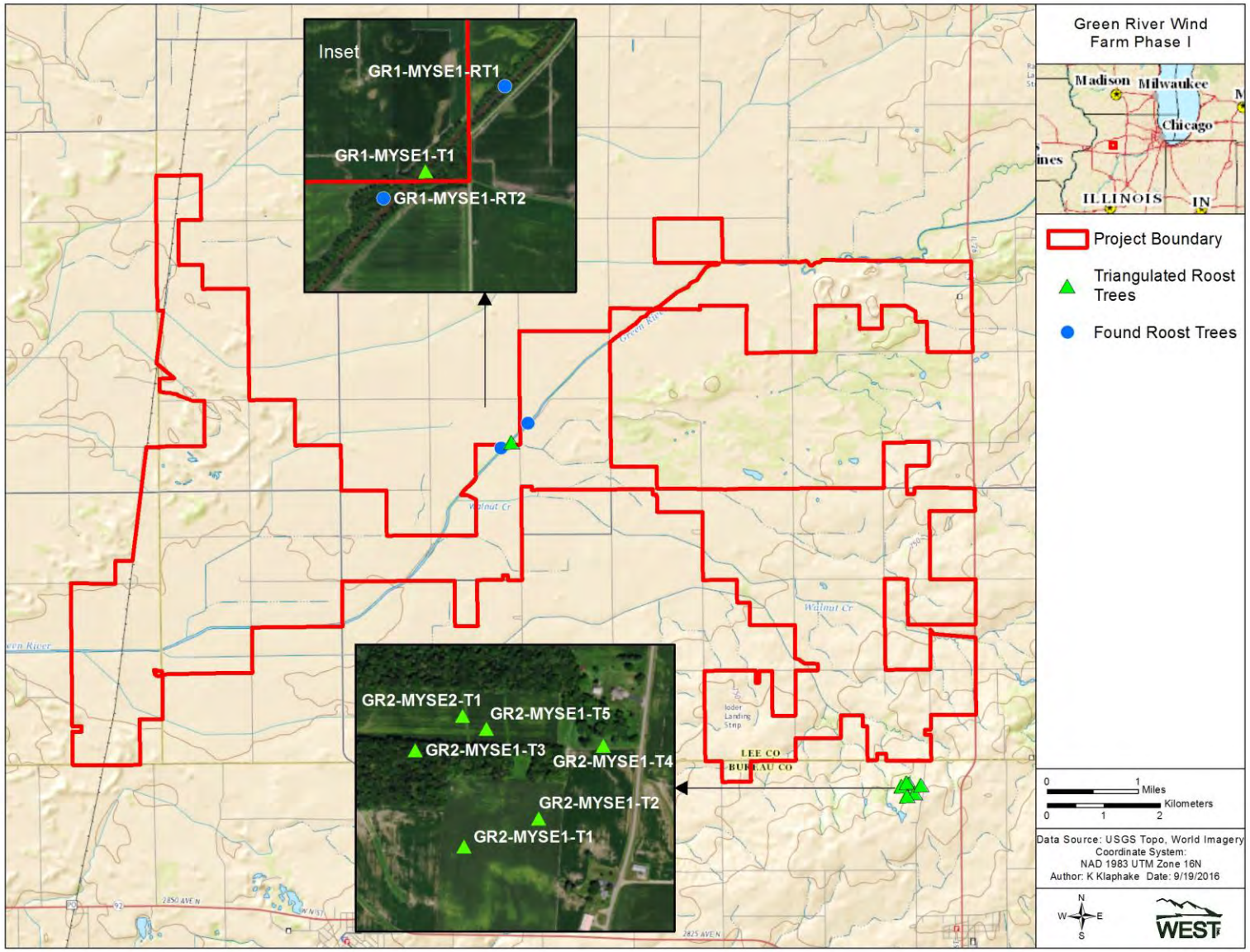

Figure 3. Northern long-eared bat roost tree locations documented at the Green River Wind Project, July 8 – 23, 2016.

Emergence Surveys

WEST conducted emergence surveys or “exit” counts at each found roost tree to determine the number of bats using the trees and to confirm the specific roost tree type and location. The maximum number of bats exiting a single tree was one bat per tree. Results of emergence surveys for roost trees are included in Table 4. Photographs of roost trees are included in Appendix F.

REFERENCES

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Appendix A. Photographs of Mist-Net Survey Sites

Appendix B. Photographs of Representative Species of Bat Captures

Appendix C. Photographs of Northern Long-Eared Bat (*Myotis septentrionalis*) Captures

Appendix D. Photographs of Little Brown Bat (*Myotis lucifugus*) Captures

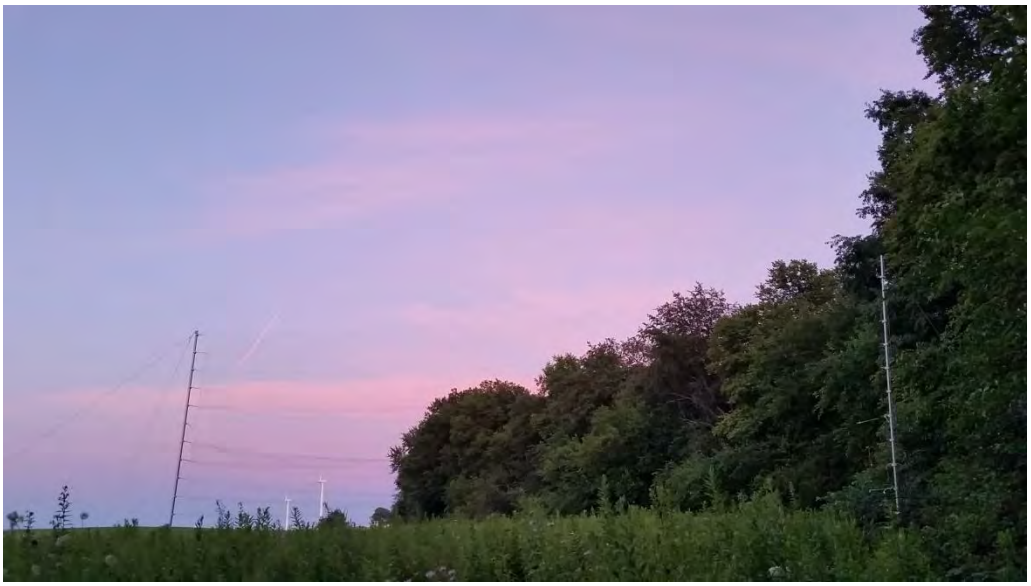
Appendix E. Bat Capture Details

Appendix F. Photographs of Northern Long-Eared Bat (*Myotis septentrionalis*) Roost Trees

GR1 – Net A

GR1 – Net B

GR1 – Net C



GR2 – Net A

GR2 – Net B

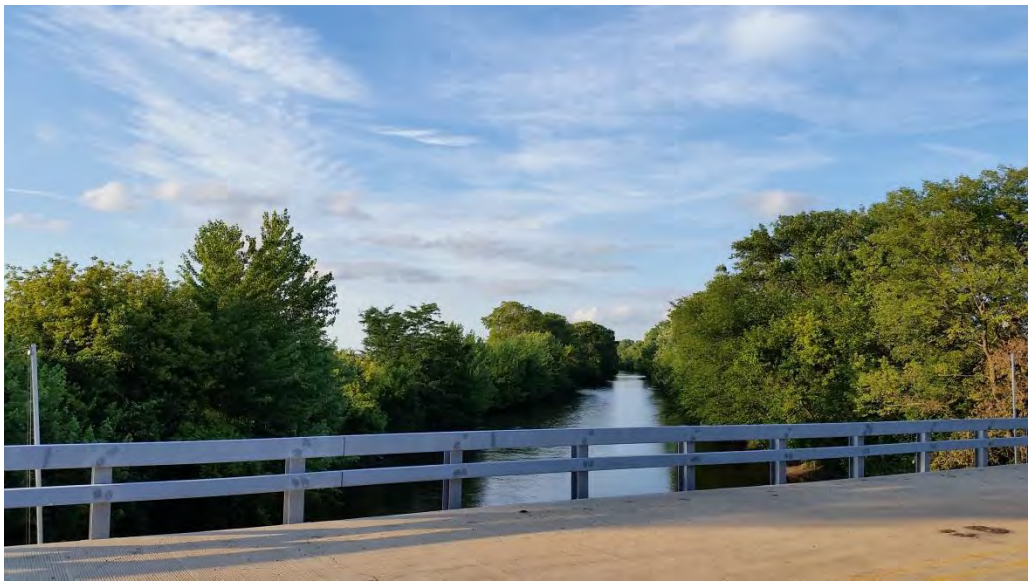
GR2 – Net C

GR3 – Net A

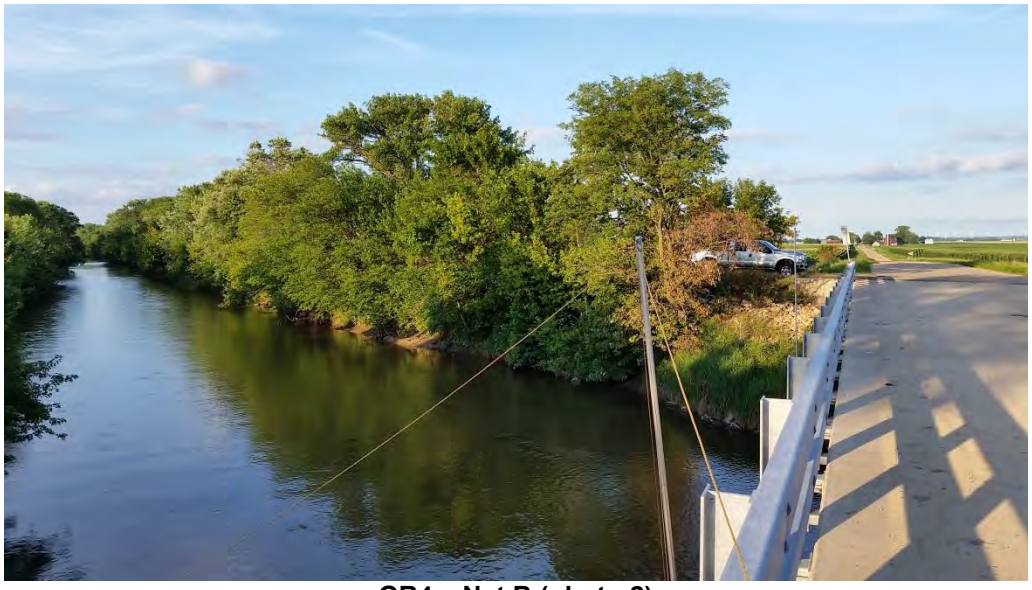
GR3 – Net B

GR3 – Net C

GR4 – Net A



GR4 – Net B (photo 1)



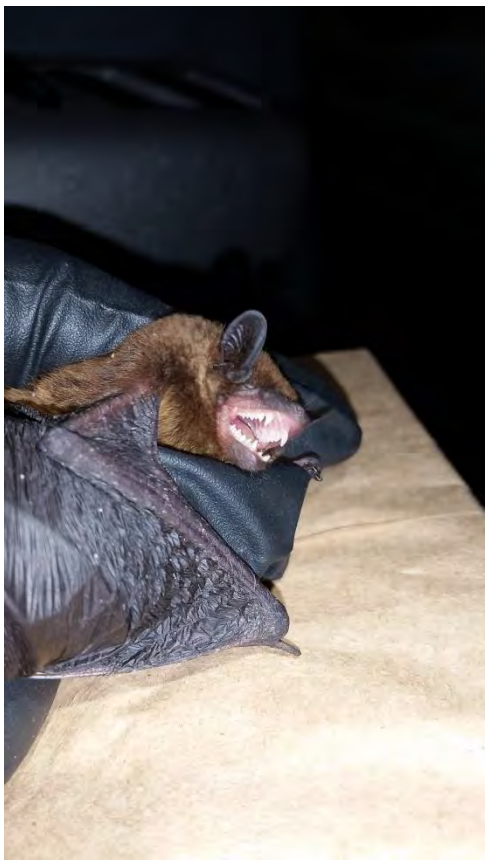
GR4 – Net B (photo 2)

GR4 – Net B (photo 3)

GR4 – Net C

Big Brown Bat

Eastern Red Bat



Evening Bat

Little Brown Bat

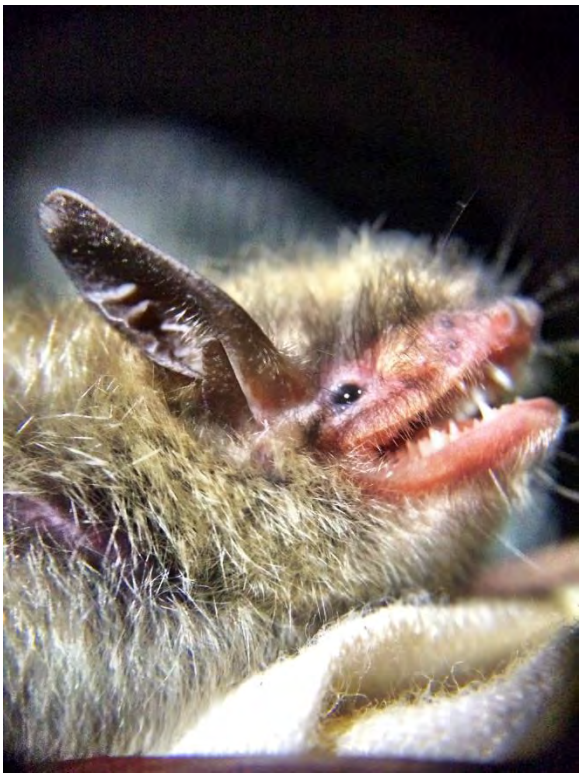
Northern Long-Eared Bat

GR1-MYSE1

GR2-MYSE1

GR2-MYSE2

GR3-MYSE1



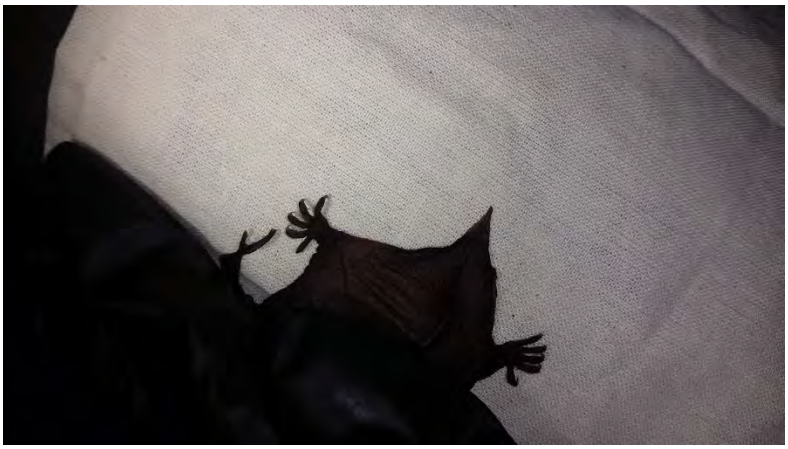
GR2-MYLU1 - Face

GR2-MYLU1 - Toehairs

GR2-MYLU1 – Calcar

GR3-MYLU1 – Face

GR3-MYLU1 – Toehairs



GR3-MYLU1 – Calcar

GR4-MYLU1 – Face

GR4-MYLU1 – Toehairs

GR4-MYLU1 - Calcar

Appendix E1: Details of Bats Captured at Site GR1 (July 6-8, 2016).

Site	Survey Night	Time	Species	Sex*	Age**	Reproductive Status***	Reichard Score	Forearm Length (mm)	Weight (g)
GR1	7/6/2016	21:50	Big brown bat	M	A	TD	0	46.1	19
GR1	7/6/2016	0:25	Big brown bat	F	A	P	0	43.2	20.5
GR1	7/6/2016	0:50	Evening bat	F	A	L	0	37.5	11
GR1	7/7/2016	22:00	Big brown bat	M	J	TD	0	47.5	16
GR1	7/7/2016	22:00	Big brown bat	M	A	NR	0	46.3	19.5
GR1	7/7/2016	22:00	Northern long-eared bat	F	A	L	0	35.9	7
GR1	7/7/2016	22:20	Big brown bat	M	A	NR	0	45.5	20
GR1	7/7/2016	22:20	Big brown bat	F	A	NR	0	49	23.5
GR1	7/7/2016	22:25	Big brown bat	F	A	L	0	51	22
GR1	7/7/2016	0:00	Big brown bat	M	A	TD	0	46.1	19
GR1	7/7/2016	0:00	Big brown bat	F	A	L	0	50.5	24.75
GR1	7/7/2016	0:00	Big brown bat	F	A	L	0	49.6	21.5
GR1	7/7/2016	0:05	Big brown bat	M	J	NR	0	47.3	16.5
GR1	7/7/2016	0:10	Big brown bat	M	A	NR	0	45	19.5
GR1	7/7/2016	0:10	Big brown bat	M	A	TD	0	46.9	19.5
GR1	7/7/2016	0:10	Big brown bat	F	J	NR	0	47	17
GR1	7/7/2016	0:10	Big brown bat	F	A	NR	0	45.1	17
GR1	7/7/2016	0:15	Big brown bat	F	A	P	0	50.9	22.5
GR1	7/7/2016	0:20	Big brown bat	F	A	L	0	46.6	19
GR1	7/7/2016	0:20	Big brown bat	F	A	L	0	51.5	22.75
GR1	7/7/2016	0:25	Big brown bat	F	A	L	0	21.5	49
GR1	7/7/2016	1:40	Big brown bat	M	A	NR	0	17	46.5
GR1	7/7/2016	1:40	Big brown bat	M	A	NR	0	17.5	44.3
GR1	7/8/2016	21:50	Eastern red bat	F	J	NR	0	40.7	9
GR1	7/8/2016	22:10	Big brown bat	M	A	TD	0	47	20
GR1	7/8/2016	22:35	Big brown bat	F	A	L	0	50	23
GR1	7/8/2016	22:40	Big brown bat	M	A	TD	0	45.1	19.75
GR1	7/8/2016	0:00	Big brown bat	F	A	NR	0	51	23
GR1	7/8/2016	0:35	Big brown bat	M	A	TD	0	48.3	18.5
GR1	7/8/2016	0:35	Big brown bat	F	J	NR	0	47.5	15.25

*M=male, F=female

Appendix E1: Details of Bats Captured at Site GR1 (July 6-8, 2016).

Site	Survey Night	Time	Species	Sex*	Age**	Reproductive Status***	Reichard Score	Forearm Length (mm)	Weight (g)

**A=adult, J=juvenile
***L=lactating, NR=non-reproductive, P=pregnant, TD=testes descended

Appendix E2: Details of Bats Captured at Site GR2 (July 15, 16, and 18, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR2	7/15/2016	22:50	Big brown bat	M	A	TD	0	41	16.5
GR2	7/15/2016	0:15	Little brown bat	F	A	NR	0	36.7	8.5
GR2	7/16/2016	21:50	Big brown bat	M	A	TD	0	37.6	16
GR2	7/16/2016	21:50	Big brown bat	F	J	NR	0	47.8	13.5
GR2	7/16/2016	23:15	Big brown bat	F	J	NR	0	47.2	14.5
GR2	7/16/2016	23:20	Big brown bat	M	A	NR	0	44.3	17.5
GR2	7/16/2016	0:30	Northern long-eared bat	F	J	NR	0	43.7	6
GR2	7/18/2016	21:40	Northern long-eared bat	F	A	L	0	37.3	7.25
GR2	7/18/2016	0:30	Big brown bat	F	A	L	0	47	19.5

*M=male, F=female
**A=adult, J=juvenile
***L=lactating, NR=non-reproductive, TD=testes descended

Appendix E3: Details of Bats Captured at Site GR3 (July 9-11, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR3	7/9/2016	22:15	Big brown bat	M	A	TD	0	46.8	17.75
GR3	7/9/2016	22:15	Big brown bat	M	A	NR	0	46.5	21
GR3	7/9/2016	22:15	Big brown bat	M	A	TD	0	46.3	18
GR3	7/9/2016	22:15	Big brown bat	F	A	L	0	48.5	20
GR3	7/9/2016	22:15	Big brown bat	M	A	TD	0	44.1	15.75
GR3	7/9/2016	22:50	Big brown bat	F	A	P	0	47.6	22
GR3	7/9/2016	23:20	Big brown bat	F	A	P	0	48	21.25

Appendix E3: Details of Bats Captured at Site GR3 (July 9-11, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR3	7/9/2016	0:45	Big brown bat	F	A	L	0	47.4	19.5
GR3	7/9/2016	0:45	Big brown bat	M	A	TD	0	44.9	19
GR3	7/9/2016	0:45	Little brown bat	F	J	NR	0	39.7	8.25
GR3	7/10/2016	21:45	Eastern red bat	F	J	NR	0	40.2	9.5
GR3	7/10/2016	23:20	Big brown bat	M	A	TD	0	46.2	18.5
GR3	7/10/2016	23:40	Northern long-eared bat	M	A	NR	0	36.2	6.5
GR3	7/11/2016	0:20	Big brown bat	F	A	L	0	44.1	20.25
GR3	7/11/2016	1:10	Eastern red bat	M	A	TD	0	38.9	14

*M=male, F=female
**A=adult, J=juvenile
***L=lactating, NR=non-reproductive, P=pregnant, TD=testes descended

Appendix E4: Details of Bats Captured at Site GR4 (July 12-14, 2016).

Site	Survey Night	Time	Species	Sex	Age	Reproductive Status	Reichard Score	Forearm Length (mm)	Weight (g)
GR4	7/13/2016	1:10	Eastern red bat	M	J	NR	0	38.1	8
GR4	7/14/2016	21:50	Little brown bat	M	A	TD	0	39.2	8.5
GR4	7/14/2016	23:55	Big brown bat	M	J	NR	0	46.6	17

*M=male
**A=adult, J=juvenile
*** NR=non-reproductive, TD=testes descended

GR1-MYSE1-RT1

GR1-MYSE1-RT2

APPENDIX C – SUMMER HABITAT MITIGATION PLAN FOR THE GREEN RIVER WIND FARM, WHITESIDE AND LEE COUNTIES, ILLINOIS

Summer Habitat Mitigation Plan for the Green River Wind Farm Project

Whiteside and Lee Counties, Illinois

Prepared By:
First Indiana Resource, LLC
a wholly owned subsidiary of Resource Environmental Solutions, LLC
5020 Montrose Blvd., Suite 650
Houston, Texas 77006

Submitted May 22, 2018

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Appendices

1. Introduction

First Indiana Resource, LLC (FIR), a wholly owned subsidiary of Resource Environmental Solutions, LLC (RES), is proposing this Summer Habitat Mitigation Plan ("Mitigation Plan") for the Green River Wind Farm ("Project") on behalf of Green River Wind Farm Phase I, LLC (GRWF), which is a wholly owned subsidiary of Geronimo Energy, LLC (Geronimo). The purpose of this Mitigation Plan is to compensate for unavoidable take of Indiana bat (*Myotis sodalis*) and Northern long-eared bat (*Myotis septentrionalis*) (the "Covered Species") associated with the Green River Wind Farm as defined in the Green River Wind Farm Habitat Conservation Plan for the Indiana Bat and Northern Long-Eared Bat ("HCP"). GRWF is seeking to attain an Incidental Take Permit (ITP) pursuant to Section 10(a)(1)(B) of the Endangered Species act and FIR has been contracted to serve as the responsible mitigation entity on GRWF's behalf.

RES has restored, enhanced and protected over 55,000+ acres of wetlands and 294 miles of streams in the United States with another 9,100 acres currently rehabilitated and preserved for endangered species habitat. Since inception, RES has permitted and developed 350 mitigation sites, supplying compensatory wetland and stream mitigation for over 1,850 federal and state permits. A company profile can be found at www.res.us.

2. Objectives

The Green River Wind Farm current project layout consists of 74 2.625-megawatt (MW) wind turbine generators (WTGs) and associated access roads, collector line systems, proposed crane paths and a project substation and laydown yard located in Whiteside and Lee counties in Illinois. Since the Project is located within the range of both the endangered Indiana bat and threatened Northern long-eared bat, GRWF is seeking a 30-year ITP that covers both species.

The HCP provides an impact of take of 65 female Indiana bats and 131 female Northern long-eared bats over the 30-year permit term. GRWF will satisfy mitigation requirements through protection of approximately 123.38 acres of summer habitat providing 65 Indiana bat credits and 131 Northern long-eared bat credits.

Currently, FIR has under control a 123.38-acre property, in Vermillion County, Illinois able to provide bat summer habitat mitigation. The selected mitigation site, the Sheets property, ("Mitigation Site") is located within the Middle Fork Vermillion River Corridor (Appendix A, Figure 1: Vicinity Map) in Vermillion County within the Vermillion Watershed (HUC 05120109). The Mitigation Site is specifically located on Bean Creek Road and US Highway 136, Potomac, Illinois 61865.

3. Determination of Mitigation Needs

Per the HCP, 123.38 acres of Indiana and Northern long-eared bat summer maternity habitat will be preserved to mitigate for the impact of take associated with the Project.

REA Model Inputs

FIR utilized the Service's Region 3 Indiana Bat REA Model and Northern long-eared Bat REA Model designed for Wind Energy Projects (Ibat REA Model_Public_v1_Dec2016, NLEB REA Model_Public_v1_Dec2016) to determine both debits and credits for both species over the life of the ITP. The primary focus of the REA Model with respect to mitigation for the take of Indiana (Ibat) and Northern long-eared bats (NLEB) is reproduction, and specifically, lost female reproductive potential (the lost female or direct take plus her and her offspring's future reproductive potential). Under the REA model, lost females plus their future lost reproductive potential are called debits. In similar fashion, when mitigation is applied to the model, the gain of both female bats and their future reproduction potential are called credits. Based on this methodology, the impact of the expected take of 23 adult female Indiana bats and 45 adult female Northern long-eared bats will result in a total estimated loss of 43 future female Indiana bat pups and 86 Northern long-eared bat pups, for a total expected impact of take of 65 lost female Indiana bats and 131 lost female Northern long-eared bats.

Stacking Protocol

When mitigating for more than one species using the same acres of habitat, competition of resources such as food and roost trees must come into play. To account for this interspecific competition, FIR applied a 10% stacking scenario using the sample calculation below (Species A represents the bat requiring the greater amount of mitigation acreage):

Total Required Mitigation Acreage = Species A Required Mitigation Acreage + (Species B Required Mitigation Acreage x 10%)

REA Model Assumptions

Inputs into the REA model for Ibat and NLEB are displayed below:

(Ibat REA Model_Public_v1_Dec2016)
Permit start year: 2018
Injured Adult Females Annually: 0.75
Permitted take years: 30
Lambda condition: Stationary

(NLEB REA Model_Public_v1_Dec2016)
Permit start year: 2018
Injured Adult Females Annually: 1.5
Permitted take years: 30
Lambda condition: Stationary

REA Model Output

Through application of the REA models, to mitigate for the impact of take of 65 female Indiana bats and 131 female Northern long-eared bats, a total of 73.4 and 116.2 acres of summer habitat would need to be protected, respectively. Application of the 10% stacking calculation above results in a total mitigation need of 123.5 acres of existing forest. However, through further discussion with USFWS Rock Island Field Office, it was determined that the 123.38-acre Sheets property will be an appropriate mitigation solution based on the ability of the site to provide high quality bat habitat in a priority river corridor. Input and output of the REA model can be found in Appendix E: REA Model Calculations.

To mitigate for the impact of take associated with the Project a total of 123.38 forested acres will be placed under easement to be protected in perpetuity.

4. Site Selection

The Mitigation Site totaling 123.38 acres, was acquired based on its location within the Middle Fork Vermillion River Corridor and direct connection to the riparian floodplain, representing a high priority conservation area for Indiana bat and Northern long-eared bat summer habitat. Protection of land in this area will provide foraging and potential roosting areas thereby contributing to the survival of both species.

Site parameters such as proximity to managed/conserved lands, access to riverine corridors, total forested acreage, suitable habitat, presence of roost trees and bat captures and percentage canopy cover were among some of the metrics employed by FIR to prioritize mitigation parcels.

The mitigation site falls within the Central Corn Belt Plains Ecoregion which consists of vast glaciated plains and is scattered with sand sheets and dunes. Much of the area has been cleared to make way for highly productive farms producing corn, soybeans, and livestock. Given the importance of farming in this region, it is necessary to protect existing bat habitat and prevent habitat loss in a manner that complements existing agricultural practices. Preserving existing wooded acreage along drainages, creeks, and ravines surrounding agriculture fields supports this conservation initiative.

Additionally, prior to FIR's control of the Mitigation Site, the landowner was in negotiations with a timber company and had a valuation completed. The appraisal resulted in over 700 mature trees, representing oak and hickory species, marked for removal. As timber harvesting pressure increases in this area, it is necessary to protect existing bat habitat and prevent future habitat loss. Such activities have detrimental effects and threaten the ecosystem through destruction of vital roosting and foraging habitat, removal of roost trees, causing roost abandonment due to excessive disturbances and ultimately, fragmenting potentially large-scale conservation efforts.

Preserving the Mitigation Site in perpetuity will help minimize the potential impacts of future logging activities by protecting existing summer habitat for the Indiana bat and Northern long-eared bat.

5. Baseline Information

5.1. Phase I Summer Habitat Assessments

FIR will conduct a Phase I Summer Habitat Assessment of the Sheets property this summer and will include the report in the final submission of the mitigation plan (Appendix C: Bat Mitigation Site Assessments). The competed report will include information including, but not limited to:

- Suitable bat roosting and foraging habitat characteristics;
- Identification of major forest types and tree species composition;
- Invasive species identification and location within site;
- Site photography

FIR initially presented the Sheets property at a joint meeting in August of 2017 to discuss the Green River Wind Farm HCP with members of USFWS Rock Island Field office, Illinois DNR, Geronimo and Atwell in attendance. During the meeting FIR discussed its mitigation strategy of protecting sites along the Middle Fork Vermillion River corridor and provided maps of the Sheets property which was well-received by both agencies. FIR has visited the site and reviewed the property using aerial photography to understand potential forested habitat for Indiana bat and Northern long-eared bat. Historical aerial and topography maps indicate that the property has been wooded and mostly flat with gently sloping topography to the south and west. The Middle Fork of the Vermillion River is located approximately 0.5 miles to the northwest of the site with a small creek just north of the property draining into the river.

The majority of the property has been in a forested state in the northern and central areas dating back to the 1940s with surrounding land uses being primarily agricultural and wooded. Two small creeks, one north and west of the property and one south and west of the property, flow northwest and drain into the Middle Fork Vermillion River. Additionally, freshwater forested/scrub wetlands on the property provide excellent bat foraging opportunities. Appendix A, Figure 2: Land Use Map depicts the Mitigation Site and its current ecological condition.

The Sheets property is adjacent to another property controlled by FIR, called the Howie Property (Appendix A, Figure 1). The 59-acre Howie Site provides suitable summer roosting habitat for the Indiana bat and Northern long-eared bat and currently serves as a mitigation property for a wind farm project due to unavoidable take of both species. Mature forested habitat is contiguous on the Howie and Sheets properties with the latter housing predominantly white oak, hickory, cottonwood, soft maple, ash, cherry, bur oak and hard maples providing roosting opportunities for bats. Additionally, walnut, red oak, white oak and sycamores are present within the site.

5.2. Acoustic Survey

As discussed with and agreed on by the USFWS, FIR will not conduct an acoustic survey on the Sheets property. This decision is based on the Sheets property directly adjoining the Howie property and providing contiguous suitable forested habitat which has been previously validated for both Indiana and Northern long-eared bat presence following acoustic surveys conducted during the summer of 2017. Additionally, the Sheets property is located along the Middle Fork Vermillion River Corridor and in the Vermillion watershed that supports a considerable amount of bat activity as evidenced by numerous Indiana bat and Northern long-eared bat captures as well as Indiana bat roost trees (Appendix A, Figure 1: Vicinity Map).

6. Mitigation Work Plan

FIR understands its responsibility to ensure that the Mitigation Site is not degraded and that invasive species are controlled per the success criteria outlined in this Mitigation Plan. Should any invasive species that threaten the function of the mitigation for Indiana and Northern long-eared bat habitat be present, they will be controlled to remove that threat within three years. Mechanical removal or a USFWS-approved herbicide will be used to control these species. Invasive species control (as needed) will occur within one year of placing a conservation easement on the site.

The Mitigation Site will be managed in its current state and will be allowed to continue to further mature into an old growth forest. FIR will install appropriate signage, fencing, and gating to secure the Mitigation Sites. Preservation of the Mitigation Site will result in the protection of 123.38 acres of forested habitat within Indiana bat and Northern long-eared bat summer habitat areas.

7. Maintenance Plan

The Mitigation Site will be monitored and maintained by FIR, as described in Section 10: Monitoring Requirements, for a period of 30 years. FIR will be responsible for performance of all duties required to satisfy the compensatory mitigation requirements of the HCP. Through a contractual agreement with GRWF, FIR will commit to preserve Indiana bat and Northern long-eared bat habitat in accordance with the provisions in this Mitigation Plan. Maintenance shall include exotic species control, tree care and mowing as appropriate to reduce competition from herbaceous weeds and invasive shrub establishment.

Maintenance activities for forested habitat will focus on controlling any pockets of invasive species that might still be present on-site and monitoring for the establishment of any new stands of invasive species. Control methods will be targeted to deal with the individual species as they are found and will include both mechanical and chemical control.

Additionally, forests will be managed to promote long-term presence of high-quality bat roosting and foraging habitats. Specific management actions will be contingent upon site and stand specific conditions, but generally will consist of one or several of the following: group and single tree select cutting, tree girdling and wounding, understory thinning, and invasive species removal. All forest management activities other than removal of herbaceous layer invasive species will be performed between November 15 and March 31, outside the bat active season. Group select thinning will be preferentially used in areas of contiguous closed canopy to provide foraging space. Single tree select thinning will be used in areas with canopy cover between 60% and 80% to facilitate regeneration of preferred roosting species as well as improve foraging potential. Preferred roosting tree species will be avoided during thinning, as will trees exhibiting current or imminent suitable roosting characteristics. Tree girdling and wounding, using approaches including but not limited to girdling at tree base, girdling in the top third, and removal of the majority of branches, will be used to promote development of potential roosts with a variety of conditions suitable throughout the summer maternity cycle. Forest canopy cover >60% will be maintained regardless of management approach.

The Mitigation Site will be monitored by RES and activities will be documented in the required monitoring reports along with a discussion of any anticipated maintenance events that will be needed during the subsequent monitoring period. The discussion will include the invasive species being treated, whether the treatments are chemical or mechanical, and the type of herbicides used.

8. Performance Standards

FIR will monitor the Mitigation Site to demonstrate that the ecological function of the site is not compromised over the 30-year term of the ITP. FIR will ensure that woody invasive species represent less than 20% cover in the understory.

FIR will conduct a habitat survey in years 3 and 7 documenting invasive cover. Should invasive species pose a threat to the establishment of suitable habitat it will be documented and treated.

9. Monitoring Requirements

FIR will be responsible for conducting monitoring. Monitoring events will include: (1) two habitat surveys in year 3 and year 7 after implementation of the conservation easement to document the presence of invasive species that may pose a threat to the establishment of suitable bat habitat, and (2) invasive species monitoring every 7 years for the life of the ITP to document the presence of invasive species that may pose a threat to the establishment of Indiana and Northern long-eared bat habitat, specifically

the presence of invasive shrub species. Bat surveys shall occur near the end of the permit term during Years 28 or 29 following the same survey methodology performed during the baseline effort for the mitigation parcel. Bat surveys on the mitigation parcel shall not replace or reduce any aspect of the tasks agreed to in the Mitigation Plan previously executed between Green River, USFWS and FIR.

The monitoring reports will include:

1. **Site Summary** – A brief summary of the state of the vegetative communities within the site, other items of note that occurred within the Mitigation Site during that monitoring period, and whether or not the project is meeting its performance standards.
2. **Invasive Species Monitoring** – The site will be visually monitored for invasive species annually. The report will include an assessment of invasive species noted within the site. If woody invasive species exceed 20% cover in the understory, mapping will be provided showing the locations of the invasive species and proposed treatment actions.
3. **Maintenance Activities** – A summary of any maintenance activities conducted during the monitoring period will be provided. If any maintenance activities will be needed during the following monitoring period, an outline of those maintenance activities will be provided.
4. **Photo Documentation** – Photographs taken from permanent photo locations. A photo location map will be provided with the first monitoring report showing these photo locations.
5. **Bat Acoustic Survey Reports**- After acoustic surveys are performed, a report will be provided in a similar format as the report associated with the acoustic survey validation conducted during the baseline effort for the mitigation parcel.

The aforementioned surveys and monitoring reports will be sent to the USFWS Rock Island Field Office and the Illinois Department of Natural Resources by December 30 of each monitoring year.

10. Mitigation Financial Assurance

The purpose of the financial assurance is to ensure that sufficient funds are available to restore the Property in the event of potential changed circumstances described in Section 13 (Appendix D: Performance Bond).

A performance bond in the amount of $148,056.00 will be issued to guarantee FIR's performance relating to changed circumstances caused by drought, fire, flood or tornadoes and affecting the Mitigation Site as set forth in Section 8.2.2.6 of the HCP. The performance bond shall be maintained through the earlier of the end of the ITP term as it is defined as of the date of this contract or the termination of the ITP. The value of this performance bond is sufficient to cover all expected restoration, monitoring, and management costs associated with deforestation of half the total mitigation acreage by two separate individual changed circumstance events.

Per the Midwest Wind Energy Multi-Species HCP, Changed Circumstances are to cover the costs of replanting the entire site within a single event. However, the Changed Circumstances costs on the Green River mitigation site reflect replanting the entire site or the total acreage over two separate occurrences, which represent a higher cost estimate due to the two equipment and personnel mobilizations required of two separate planting events.

11. Site Protection Instrument

The Mitigation Site will be protected in perpetuity through the application of a Conservation Easement held by a certified 501(c)(3) non-profit organization. A draft of the site protection instrument is included as Appendix B: Conservation Easement. The Conservation Easement restricts activities incompatible with the objectives of this Mitigation Plan. The certified 501(c)(3) non-profit organization will act as long-term steward and assume associated responsibilities.

Any proposed, substantive changes to the easement language must be reviewed and approved by the USFWS to protect the Mitigation Site from regional development as part of the long-term maintenance and management plan.

12. Long-term Management Plan

12.1 Long-term Stewardship Responsibilities

A certified 501(c)(3) non-profit organization, will be designated Long-term Steward charged with long-term management and maintenance responsibilities once FIR has attained the performance standards as defined in Section 9: Performance Standards. FIR may appoint a different Long-term Steward at a future point in time. The appointment of such an entity shall be approved by the USFWS.

The responsibilities of the Long-term Steward will include thefollowing:

- Periodic patrols of the Mitigation Site to qualitatively monitor the general condition of this habitat in perpetuity.
- Enforcement of the terms of the Conservation Easement. If the long-term steward needs to enforce the easement, or encounters any easement violations, they will notify the USFWS of such issues and the eventual resolution of those issues.

12.2 Long-term Stewardship Funding

FIR shall deposit $50,000 into an escrow account to be used solely to fund the activities associated with the long-term stewardship of the Mitigation Sites. This total includes amounts for travel, property monitoring, invasive species management and reporting.

Account statements for the escrow account shall be included with the annual monitoring reports provided to the USFWS. This escrow account may be transferred into an alternative financial assurance mechanism covering the Mitigation Site upon approval by the USFWS.

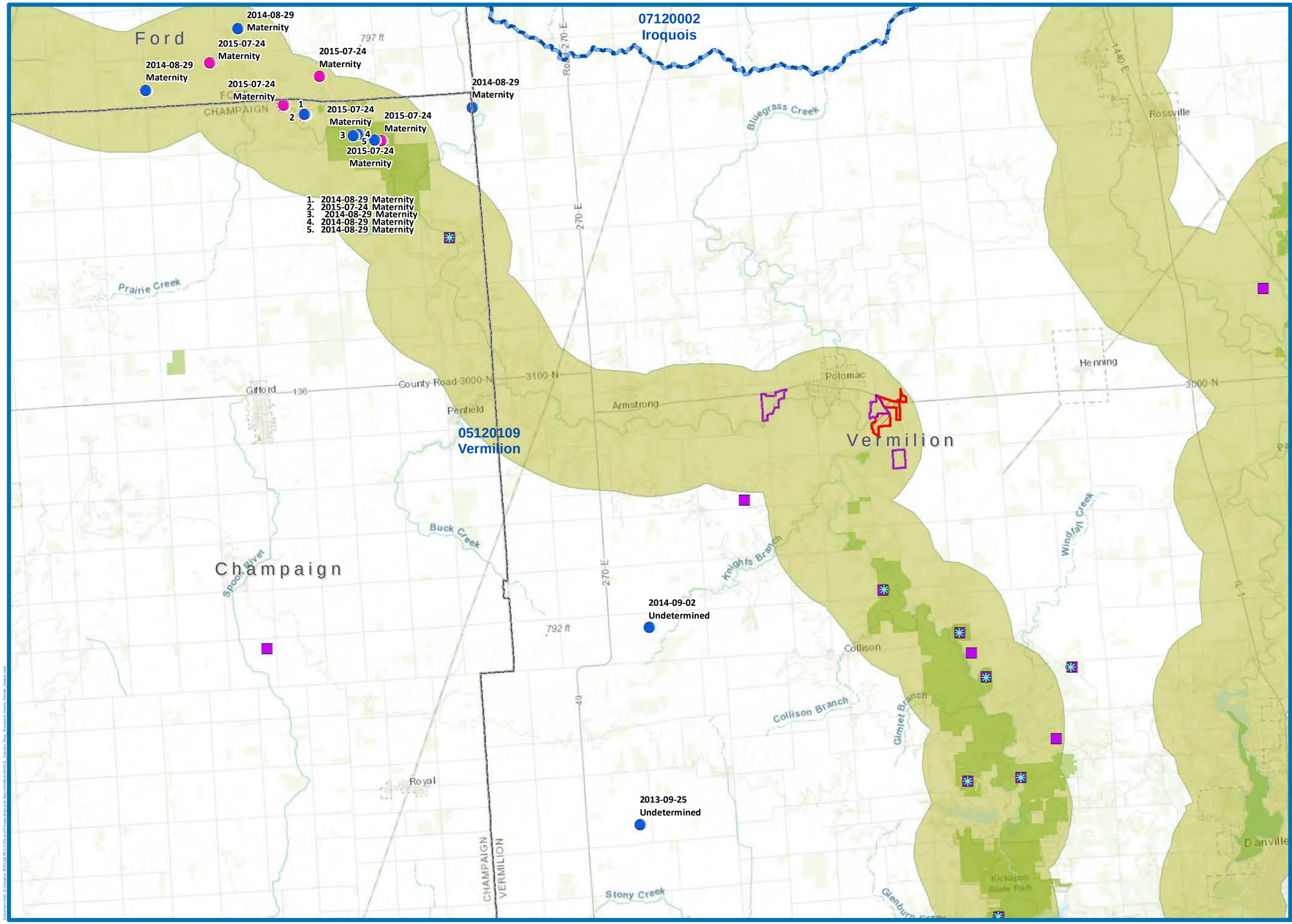
13. Changed Circumstances

The effectiveness of the mitigation project may be affected by some potential foreseeable changed circumstances. FIR will provide financial assurance for the initial mitigation project including potential changed circumstances which may occur during the permit term. Financial assurance will be provided for the following changed circumstances involving natural disasters:

- Drought
- Fire
- Flood
- Tornado

In the event that a changed circumstance occurs, FIR will commit to replanting the Mitigation Site. FIR considers it unlikely that a single changed circumstance event will deforest all acres of mitigation land as these events are rare in Illinois. Therefore, the performance bond will include funds sufficient for restoration of half the Mitigation Site across two occurrences, totaling the entire acreage for restoration during the 30-year term of the ITP. The budgeted amount will account for potential deforestation of half the mitigation lands caused by a single rare event each time. FIR has budgeted $148,056.00 for potential changed circumstances. In the event monitoring reveals that mitigation efforts fail to meet the compliance criteria set forth in the HCP, FIR will implement adaptive management to take corrective actions and follow management recommendations from the USFWS and other appropriate land management agencies. In the event of a changed circumstance, FIR will provide notice to the USFWS. The notice will include an explanation of the deficiency and will outline specific practices and measures that will guide decisions for revising the Mitigation Plan if needed.

Appendix A: Figures



APPENDIX A, FIGURE 1: VICINITY MAP

ILLINOIS

Date: 4/24/2018	Drawn by: BRG
Checked by: DJ	Page 1 of 1

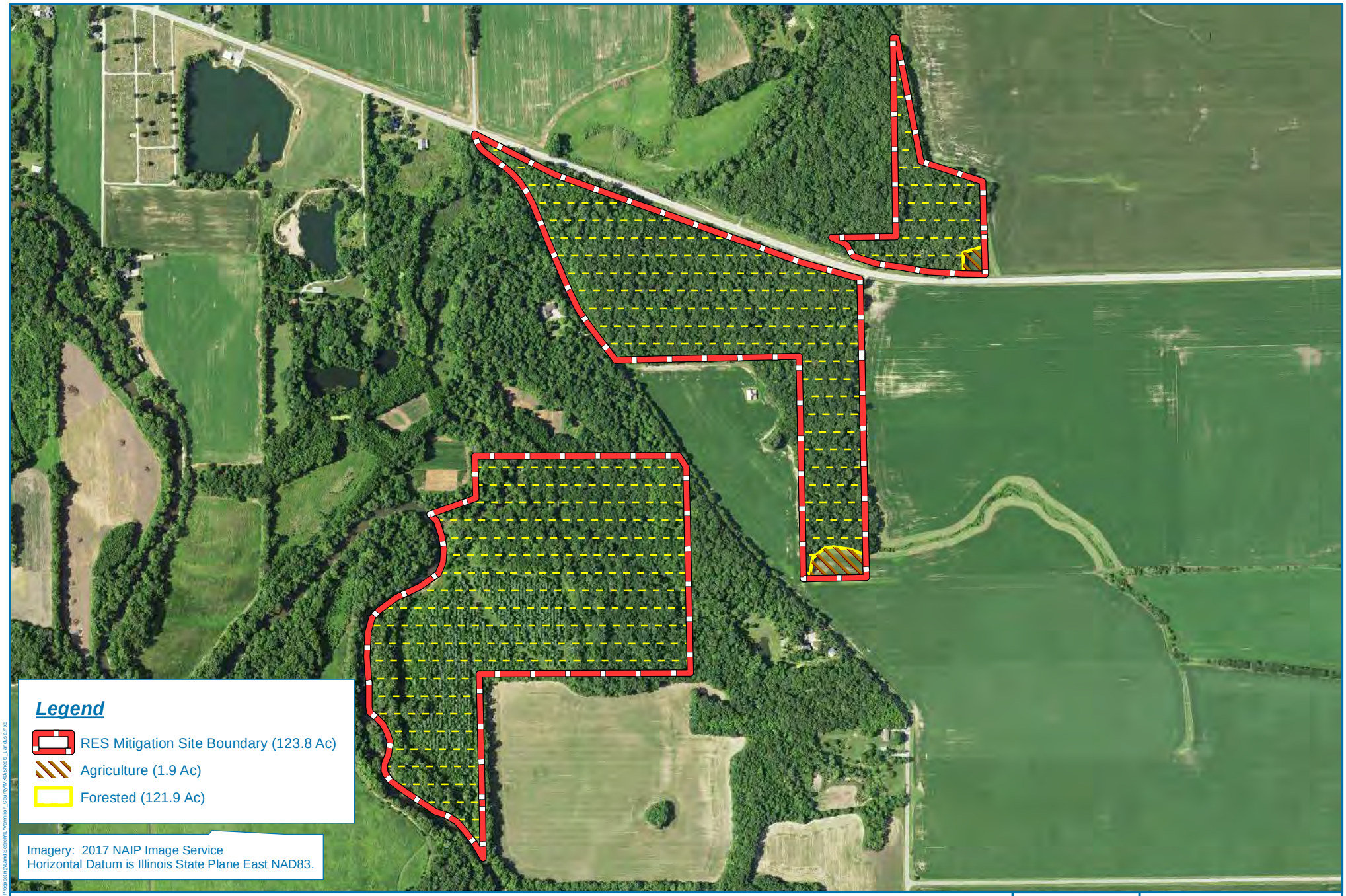
- Sheets Tract Boundary (123.8 Ac)
- RES Properties
- 8-Digit HUC
- Protected Land
- TNC Priority Areas

Illinois Bat Data

- IB (IDNR 2017)
- NLEB (IDNR 2017)
- IB Roost (IDNR 2017)
- Illinois Nature Preserves Commission (INPC) Land Protection Program
- Illinois Natural Areas Inventory (INAI) Sites

REFERENCE

1.) Background Image: ESRI Image Service
2.) Horizontal Datum is NAD83 UTM Z16N.



Document Path: E:\Dropbox (RES)\RES GIS\Land Search\IL Vermilion County\MXD\Sheets_Landuse.mxd

APPENDIX A, FIGURE 2:

LAND USE MAP

VERMILION COUNTY, ILLINOIS

Date: 4/24/2018

Drawn by: BRG

Checked by: DJ

Appendix B: Conservation Easement

CONSERVATION EASEMENT

Mail to: _____

_____

_____

RECITALS

This Conservation Easement made this ____ day of _____, 20___, by, between, and among _____, a _____, Grantor, with a mailing address of _____; _____, a _____, Grantee, with a mailing address at _____; and FIRST INDIANA RESOURCE, LLC, an Indiana limited liability company, Sponsor, with a mailing address at 5020 Montrose Blvd., Suite 650, Houston, Texas 77006. Grantor, Grantee, and Sponsor shall be individually referred to hereinafter as "Party" and collectively referred to hereinafter as the "Parties".

WHEREAS, the Grantor, is the owner in fee simple of certain real property, located in _____, _____ County, Illinois (Tax Parcel ID No. _____), which is more particularly described in **Exhibit A** (hereinafter the "Property") a portion of which has ecological, scientific, educational and aesthetic value in its present state as a natural area which has not been subject to development or exploitation, and which is more particularly described and depicted on **Exhibit B**, attached hereto and incorporated herein by this reference (hereinafter the "Conservation Area"); and

WHEREAS, the Grantee, is a nonprofit corporation incorporated under the laws of the State of _____ as a tax-exempt public charity under Section 501(c)(3) and/or 509(a)(1) of the Internal Revenue Code of 1986, as amended, and the regulations promulgated pursuant thereto ("IRC"), qualified under section 170(h) of the IRC to receive qualified conservation contributions, whose purpose is to preserve natural areas for scientific, charitable, educational and aesthetic purposes; and

WHEREAS, Sponsor is an Indiana company engaged in a business operation for the establishment of a site for the restoration, establishment, enhancement and/or preservation of endangered or threatened species habitats, which will enable a designated third party to assume direct responsibility for the conservation commitment relating to one or more specific projects; and

WHEREAS, the Conservation Area consists of _____ acres of shagbark hickory, white oak, red oak, black cherry, sugar maple, red maple, tulip-poplar, white ash, American elm, black walnut and black locust; and

WHEREAS, the Conservation Area will protect and enhance high quality forest habitat consisting of Oak/Hickory ridges, Mixed Hardwood shaded slopes and Mixed Mesic Hardwood valleys, particularly as it relates to the Protected Species with regard to breeding, foraging, feeding, sheltering, roosting and migration. The Conservation Area's solar exposure, potential roosts, low presence of invasive species, major streams and proximity to conserved land provides suitable habitat for the Indiana bat and the Northern long-eared bat (collectively the "Protected Species"); and

WHEREAS, the Conservation Area is a significant natural area which qualifies as a "...relatively natural habitat of fish, wildlife, or plants, or similar ecosystem," as that phrase is used in Section 170 of the Federal Endangered Species Act (hereinafter "ESA"), (P.L. 96-541)26 USC 170(h)(4)(A)(ii), *as amended*, and in regulations promulgated thereunder; specifically, the Conservation Area is habitat for Protected Species; and

WHEREAS, the United States Fish and Wildlife Service (hereinafter the "USFWS") within the United States Department of the Interior, is authorized by Federal law to administer the ESA, 16 U.S.C. § 1531 et seq., and other laws and regulations; and

WHEREAS, the USFWS has listed the Indiana bat and Northern long-eared bat as endangered and threatened, respectively, pursuant to the requirements of the ESA and the regulations thereunder; and

WHEREAS, the USFWS has approved the Conservation Area to be used as a conservation area in accordance with the Indiana and Northern long-eared bat conservation plan between the USFWS and Sponsor (the "Plan"), incorporated herein by reference; and

WHEREAS, the specific conservation values of the Conservation Area are documented in an Easement Documentation Report, prepared by Sponsor and signed and acknowledged by the Grantor, establishing the baseline condition of the Conservation Area at the time of this grant and including reports, maps, photographs, and other documentation; and whereas Grantee has reviewed the Easement Documentation Report, and affirms that it is an accurate though not exhaustive record of baseline conditions; and

WHEREAS, the Parties have the common purpose of conserving the above-described conservation values of the Conservation Area in perpetuity.

WHEREAS, the State of Illinois has authorized the creation of Conservation Easements pursuant to 765 ILCS 120/0.01 – 120/6 (Real Property Conservation Rights Act) and Grantor and Grantee wish to avail themselves of the provisions of that law;

NOW, THEREFORE, the Grantor, for and in consideration of the facts above recited and of the mutual covenants, terms, conditions and restrictions herein contained and absolute and unconditional consideration of $1.00, does hereby give, grant, bargain, sell and convey unto the Grantee, a conservation easement in perpetuity over the Conservation Area of the nature and character and to the extent hereinafter set forth.

PURPOSE

Purpose. It is the primary purpose of this Conservation Easement to assure that the Conservation Area will be retained forever in its forested state as suitable for the Protected Species, irrespective of the federal listing status of the species; and also to the extent consistent with the primary purpose, to protect any other rare plants, animals, or plant communities on the Conservation Area, and to ensure the Conservation Area remains permanently in a natural, scenic and forested condition; and to prevent any use of the Conservation Area that will significantly impair or interfere with the conservation values or interests of the Conservation Area described above. Grantor intends that this Conservation Easement will confine the use of the Conservation Area to such activities as are consistent with the purpose of this Conservation Easement.

A. Restrictions

A.1 No Industrial Use. No industrial activities, including but not limited to the construction or placement of buildings or parking areas, shall occur in the Conservation Area.

A.2 No New Residential Use. No new residential structures or appurtenances, including but not limited to the construction or placement of new homes, mobile homes or storage sheds, shall be constructed in the Conservation Area.

A.3 No Commercial Use. No commercial activities shall occur in the Conservation Area, except for the low impact recreational uses explicitly identified under Reserved Rights in this Conservation Easement.

A.4 No Agricultural Use. No new agricultural activities that were not previously documented as part of the baseline conditions shall occur in the Conservation Area, including the use of the Conservation Area for cropland, waste lagoons, detention or collection ponds, or pastureland.

A.5 No Vegetative Clearing. No forestry or timbering activities shall occur in the Conservation Area, except that 1) with the written concurrence of Grantee, which will be granted if the proposed activities should, in Grantee's judgment, on balance, improve habitat for listed or otherwise rare species within the Conservation Area, and with the written concurrence of the USFWS, the Sponsor maintains the right to conduct silvicultural modifications with the intent to improve listed species habitat consistent with the then-

established standards and practices published by the USFWS for listed species within the Conservation Area through reforestation, afforestation or silvicultural management to improve the health of the Protected Species habitat with the written concurrence of the USFWS of any such modifications; and 2) limited vegetative clearing may only occur as described under the Reserved Rights Section herein, with the written concurrence of the USFWS and in accordance with a plan submitted to Grantee and approved under the terms of paragraph B.5. of this Conservation Easement.

A.6 Development Rights Extinguished. No development rights which have been encumbered or extinguished by this Conservation Easement shall be transferred pursuant to a transferable development rights scheme or cluster development arrangement or otherwise.

A.7 No Subdivision. The Conservation Area may not be divided or subdivided. Further, the Conservation Area may not be divided, partitioned, nor conveyed except in its current configuration as one whole parcel.

A.8 No Utilities (except for those under existing encumbrances). No new utilities, including pipes, pipelines, transmission lines, whether aboveground or underground, shall be constructed or installed in the Property.

A.9 No New Construction. There shall be no new building, facility, mobile home, or other structure, temporary or permanent, constructed or placed in the Conservation Area, except as approved by Grantee under the terms of B.5. of this Conservation Easement, and as deemed necessary to construct artificial roosting habitat for the Protected Species.

A.10 No Littering or Dumping. No dumping of soil, trash, ashes, sawdust, garbage, waste, abandoned vehicles, appliances or machinery, dredge spoil, or other material shall occur in the Conservation Area.

A.11 No Burning of Waste or Open Fires. No burning of trash or waste, **or building of open air fires including, fires for cooking purposes and campfires** shall occur in the Conservation Area unless employed for the restoration and maintenance activities conducted pursuant to Section B.4.

A.12 No Disposal of Hazardous Waste. No dumping, disposal, or storage of hazardous materials shall occur in the Conservation Area, including but not limited to used motor oil, household chemicals, insecticides, herbicides, or similar chemicals, or of containers of such materials, except to the extent such materials or containers are used for the purposes of managing the conservation values of the Conservation Area and are securely stored and/or maintained in accordance with law and label requirements.

A.13 No Grading, Mineral Use, Excavation, Dredging. No grading, excavation, dredging, mining, or drilling and no removal of topsoil, sand, gravel, rock, peat, minerals, or other material shall occur in the Conservation Area except to the extent that such

activities are consistent with other Reserved Rights, and approval by Grantee under the terms of paragraph B.5. of this Conservation Easement.

A.14 Placement of Spoils. No filling or placement of dredged spoil, topsoil, or other materials shall occur in the Conservation Area shall occur, except as necessary for stream bank restoration or protection measures approved by the USFWS, and by Grantee under the terms of B.5. of this Conservation Easement, and which is consistent with local, state and federal law.

A.15 Limited Signage. No signs shall be permitted in the Conservation Area except interpretive signs describing restoration activities and the Conservation Values of the Conservation Area; signs along hiking or cross-country skiing trails; signs identifying the owner of the Property or Conservation Area and the holder of this Conservation Easement; any signage required by applicable federal, state or local laws; and signs giving directions or prescribing rules and regulations for the use of the Conservation Area.

A.16 No Fencing. No fences shall be erected in the Conservation Area, except to exclude livestock from certain areas, to the extent that such an agricultural use was in existence at the time the baseline was determined, or is necessary as a habitat management tool elsewhere on the Property or in the Conservation Area.

A.17 Pesticide, Herbicide Prohibitions. No rodenticides or other small mammal control measures that may adversely affect the purpose of this Conservation Easement shall be used or undertaken in the Conservation Area. No pesticides, herbicides, or fertilizers will be used in the Conservation Area, except in those instances when the conservation values of the Conservation Area are threatened to the extent that the conservation values may be extirpated or lost without aggressive management and stewardship activities being implemented and only with the written concurrence of the USFWS and the approval of Grantee under the terms of paragraph B.5. of this Conservation Easement.

A.18 Prohibitions on mechanized vehicles/equipment. No off-road, all-terrain or similar vehicles are permitted to operate in the Conservation Area, except for emergency vehicles or where necessary to effectuate the terms of this Conservation Easement and for access and egress required for the hauling of game and for accessing hunting stands to the extent that such activities are consistent with other Reserved Rights. Use of mechanized vehicles managed so as to do the least feasible damage to the conservation values shall be allowed for the construction and maintenance of artificial roosts for the Protected Species, planting vegetation, moving rocks, soil, and trail maintenance.

B. Reserved Rights

B.1 Recreational Use. No recreational activities shall occur in the Conservation Area, except for low-impact recreational activities, including but not limited to, hunting/fishing, walking, jogging, biking, cross-country skiing, snowshoeing, wildlife observation, photography, horseback riding, and use of interpretive trails, so long as these activities:

1) are consistent with the Purpose of this Conservation Easement; and,

2) do not result in the destruction of, or harm the viability of, trees or other vegetation in the Conservation Area, except that the limited clearing or cutting of vegetation is permissible in accordance with the limitations below.

In constructing trails, the Grantor shall avoid clearing trees greater than five (5) inches in diameter at breast height (dbh). To the extent that it is necessary to install a crossing of a wet seep or stream deemed to be in need of protection by the Sponsor, such wet seep or stream will be protected by using appropriate structures, such as boardwalks, as are commercially reasonable.

B.2 Educational Use. The Parties reserve the right to conduct educational activities within the Conservation Area, such as site visits, studies and observations. Any educational activities involving attempts to capture the Protected Species or activities that could otherwise result in the take of the Protected Species, as that term is defined by the ESA, may be undertaken only in accordance with applicable federal and state laws.

B.3 Vegetative Management. No cutting, removing, mowing, destroying, harming, harvesting, pruning, planting or relocating of trees, shrubs, or other vegetation shall occur in the Conservation Area except that the removal of vegetation is authorized in connection with:

1) The construction and maintenance of trails for low impact recreational activities as identified as a Reserved Right, provided that such trails shall be no more than four (4) feet wide and shall be vegetated or covered with non-invasive grasses (native to the region if feasible) and/or gravel. All vegetative clearing in connection with trail construction shall occur between October 1 and March 31. No trees that are greater than five (5) inches dbh shall be removed in the course of developing such trails;

2) The removal of any trees that present a safety hazard, with permission of Grantee under the terms of paragraph B.5. of this Conservation Easement. If removal of any potential roost trees is required between April 1 and September 30, the Parties, with the guidance of a USFWS or appropriate state wildlife agency or other qualified biologist must determine whether the tree is being used as a roost tree by the Protected Species and must contact the USFWS to coordinate prior to tree removal. If a Party has a reasonable, objective basis to believe that a tree that provides Protected Species roosts poses an "Imminent Hazard" (i.e., must be cut down immediately in order to avoid significant injury that will be realized prior to completing consultation with a qualified biologist, the USFWS or State wildlife agency according to the above terms), the Party may cut such tree, provided that the Party shall allow a qualified biologist to examine any such

tree immediately after the tree is cut down and before it is removed from the area to determine whether the tree is occupied by the Protected Species or to allow the USFWS or state wildlife agency to determine how to handle any Protected Species occupying or displaced from the tree; or

3) Restoration or management of the Conservation Area that is consistent with the purposes of this Conservation Easement with the written concurrence of the USFWS and as is approved by Grantee under the terms of paragraph B.5. of this Conservation Easement.

B.4 Restoration and Maintenance of Conservation Purpose. Any restoration and maintenance activities must be deemed suitable and necessary by the Sponsor and the USFWS to maintain or improve the conservation values of the Conservation Area, and shall not diminish the mitigation ratios, quality or quantity specified in any plan submitted by Sponsor for a conservation or restoration project in the Conservation Area. Any restoration activities to be conducted by the Sponsor must be proposed in writing by Sponsor as part of a USFWS-approved management plan consistent with the purposes of this Conservation Easement and approved by Grantee under the terms of paragraph B.5. of this Conservation Easement. Upon completion of any restoration or maintenance activities undertaken by Sponsor, as determined by USFWS, any and all restoration and management rights granted to Sponsor in this Conservation Easement shall transfer to Grantee.

B. 5. Grantee Discretionary Approval. In addition to the provisions hereunder that specifically require that notice be provided to Grantee in advance of a particular activity or use of the Conservation Area, Grantor/Sponsor shall notify Grantee at any time Grantor or Sponsor proposes to undertake an activity or use that, pursued without sufficient regard, could have a materially adverse effect on the conservation values. The purpose of requiring this notification is to afford Grantee an adequate opportunity to assess the activity, as specifically planned, for consistency with the objective of maintaining the conservation values. Thus, the notification must describe the nature, scope, design, location, schedule, and other material information about the proposed activity in sufficient detail that Grantee is able to make an informed judgment as to its compatibility with the conservation values. Where Grantor/Sponsor is required to obtain Grantee's permission or approval for a proposed action hereunder, Grantee shall grant permission or approval only when Grantee determines that the proposed action will not substantially diminish or impair the conservation values of the Conservation Area. Grantee's response to a request for approval **s**hall not be unreasonably delayed or withheld, and shall be and given or denied in writing within ten (10) days after receipt of Grantor/Sponsor's complete written application. If no response is received within ten (10) days after receipt of Grantor/Sponsor's complete written application, then the proposed activity shall be deemed approved/permitted. If approval is withheld, Grantee shall inform Grantor/Sponsor in writing of the reasons. If the parties cannot reach agreement on a plan that addresses Grantee's stated concerns within ten (10) days of Grantor's receipt of Grantee's explanation, Grantor/Sponsor may bring suit in a court of competent jurisdiction. If any such suit brought within six (6) months of the receipt of Grantee's explanation proceeds to judgment, the prevailing party is entitled under this agreement to be reimbursed by the party that does not prevail, for

reasonable attorney's fees and other costs of the litigation. After such six (6) month period, Grantor and Sponsor waive, without requirement of a writing, the right to object to Grantee's decision not to approve the planned activity.

C. Enforcement, remedies, third party rights.

C.1 Grantee and Sponsor Rights of Entry and Enforcement. Grantee and Sponsor are hereby granted the following rights:

C.1.a To enter upon the Property to access the Conservation Area at any time after giving twenty-four (24) hours' prior notice to the Grantor, in order to monitor Grantor's compliance with this Conservation Easement, monitor and survey the Conservation Area for use by the Protected Species and otherwise enforce the terms of this Conservation Easement. If there is an emergency that threatens the conservation values, Grantee may enter upon the Property to access the Conservation Area to monitor immediately after making a reasonable effort under the circumstances to notify Grantor;

C.1.b To enjoin any activity on or use of the Conservation Area that is inconsistent with this Conservation Easement, to require 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, to seek money damages and any other legal or equitable remedy, and to preserve the conservation values of the Conservation Area;

C.1.c To preserve, protect and sustain all biological resources and conservation values of the Conservation Area unless specifically excluded from protection under this Conservation Easement; and

C.1.d To **bring an action at law or equity in a court of competent jurisdiction to** enforce the terms, provisions and restrictions of this Conservation Easement.

C.1.e. **To recover any damages arising from non-compliance with the terms of this Conservation Easement.**

C. 2. The USFWS as Third-Party Beneficiary; Enforcement and Remedies.

C.2.a. The Parties hereto agree that, because of the USFWS's duties and powers arising under the ESA, the USFWS has a clear and substantive interest in the preservation and enforcement of this Conservation Easement. Therefore, the Parties grant to the USFWS, its agents, successors and assigns, the rights and standing to be noticed, to enter the Property to access the Conservation Area upon twenty-four (24) hours' prior notice to the Parties, to approve or disapprove requests, and to enforce this Conservation Easement as described in this Section and according to the terms set forth herein.

C.2.b Grantor and Grantee shall notify the USFWS in writing of the names and addresses of any party to whom the Conservation Area, or any part thereof, is to be granted, conveyed or otherwise transferred prior to the time said transfer is consummated, as provided in paragraphs D and E.

C.2.c This Conservation Easement does not convey a general right of access to the public, except that the USFWS, its agents, contractors, and assigns, may enter onto the Property to access the Conservation Area at any time upon twenty-four (24) hours prior notice to the Parties for the purpose of conducting inspections to determine compliance with the terms contained herein, for the purpose of assessing the Protected Species population status and vegetative habitat condition and suitability, and, with the permission of the Parties, conducting certain management and monitoring activities not already identified herein.

C.2.d In addition to any other rights and remedies available to the USFWS at law or in equity, the USFWS shall have the right, but not the obligation to enforce this Conservation Easement and is entitled to exercise the same remedies available to Grantee and Sponsor, identified in paragraph C.1. The USFWS may do so upon the written request of Grantee or if Grantee fails to enforce this Conservation Easement. Prior to taking any enforcement action, the USFWS shall notify the Parties in writing of Grantee's alleged violations, and shall afford Grantee thirty (30) days to negotiate a remedial action and settlement with Grantor prior to commencing its own enforcement action. No failure on the part of the USFWS to enforce any term, condition, or provision hereof shall discharge or invalidate such term, condition, or provision to affect its right or that of the Parties to enforce the same.

D. Assignment. The Parties hereto recognize and agree that the benefits of this Conservation Easement are in gross and are assignable, and the Grantee hereby covenants and agrees that in the event it transfers or assigns its interest in and to the Conservation Easement, it shall obtain written concurrence of the USFWS, and the organization receiving the interest shall be a qualified organization as that term is defined in Section 170(h)(3) of the IRC (or any successor section) and the regulations promulgated thereunder, which is organized and operated primarily for one of the conservation purposes specified in Section 170(h)(4)(A) of the IRC and Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue to carry out in perpetuity the conservation purposes which the contribution was originally intended to advance.

E. Subsequent Transfers. The Grantor agrees that the terms, conditions, restrictions and purposes of this Conservation Easement or reference thereto will be inserted by Grantor in any subsequent deed or other legal instrument by which the Grantor divests any retained, reserved or reversionary interest and by Grantee if Grantee subsequently transfers any fee simple title or possessory interest in the Conservation Area; and Grantor and Grantee further agree to notify the other Parties, and the USFWS at least thirty (30) days in advance of any pending transfer.

F. Government Permits and Approvals. The conveyance of this Conservation Easement by the Grantor to the Grantee does not replace, abrogate, or otherwise set aside any local, state or federal laws, requirements, or restrictions applicable to the Property or the Conservation Area and shall not relieve Grantor of the obligations and responsibilities to obtain any and all applicable federal, state, and local governmental permits and approvals, if necessary, to exercise Grantor's retained rights and uses of the Conservation Area even if consistent with the conservation purposes of this Conservation Easement.

G. Eminent Domain. Whenever all or part of the Conservation Area is taken in exercise of eminent domain by public, corporate, or other authority so as to abrogate the restrictions imposed by this Conservation Easement, the Grantor and the Grantee shall join in appropriate actions at the time of such condemnation to recover the full value of the taking and all incidental or direct damages resulting from the taking. After all expenses incurred by the Parties in such action have been paid out of the recovered proceeds, the remainder shall belong to Grantor. A settlement of a bona fide threat of condemnation in advance of litigation fulfills the obligations of this term if in the settlement agreement the Grantee receives the fair market value of the property interest taken.

H. Interpretation. This Conservation Easement shall be interpreted and performed pursuant to the laws of the State of Illinois, the ESA, and other applicable federal laws.

I. Severability. If any provision in this instrument 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. If any provision of this Conservation Easement or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions of this Conservation Easement and the application of such provisions to persons or circumstances other than those as to which it is found to be invalid shall not be affected thereby.

J. Successors and Assigns. The term "Grantor" shall include the Grantor and the Grantor's heirs, successors, and assigns and shall also include the masculine, feminine, corporate, singular or plural form of the word as needed in the context of its use. The term "Grantee" shall include Grantee and its successors and assigns. The term “Sponsor” shall include Sponsor, its successors and assigns.

K. Notices. Any notices, consents, approvals or other communications required in this Conservation Easement shall be sent by registered or certified mail to the appropriate party or its successor(s) in interest at the following address or such address as may be hereafter specified by notice in writing:

Grantor: _____
_____
_____
Attn: _____

Grantee: _____
_____
_____
Attn: _____

Sponsor: First Indiana Resource, LLC
c/o Resource Environmental Solutions, LLC
5020 Montrose Blvd., Suite 650
Houston, TX 77006
Attn: Stephen Colomb

USFWS: U.S. Fish & Wildlife Service, _____ Field Office
_____
_____
Attn: _____

L. Counterparts. The Parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by all Parties; each counterpart shall be deemed an original instrument as against any Party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

M. Captions. The captions herein have been inserted solely for convenience of reference and are not a part of this Conservation Easement and shall have no effect upon construction or interpretation.

N. Monitoring. Grantee shall monitor the Conservation Area to ensure compliance with the terms of this Conservation Easement. Monitoring shall be performed by visual or aerial means at a minimum of every year for the first five (5) years, then once every two (2) years thereafter. Grantee will provide USFWS with a monitoring report identifying the then current condition of the Conservation Area. The monitoring report shall include any observed violations of the terms of this Conservation Easement and any corrective action taken to resolve such violations.

O. Taxes, Costs and Liabilities. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Conservation Area. Grantee or Sponsor shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Conservation Area, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

P. Title. Grantor warrants that it has valid and marketable title to the Property, free and clear of all mortgages, deeds of trust, or other liens or encumbrances that would rank in priority above this Conservation Easement, except for those permitted exceptions shown on the Preliminary Title Report included in the USFWS-approved Permittee Responsible Conservation Plan. Should USFWS discover the existence of an Unpermitted Exception (defined below) then (i) USFWS shall notify Sponsor in writing of the existence of the Unpermitted Exception; and (ii) Sponsor shall have thirty (30) days from receipt of such notice to cure or remove the Unpermitted Exception. If Sponsor fails to cure or remove the Unpermitted Exception within such 30-day period, USFWS may dismiss the project contemplated by the Permittee Responsible Conservation Plan. As used herein, "Unpermitted Exception" means any exception not approved by USFWS through its approval of the Permittee Responsible Conservation Plan and the Preliminary Title Report contained therein and therefore deemed unsatisfactory to USFWS.

Q. Standing. Grantee, Sponsor and/or the USFWS have the right to enforce the terms, provisions and restrictions of this Conservation Easement. Any forbearance on behalf of Grantee, Sponsor or the USFWS to exercise its right of enforcement hereunder shall not be deemed or construed to be a waiver of either of their rights hereunder.

R. Extinguishment. In the event that changed conditions render impossible the continued use of the Conservation Area for the conservation purposes, this Conservation Easement may only be extinguished, in whole or in part, by judicial proceeding.

S. Merger. The Parties agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

T. Parties Subject to this Conservation Easement. This Conservation Easement shall be binding on and shall inure to the benefit of the Parties and their respective successors and assigns subject to the limitations on transfer set forth in this Conservation Easement.

U. Loss of or Injury to Conservation Values. Neither absence of the Protected Species from the Conservation Area nor a loss of or significant injury to conservation values for the Protected Species due to circumstances including, but without limitation, fire, flood, storm, disease, or seismic events, shall be construed to render the purpose of this Conservation Easement impossible to accomplish and shall not terminate or extinguish this Conservation Easement in whole or in part. In the case of loss of or significant injury to any of the conservation values for the Protected Species due to fire, flood, storm, disease, seismic events or similar circumstances, the Grantor, Grantee, or Sponsor may, but shall not be required to, seek to undertake measures in consultation with the USFWS to restore such conservation values.

[The remainder of this page is intentionally left blank.]

INTENDING TO BE LEGALLY BOUND, the undersigned Grantor, Grantee, and Sponsor, by their respective duly authorized representatives, have signed and delivered this Conservation Easement as of the date first above written.

Grantor

_____

Name:

STATE OF _____ :
: SS
COUNTY OF _____ :

On _____, before me, a Notary Public for the State aforesaid, personally appeared _____, known to me or satisfactorily proven to be the person whose name is subscribed to the within instrument, and acknowledged that s/he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have set my hand and official seal.

_____

Notary Public
My commission expires:

_____

[SEAL]

Grantee

_____,
a _____

By: _____
Name: _____
Title: _____

STATE OF _____ :
: SS
COUNTY/PARISH OF _____ :

On _____, before me, a Notary Public for the State aforesaid, personally appeared _____, who acknowledged himself/herself to be the _____ of _____, a _____ nonprofit corporation, and that s/he, in the capacity set forth above, on behalf of the Grantee, being authorized to do so, executed, in my presence, the foregoing Conservation Easement for the purposes herein contained.

IN WITNESS WHEREOF, I have set my hand and official seal.

_____
Notary Public
My commission expires:
_____

[SEAL]

Sponsor

First Indiana Resource, L.L.C.,
an Indiana limited liability company

By: Resource Environmental Solutions, LLC,
a Louisiana limited liability company

By: _____
Name: _____
Title: _____

STATE OF TEXAS :
: SS
COUNTY OF HARRIS :

On _____, before me, a Notary Public for the State aforesaid, personally appeared _____, who acknowledged himself/herself to be the _____ of Resource Environmental Solutions, LLC, manager of First Indiana Resource, LLC, an Indiana limited liability company, and that s/he, in the capacity set forth above, on behalf of the Grantee and Sponsor, being authorized to do so, executed, in my presence, the foregoing Easement Agreement for the purposes herein contained.

IN WITNESS WHEREOF, I have set my hand and official seal.

_____
Notary Public
My commission expires:
_____

[SEAL]

PREPARED BY: _____

EXHIBIT A

Description of the Property

EXHIBIT A

LEGAL DESCRIPTION

PARCEL 1:

THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT AN IRON ROD SET AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE SOUTH ON A LOCAL AZIMUTH OF 179 DEGREES 13 MINUTES 13 SECONDS A DISTANCE OF 1334.40 FEET TO A STONE FOUND AT THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE WEST 270 DEGREES 08 MINUTES 22 SECONDS A DISTANCE OF 1340.42 FEET TO AN AXLE SHAFT FOUND AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE NORTH 359 DEGREES 21 MINUTES 22 SECONDS A DISTANCE OF 1328.30 FEET TO AN IRON ROD FOUND AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE EAST 89 DEGREES 52 MINUTES 49 SECONDS A DISTANCE OF 1337.20 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

PARCEL 2:

PART OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER AND PART OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, LYING EAST OF THE CENTER OF THE MIDDLE FORK OF THE VERMILION RIVER AND SOUTH OF THE CENTER OF BEAN CREEK BEING FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT AN AXLE SHAFT FOUND AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE SOUTH ON A LOCAL AZIMUTH OF 179 DEGREES 16 MINUTES 55 SECONDS ALONG THE EAST LINE OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 11 A DISTANCE OF 1049.78 FEET TO AN IRON ROD SET NEAR THE NORTH BANK OF SAID RIVER; THENCE SOUTH 179 DEGREES 16 MINUTES 55 SECONDS ALONG SAID EAST LINE 100 FEET MORE OR LESS TO THE CENTER OF SAID RIVER; THENCE NORTHWESTERLY AND NORTHEASTERLY ALONG THE CENTER OF SAID RIVER A DISTANCE OF 2680 FEET MORE OR LESS TO THE INTERSECTION OF THE CENTER OF BEAN CREEK; THENCE NORTHEASTERLY 77 DEGREES 37 MINUTES 33 SECONDS ALONG THE CENTER OF SAID CREEK A DISTANCE OF 270 FEET MORE OR LESS TO THE EAST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE SOUTH 179 DEGREES 21 MINUTES 22 SECONDS ALONG SAID EAST LINE 1018.3 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

PARCEL 3, TRACT 1:

PART OF SECTIONS 1,2, 11 AND 12, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: COMMENCING AT A STONE FOUND AT THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 12; THENCE SOUTH ON A LOCAL AZIMUTH OF 178 DEGREES 51 MINUTES 23 SECONDS ALONG THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 12 A DISTANCE OF 245.54 FEET TO A MAG NAIL SET ON THE EXTENSION OF THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER COURT ORDER 9379, DATED APRIL 4, 1932; THENCE WEST 268 DEGREES 34 MINUTES 45 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 3588.93 FEET TO AN IRON ROD SET; THENCE NORTHWESTERLY AROUND A CURVE TO THE RIGHT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 598.28 FEET, SAID CURVE HAVING A RADIUS OF 2619.99 FEET, A CHORD AZIMUTH OF 275 DEGREES 07 MINUTES 16 SECONDS AND A CHORD LENGTH OF 596.99 FEET TO AN IRON ROD FOUND; THENCE SOUTHWESTERLY 261 DEGREES 25 MINUTES 30 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 31.19 FEET TO AN IRON ROD SET FOR A PLACE OF BEGINNING; THENCE SOUTH 178 DEGREES 48 MINUTES 00 SECONDS A DISTANCE OF 1878.83 FEET TO AN IRON ROD SET; THENCE WEST 268 DEGREES 42 MINUTES 26 SECONDS A DISTANCE OF 405.60 FEET TO A FENCE POST; THENCE NORTH 358 DEGREES 48 MINUTES 00 SECONDS A DISTANCE OF 1404.56 FEET TO A STONE FOUND; THENCE WEST 268 DEGREES 39 MINUTES 08 SECONDS A DISTANCE OF 1124.63 FEET TO AN IRON ROD SET ON THE EAST RIGHT OF WAY LINE OF COUNTY HIGHWAY 15 PER DOCUMENT NUMBER 86-8247 IN THE OFFICE OF THE VERMILION COUNTY RECORDER; THENCE NORTHWESTERLY 330 DEGREES 52 MINUTES 32 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 85.62 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 325 DEGREES 05 MINUTES 39 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 297.94 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 336 DEGREES 42 MINUTES 25 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 489.62 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 342 DEGREES 33 MINUTES 11 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 200.49 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 325 DEGREES 05 MINUTES 34 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 215.73 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 313 DEGREES 01 MINUTES 16 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 354.40 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER COURT ORDER 9379, DATED APRIL 4,1932 A DISTANCE OF 426.67 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHWESTERLY 200 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 15.00 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 318.70 FEET; THENCE SOUTHEASTERLY 127 DEGREES 12 MINUTES 52 SECONDS ALONG THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER CONDEMNATION CASE 70-H-50, DATED SEPTEMBER 22, 1971 A DISTANCE OF 208.81 FEET; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 300.00 FEET; THENCE SOUTHEASTERLY 105 DEGREES 30 MINUTES 52 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 401.53 FEET; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE AND SOUTH RIGHT OF WAY LINE PER DEED BOOK 796 PAGE 317

IN THE OFFICE OF THE VERMILION COUNTY, RECORDER A DISTANCE OF 501.40 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHEASTERLY AROUND A CURVE TO THE LEFT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 307.86 FEET, SAID CURVE HAVING A RADIUS OF 2659.99 FEET, A CHORD AZIMUTH OF 107 DEGREES 11 MINUTES 58 SECONDS AND A CHORD LENGTH OF 307.69 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHEASTERLY 81 DEGREES 25 MINUTES 30 SECONDS A DISTANCE OF 78.67 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

ALSO AN EASEMENT FOR THE PURPOSE OF INGRESS AND EGRESS TO THE ABOVE DESCRIBED REAL ESTATE FROM AN EXISTING ENTRANCE ON U.S. ROUTE 136 BEING FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT THE PLACE OF BEGINNING OF THE ABOVE DESCRIBED REAL ESTATE; THENCE SOUTH 178 DEGREES 48 MINUTES 00 SECONDS 50 FEET; THENCE EAST 88 DEGREES 48 MINUTES 00 SECONDS 25 FEET; THENCE NORTHERLY 05 DEGREES 03 MINUTES 54 SECONDS 54.33 FEET TO AN IRON ROD SITUATED ON THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136; THENCE SOUTHWESTERLY 261 DEGREES 25 MINUTES 30 SECONDS 31.19 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

PARCEL 3, TRACT 2:

PART OF THE SOUTH HALF OF SECTION 1, AND PART OF THE NORTH HALF OF SECTION 12 ALL IN TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: COMMENCING AT A STONE FOUND AT THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 12; THENCE SOUTH ON A LOCAL AZIMUTH OF 178 DEGREES 51 MINUTES 23 SECONDS ALONG THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 12 A DISTANCE OF 165.54 FEET TO A MAG NAIL SET ON THE EXTENSION OF THE NORTH RIGHT OF WAY LINE OF U.S. ROUTE 136; THENCE WEST 268 DEGREES 34 MINUTES 45 SECONDS ALONG THE NORTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER COURT ORDER 9379, DATED APRIL 4, 1932 A DISTANCE OF 3387.61 FEET TO AN IRON ROD SET FOR A PLACE OF BEGINNING; THENCE CONTINUING WEST 268 DEGREES 34 MINUTES 45 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 201.71 FEET TO AN IRON ROD SET; THENCE NORTHWESTERLY AROUND A CURVE TO THE RIGHT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 580.02 FEET, SAID CURVE HAVING A RADIUS OF 2539.99 FEET, A CHORD AZIMUTH OF 275 DEGREES 07 MINUTES 16 SECONDS, AND A CHORD LENGTH OF 578.76 FEET TO AN IRON ROD SET; THENCE NORTHWESTERLY 309 DEGREES 51 MINUTES 39 SECONDS ALONG SAID RIGHT OF WAY LINE PER DEED BOOK 796 PAGE 317 IN THE OFFICE OF THE VERMILION COUNTY RECORDER A DISTANCE OF 109.40 FEET TO AN IRON ROD FOUND; THENCE NORTHWESTERLY AROUND A CURVE TO THE RIGHT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 115.19 FEET, SAID CURVE HAVING A RADIUS OF 2490.16 FEET, A CHORD AZIMUTH OF 285 DEGREES 12 MINUTES 26 SECONDS, AND A CHORD LENGTH OF 115.18 FEET TO AN IRON ROD FOUND SITUATED ON THE SOUTH LINE OF SAID SECTION 1; THENCE EAST 88 DEGREES 39 MINUTES 08 SECONDS ALONG SAID SOUTH LINE A DISTANCE OF 397.44 FEET TO AN IRON ROD FOUND; THENCE NORTH 358 DEGREES 50 MINUTES 50 SECONDS A DISTANCE OF 1279.50 FEET TO AN IRON ROD SET; THENCE EAST 88 DEGREES 50 MINUTES 50 SECONDS A DISTANCE OF 29.00 FEET TO AN IRON ROD SET; THENCE SOUTHEASTERLY 166 DEGREES 57 MINUTES 50 SECONDS A DISTANCE OF 730.29 FEET TO AN IRON ROD SET; THENCE SOUTHEASTERLY 108 DEGREES 53 MINUTES 34

SECONDS A DISTANCE OF 426.93 FEET TO AN IRON ROD SET; THENCE SOUTH 179 DEGREES 36 MINUTES 41 SECONDS A DISTANCE OF 586.47 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

PARCEL 4:

PART OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: COMMENCING AT AN IRON ROD SET AT THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 12; THENCE SOUTH ON A LOCAL AZIMUTH OF 179 DEGREES 13 MINUTES 13 SECONDS ALONG THE WEST LINE OF SAID NORTHWEST QUARTER A DISTANCE OF 46.00 FEET TO A MAG NAIL SET IN THE CENTER OF COUNTY HIGHWAY 15 FOR A PLACE OF BEGINNING; THENCE SOUTHEASTERLY 146 DEGREES 12 MINUTES 01 SECONDS ALONG SAID CENTER LINE A DISTANCE OF 147.85 FEET TO A MAG NAIL SET; THENCE SOUTHWESTERLY 232 DEGREES 21 MINUTES 59 SECONDS A DISTANCE OF 100.69 FEET TO AN IRON ROD SET ON THE WEST LINE OF SAID NORTHWEST QUARTER; THENCE NORTH 359 DEGREES 13 MINUTES 13 SECONDS ALONG SAID WEST LINE A DISTANCE OF 184.36 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

EXCEPT FROM THE ABOVE PARCELS THAT PORTION OF THE LAND CONVEYED TO THE PEOPLE OF THE STATE OF ILLINOIS, DEPARTMENT OF TRANSPORTATION RECORDED OCTOBER 9, 1986 AS DOCUMENT NUMBER 86-8247.

Permanent Index Number: 12-01-300-004; 12-02-400-008; 12-11-200-003; 12-11-200-006; 12-11-200-012; 12-11-200-013; 12-11-400-010; 12-12-100-003; 12-12-100-009; 12-12-200-001

EXHIBIT B

Description and Depiction of the Conservation Area

ALTA/NSPS LAND TITLE SURVEY

PART OF THE

E1/2 SECTION 11 & NW1/4 SECTION 12, T21N, R13W

OF THE 2nd P.M.

VERMILION COUNTY, ILLINOIS

N

0 300 600

SCALE : 1" = 300'

TOTAL AREA = 65.486 ACRES ±

LEGEND

- ○ 5/8" X 24" IRON ROD SET WITH L.S. 3106 IDENTIFICATION CAP
- ● IRON ROD OR PIPE FOUND
- Ⓜ MAG NAIL SET
- △ STONE FOUND
- *(1344')* RECORD DISTANCE
- *1340.42'* MEASURED DISTANCE
- BOUNDARY OF SURVEY

To: Stewart Title Guaranty Company, First Indiana Resource, LLC, and Robert B. Brennan.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1-4, 6a, 6b, 8, 11, 13, 16 and 19 of Table A thereof.

The field work was completed on October 3, 2017.

Date of Plat or Map: October 25, 2017.

S.W. ROSS LAND SURVEYING
SURVEYING & MAPPING
222 N. ALABAMA ST.
CHRISMAN, ILLINOIS
(217) 269-2750 scottross3106@comcast.net

Scott W. Ross
Illinois Professional Land Surveyor No. 3106

SCOTT W. ROSS 3106 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS * CHRISMAN, ILLINOIS *

LICENSE EXPIRES 11/30/2018

℄ BEAN CREEK

NWcor SE1/4 NE1/4

Michael J. Howie
Property per Doc. #14-04554

(1340')
1337.20'
89°52'49"

NEcor 11-21-13 per Doc. #88-5403

1334.40'
179°13'13"

(46')

P.O.B. Parcel 4

℄ *CH 15*

PARCEL 4
0.170 ACRES ±

27.45'

NEcor SE1/4 NE1/4
P.O.B. Parcel 1

John & Douglas Goodwine
Property per Doc. #17-02445

Mike & Valerie Howie
Property per Doc. #10-10330

℄ BEAN CREEK

359°21'22"
290'

Iron Rod Found
20' North of ℄ Bean Creek
per Doc. #10-10592

270' ±
77°37'33"

359°21'22"
20' ±

℄ MIDDLE FORK
VERMILION RIVER

(2 AC. ±)

1328.30'
359°21'22"
(1330')

PARCEL 1
SE1/4 NE1/4 11-21-13
40.916 Acres ±

(1334')
1334.40'
179°13'13"

Charles Shumate Prop.
per doc. #96-07369

E. Line SW1/4 NE1/4
179°21'22"
1018.3'

(9 AC. ±)

P.O.B. Parcel 2
SWcor SE1/4 NE1/4
Axle Shaft Found from
County Surveyor Record
Book 3, Pg. 352, dated
Dec. & May, 1910.

SEcor NE1/4 per
Doc. #89-9274

Mervis Family, L.L.C.
Property per Doc. #04-01191

2680' ±

PARCEL 2
24.40 Acres ±

1340.42'
270°08'22"
(1342')

PART NW1/4 SE1/4

E. Line NW1/4 SE1/4
1049.78'
179°16'55"

Jarrod & Cheryl Dice
Property per Doc. #07-06385

(2665')
(2667.95')
2667.96'
359°12'29"

Iron Rod with Cap Set 100' ±
North of Center of River

179°16'55"
100' ±

SEcor 11-21-13 per
Doc. #89-9272

(1344')

EDGE OF
ROAD 18' WIDE

NWcor SW1/4
NW1/4 12-21-13

65'

℄ ROAD

46'
179°13'13"

℄ *CH 15*

76'

P.O.B. Parcel 4

Telephone
Line

359°13'13"
184.36'

146°12'01"
147.85'

Telephone
Pedestal

See Note on Sheet 2
About Culvert

ENTRANCE

100.69'
232°21'59"

W. Line NW1/4
12-21-13

DETAIL PARCEL 4

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC #1374 : C:\CARLSON PROJECTS\1374\1374C RIVER.DWG

TABLE "A" NOTES FROM ALTA/NSPS LAND TITLE SURVEYS

ITEM	
2	NO ADDRESS OF PROPERTY SHOWN OR OBSERVED.
3	PART OF THIS PROPERTY IS LOCATED IN FLOOD ZONE "A" AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT FLOOD INSURANCE RATE MAP NUMBER 17183C0150D EFFECTIVE DATE 5/16/2012. SEE SHEET 3 OF 3 FOR MAPS.
4	TOTAL AREA = 65.486 ACRES MORE OR LESS.
6(a)	PROPERTY IS NOT ZONED PER VERMILION COUNTY RECORDERS OFFICE .
6(b)	NO CURRENT ZONING CLASSIFICATION. NO BUILDING SETBACKS.
11	OBSERVED EVIDENCE OF UTILITIES ONLY.
16	THERE IS NO OBSERVED EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

TABLE "B" NOTES FROM COMMITMENT FOR TITLE INSURANCE FILE NO. 17000332938

I HAVE REVIEWED ALL ITEMS IN SCHEDULE "B" OF STEWART TITLE GUARANTY COMPANY FILE NUMBER 17000332938, EFFECTIVE DATE AUGUST 24, 2017 AND ARE SHOWN ON THIS SURVEY. I HAVE NOT MADE A SEPARATE SEARCH OF THE RECORDS FOR EASEMENTS, DEDICATIONS, VACATIONS OR RIGHT-OF-WAYS.

ITEM #4: IN SCHEDULE "B PART TWO" EASEMENT IS NOT ON PROPERTY SURVEYED. IT LIES EAST OF OF THE PROPERTY SURVEYED.

NO BUILDINGS OBSERVED

GENERAL NOTES

THE CENTER LINE OF THE MIDDLE FORK RIVER AND BEAN CREEK WERE LOCATED IN JUNE, 2017. THE WATER BOUNDARY IS SUBJECT TO CHANGE DUE TO NATURAL CAUSES AND THAT IT MAY OR MAY NOT REPRESENT THE ACTUAL LOCATION OF THE LIMIT OF TITLE. I AM NOT AWARE OF NATURAL OR ARTIFICIAL REALIGNMENTS OR CHANGES IN SUCH BOUNDARIES.

THE SITE CONDITIONS IN LOCATING THE CENTER LINE OF THE MIDDLE FORK RIVER MAY HAVE RESULTED IN A RELATIVE POSITIONAL PRECISION THAT EXCEEDS THE MAXIMUM ALLOWED.

THIS IS THE ONLY PROPERTY LINE IN WHICH PHYSICAL ACCESS WITHIN FIVE FEET WAS RESTRICTED TO SOME EXTENT.

AZIMUTHS SHOWN FOR DESCRIPTION PURPOSES ONLY, BASED ON ASSUMED DATUM.

EXISTING METAL CULVERT ON ENTRANCE FROM COUNTY HIGHWAY 15 EXTENDS 9 FEET SOUTHEAST OF PROPERTY LINE.

ONLY OBSERVED UTILITY IS A BURIED TELEPHONE LINE ON THE WEST SIDE OF COUNTY HIGHWAY 15 AS SHOWN BY FIELD LOCATED TELEPHONE PEDESTAL.

NO RIGHT-OF-WAY OR EASEMENT DOCUMENTS SHOWN IN TITLE COMMITMENT.

S.W. ROSS LAND SURVEYING
SURVEYING & MAPPING
222 N. ALABAMA ST.
CHRISMAN, ILLINOIS
(217) 269-2750 scottross3106@comcast.net

LEGAL DESCRIPTION FROM STEWART TITLE GUARANTY COMPANY, FILE NO. 17000332938.
EFFECTIVE DATE: AUGUST 24, 2017 at 8:00 am. SHOWN AS PARCEL 1, 2 & 4

PARCEL 1:
THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT AN IRON ROD SET AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE SOUTH ON A LOCAL AZIMUTH OF 179 DEGREES 13 MINUTES 13 SECONDS A DISTANCE OF 1334.40 FEET TO A STONE FOUND AT THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE WEST 270 DEGREES 08 MINUTES 22 SECONDS A DISTANCE OF 1340.42 FEET TO AN AXLE SHAFT FOUND AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE NORTH 359 DEGREES 21 MINUTES 22 SECONDS A DISTANCE OF 1328.30 FEET TO AN IRON ROD FOUND AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE EAST 89 DEGREES 52 MINUTES 49 SECONDS A DISTANCE OF 1337.20 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

PARCEL 2:
PART OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER AND PART OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, LYING EAST OF THE CENTER OF THE MIDDLE FORK OF THE VERMILION RIVER AND SOUTH OF THE CENTER OF BEAN CREEK BEING FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT AN AXLE SHAFT FOUND AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE SOUTH ON A LOCAL AZIMUTH OF 179 DEGREES 16 MINUTES 55 SECONDS ALONG THE EAST LINE OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 11 A DISTANCE OF 1049.78 FEET TO AN IRON ROD SET NEAR THE NORTH BANK OF SAID RIVER; THENCE SOUTH 179 DEGREES 16 MINUTES 55 SECONDS ALONG SAID EAST LINE 100 FEET MORE OR LESS TO THE CENTER OF SAID RIVER; THENCE NORTHWESTERLY AND NORTHEASTERLY ALONG THE CENTER OF SAID RIVER A DISTANCE OF 2680 FEET MORE OR LESS TO THE INTERSECTION OF THE CENTER OF BEAN CREEK; THENCE NORTHEASTERLY 77 DEGREES 37 MINUTES 33 SECONDS ALONG THE CENTER OF SAID CREEK A DISTANCE OF 270 FEET MORE OR LESS TO THE EAST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE SOUTH 179 DEGREES 21 MINUTES 22 SECONDS ALONG SAID EAST LINE 1018.3 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

PARCEL 4:
PART OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: COMMENCING AT AN IRON ROD SET AT THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 12; THENCE SOUTH ON A LOCAL AZIMUTH OF 179 DEGREES 13 MINUTES 13 SECONDS ALONG THE WEST LINE OF SAID NORTHWEST QUARTER A DISTANCE OF 46.00 FEET TO A MAG NAIL SET IN THE CENTER OF COUNTY HIGHWAY 15 FOR A PLACE OF BEGINNING; THENCE SOUTHEASTERLY 146 DEGREES 12 MINUTES 01 SECONDS ALONG SAID CENTER LINE A DISTANCE OF 147.85 FEET TO A MAG NAIL SET; THENCE SOUTHWESTERLY 232 DEGREES 21 MINUTES 59 SECONDS A DISTANCE OF 100.69 FEET TO AN IRON ROD SET ON THE WEST LINE OF SAID NORTHWEST QUARTER; THENCE NORTH 359 DEGREES 13 MINUTES 13 SECONDS ALONG SAID WEST LINE A DISTANCE OF 184.36 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A — Cross section line

23 — 23 — Transect line

45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4489000M N — 1000-meter Universal Transverse Mercator grid values, zone 16

1565000 FT — 5000-foot grid tick: Illinois State Plane East Coordinate System, 3776 zone (FIPSZONE 1201) Transverse Mercator

DX5510 X — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 16, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150D

FIRM

FLOOD INSURANCE RATE MAP

VERMILION COUNTY, ILLINOIS

AND INCORPORATED AREAS

PANEL 150 OF 525

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

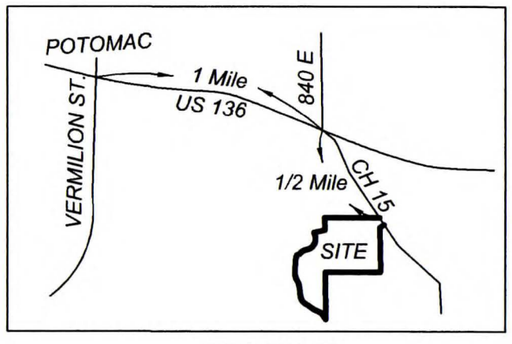
COMMUNITY	NUMBER	PANEL	SUFFIX
POTOMAC, VILLAGE OF	170799	0150	D
VERMILION COUNTY	170935	0150	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

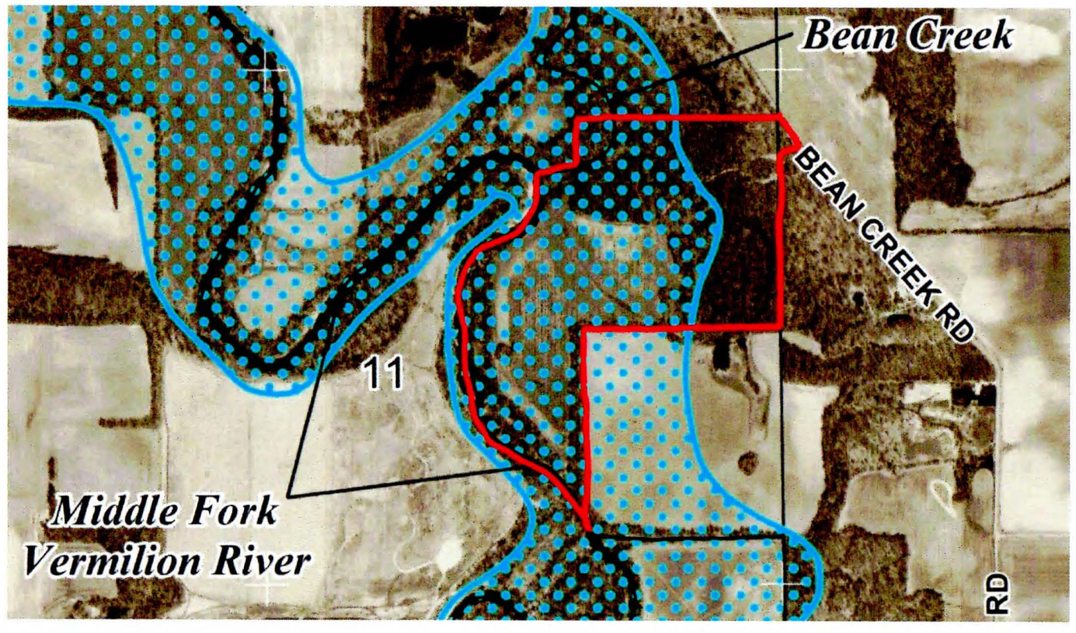
MAP NUMBER
17183C0150D

EFFECTIVE DATE
MAY 16, 2012

Federal Emergency Management Agency



VICINITY MAP
SCALE 1"=3700'



PART OF FEMA FLOOD MAP
SCALE 1"=1000'

S.W. ROSS LAND SURVEYING
SURVEYING & MAPPING
222 N. ALABAMA ST.
CHRISMAN, ILLINOIS
(217) 269-2750 scottross3106@comcast.net

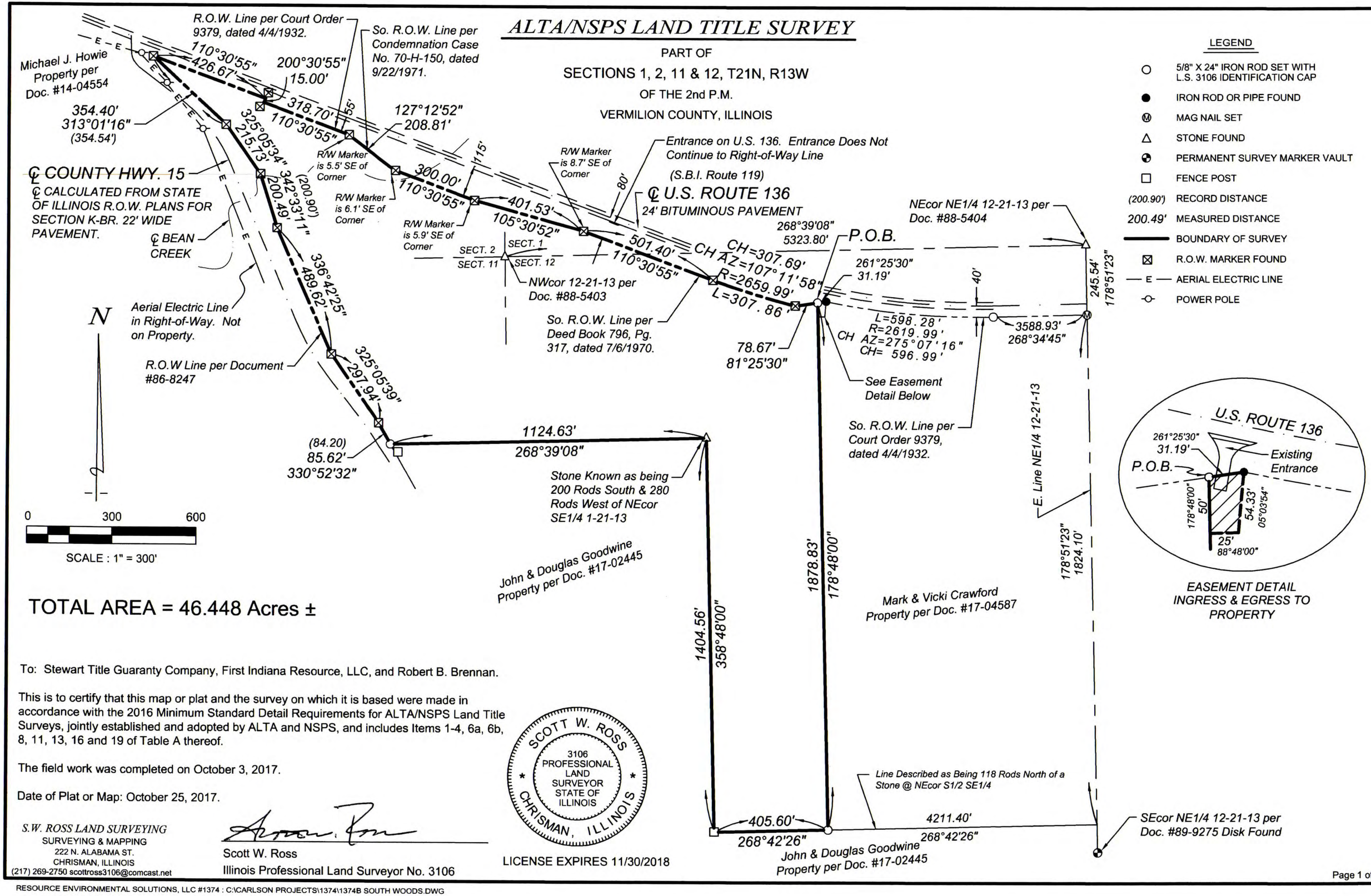
ALTA/NSPS LAND TITLE SURVEY

PART OF

SECTIONS 1, 2, 11 & 12, T21N, R13W

OF THE 2nd P.M.

VERMILION COUNTY, ILLINOIS



LEGEND

- ○ 5/8" X 24" IRON ROD SET WITH L.S. 3106 IDENTIFICATION CAP
- ● IRON ROD OR PIPE FOUND
- Ⓜ MAG NAIL SET
- △ STONE FOUND
- ◓ PERMANENT SURVEY MARKER VAULT
- □ FENCE POST
- (200.90') RECORD DISTANCE
- 200.49' MEASURED DISTANCE
- BOUNDARY OF SURVEY
- ⊠ R.O.W. MARKER FOUND
- — E — AERIAL ELECTRIC LINE
- POWER POLE

EASEMENT DETAIL
INGRESS & EGRESS TO PROPERTY

TOTAL AREA = 46.448 Acres ±

To: Stewart Title Guaranty Company, First Indiana Resource, LLC, and Robert B. Brennan.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1-4, 6a, 6b, 8, 11, 13, 16 and 19 of Table A thereof.

The field work was completed on October 3, 2017.

Date of Plat or Map: October 25, 2017.

S.W. ROSS LAND SURVEYING
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Scott W. Ross
Illinois Professional Land Surveyor No. 3106

SCOTT W. ROSS
3106 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS
CHRISMAN, ILLINOIS

LICENSE EXPIRES 11/30/2018

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC #1374 : C:\CARLSON PROJECTS\1374\1374B SOUTH WOODS.DWG

TABLE "A" NOTES FROM ALTA/NSPS LAND TITLE SURVEYS

ITEM	
2	NO ADDRESS OF PROPERTY SHOWN OR OBSERVED.
3	PART OF THIS PROPERTY IS LOCATED IN FLOOD ZONE "A" AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT FLOOD INSURANCE RATE MAP NUMBER 17183C0150D EFFECTIVE DATE 5/16/2012. SEE SHEET 3 OF 3 FOR MAPS.
4	TOTAL AREA = 46.448 ACRES MORE OR LESS.
6(a)	PROPERTY IS NOT ZONED PER VERMILION COUNTY RECORDERS OFFICE .
6(b)	NO CURRENT ZONING CLASSIFICATION. NO BUILDING SETBACKS
11	NO OBSERVED EVIDENCE OF UTILITIES ON THIS PROPERTY.
16	THERE IS NO OBSERVED EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

TABLE "B" NOTES FROM COMMITMENT FOR TITLE INSURANCE FILE NO. 17000332938

I HAVE REVIEWED ALL ITEMS IN SCHEDULE "B" OF STEWART TITLE GUARANTY COMPANY FILE NUMBER 17000332938, EFFECTIVE DATE AUGUST 24, 2017 AND ARE SHOWN ON THIS SURVEY. I HAVE NOT MADE A SEPARATE SEARCH OF THE RECORDS FOR EASEMENTS, DEDICATIONS, VACATIONS OR RIGHT-OF-WAYS.

ITEM #4: IN SCHEDULE "B PART TWO" EASEMENT IS ON PROPERTY SURVEYED. IT IS A BLANKET EASEMENT FOR REPAIRING, MAINTAINING AND REPLACING DRAINAGE TILE TO THE PROPERTY LYING EAST OF AND ADJACENT TO THE PROPERTY SURVEYED.

NO BUILDINGS OBSERVED

GENERAL NOTES

AZIMUTHS SHOWN FOR DESCRIPTION PURPOSES ONLY, BASED ON ASSUMED DATUM.

NO OBSERVED UTILITIES ARE ON THE PROPERTY SURVEYED. UTILITY SHOWN IN STATE R.O.W.

SUMMARY OF RIGHT-OF-WAYS AND EASEMENTS

TYPE	DOCUMENT #	NOTE
RIGHT-OF-WAY	86-8247	SHOWN ON PLAT, WARRANTY DEED
RIGHT-OF-WAY	796/317	SHOWN ON PLAT, WARRANTY DEED
RIGHT-OF-WAY	70-H-150	SHOWN ON PLAT, CONDEMNATION PROCEEDING
RIGHT-OF-WAY	9379	SHOWN ON PLAT, COURT ORDER
EASEMENT	17-05921	IT IS A BLANKET EASEMENT FOR DRAINAGE TO THE PROPERTY TO THE EAST

S.W. ROSS LAND SURVEYING
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CHRISMAN, ILLINOIS
(217) 269-2750 scottross3106@comcast.net

LEGAL DESCRIPTION FROM STEWART TITLE GUARANTY COMPANY, FILE NO. 17000332938.
EFFECTIVE DATE: AUGUST 24, 2017 at 8:00 am. SHOWN AS PARCEL 3, TRACT 1

PART OF SECTIONS 1, 2, 11 AND 12, TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: COMMENCING AT A STONE FOUND AT THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 12; THENCE SOUTH ON A LOCAL AZIMUTH OF 178 DEGREES 51 MINUTES 23 SECONDS ALONG THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 12 A DISTANCE OF 245.54 FEET TO A MAG NAIL SET ON THE EXTENSION OF THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER COURT ORDER 9379, DATED APRIL 4, 1932; THENCE WEST 268 DEGREES 34 MINUTES 45 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 3588.93 FEET TO AN IRON ROD SET; THENCE NORTHWESTERLY AROUND A CURVE TO THE RIGHT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 598.28 FEET, SAID CURVE HAVING A RADIUS OF 2619.99 FEET, A CHORD AZIMUTH OF 275 DEGREES 07 MINUTES 16 SECONDS AND A CHORD LENGTH OF 596.99 FEET TO AN IRON ROD FOUND; THENCE SOUTHWESTERLY 261 DEGREES 25 MINUTES 30 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 31.19 FEET TO AN IRON ROD SET FOR A PLACE OF BEGINNING;THENCE SOUTH 178 DEGREES 48 MINUTES 00 SECONDS A DISTANCE OF 1878.83 FEET TO AN IRON ROD SET; THENCE WEST 268 DEGREES 42 MINUTES 26 SECONDS A DISTANCE OF 405.60 FEET TO A FENCE POST; THENCE NORTH 358 DEGREES 48 MINUTES 00 SECONDS A DISTANCE OF 1404.56 FEET TO A STONE FOUND; THENCE WEST 268 DEGREES 39 MINUTES 08 SECONDS A DISTANCE OF 1124.63 FEET TO AN IRON ROD SET ON THE EAST RIGHT OF WAY LINE OF COUNTY HIGHWAY 15 PER DOCUMENT NUMBER 86-8247 IN THE OFFICE OF THE VERMILION COUNTY RECORDER; THENCE NORTHWESTERLY 330 DEGREES 52 MINUTES 32 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 85.62 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 325 DEGREES 05 MINUTES 39 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 297.94 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 336 DEGREES 42 MINUTES 25 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 489.62 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 342 DEGREES 33 MINUTES 11 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 200.49 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 325 DEGREES 05 MINUTES 34 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 215.73 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHWESTERLY 313 DEGREES 01 MINUTES 16 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 354.40 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER COURT ORDER 9379, DATED APRIL 4,1932 A DISTANCE OF 426.67 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHWESTERLY 200 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 15.00 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 318.70 FEET; THENCE SOUTHEASTERLY 127 DEGREES 12 MINUTES 52 SECONDS ALONG THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER CONDEMNATION CASE 70-H-150, DATED SEPTEMBER 22, 1971 A DISTANCE OF 208.81 FEET; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 300.00 FEET; THENCE SOUTHEASTERLY 105 DEGREES 30 MINUTES 52 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 401.53 FEET; THENCE SOUTHEASTERLY 110 DEGREES 30 MINUTES 55 SECONDS ALONG SAID RIGHT OF WAY LINE AND SOUTH RIGHT OF WAY LINE PER DEED BOOK 796 PAGE 317 IN THE OFFICE OF THE VERMILION COUNTY, RECORDER A DISTANCE OF 501.40 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE SOUTHEASTERLY AROUND A CURVE TO THE LEFT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 307.86 FEET, SAID CURVE HAVING A RADIUS OF 2659.99 FEET, A CHORD AZIMUTH OF 107 DEGREES 11 MINUTES 58 SECONDS AND A CHORD LENGTH OF 307.69 FEET TO A CONCRETE RIGHT OF WAY MARKER; THENCE NORTHEASTERLY 81 DEGREES 25 MINUTES 30 SECONDS A DISTANCE OF 78.67 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

ALSO AN EASEMENT FOR THE PURPOSE OF INGRESS AND EGRESS TO THE ABOVE DESCRIBED REAL ESTATE FROM AN EXISTING ENTRANCE ON U.S. ROUTE 136 BEING FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT THE PLACE OF BEGINNING OF THE ABOVE DESCRIBED REAL ESTATE; THENCE SOUTH 178 DEGREES 48 MINUTES 00 SECONDS 50 FEET; THENCE EAST 88 DEGREES 48 MINUTES 00 SECONDS 25 FEET; THENCE NORTHERLY 05 DEGREES 03 MINUTES 54 SECONDS 54.33 FEET TO AN IRON ROD SITUATED ON THE SOUTH RIGHT OF WAY LINE OF U.S. ROUTE 136; THENCE SOUTHWESTERLY 261 DEGREES 25 MINUTES 30 SECONDS 31.19 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A — Cross section line

23 — 23 — Transect line

45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4489000M N — 1000-meter Universal Transverse Mercator grid values, zone 16

1565000 FT — 5000-foot grid tick: Illinois State Plane East Coordinate System, 3776 zone (FIPSZONE 1201) Transverse Mercator

DX5510X — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 16, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150D

FIRM

FLOOD INSURANCE RATE MAP

VERMILION COUNTY, ILLINOIS

AND INCORPORATED AREAS

PANEL 150 OF 525

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

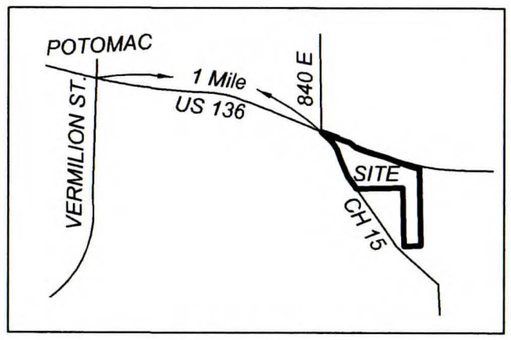
COMMUNITY	NUMBER	PANEL	SUFFIX
POTOMAC, VILLAGE OF	170799	0150	D
VERMILION COUNTY	170935	0150	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

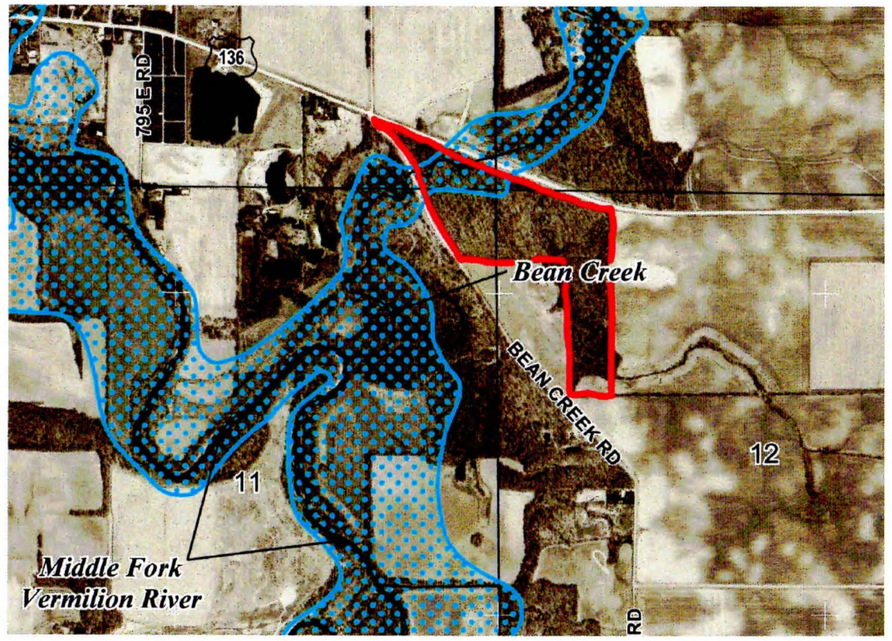
MAP NUMBER
17183C0150D

EFFECTIVE DATE
MAY 16, 2012

Federal Emergency Management Agency



VICINITY MAP
SCALE 1"=3700'



PART OF FEMA FLOOD MAP
SCALE 1"=1600'

S.W. ROSS LAND SURVEYING
SURVEYING & MAPPING
222 N. ALABAMA ST.
CHRISMAN, ILLINOIS
(217) 269-2750 scottross3106@comcast.net

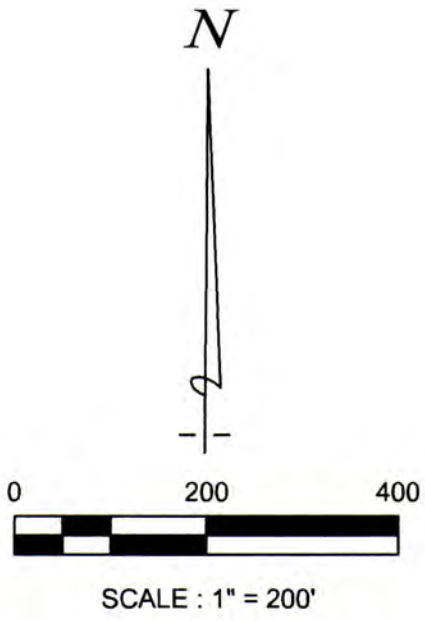
ALTA/NSPS LAND TITLE SURVEY

PART OF THE

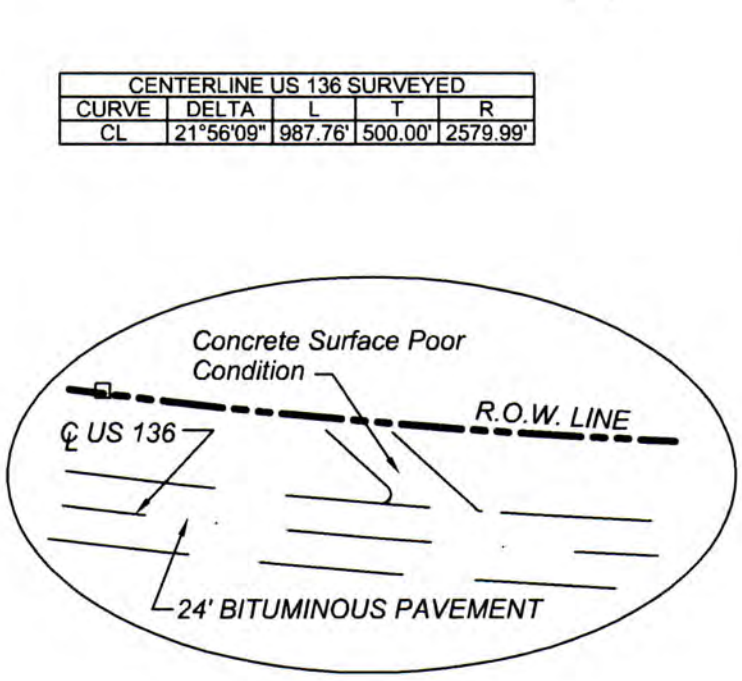
S1/2 SECTION 1 & N1/2 SECTION 12, T21N, R13W

OF THE 2nd P.M.

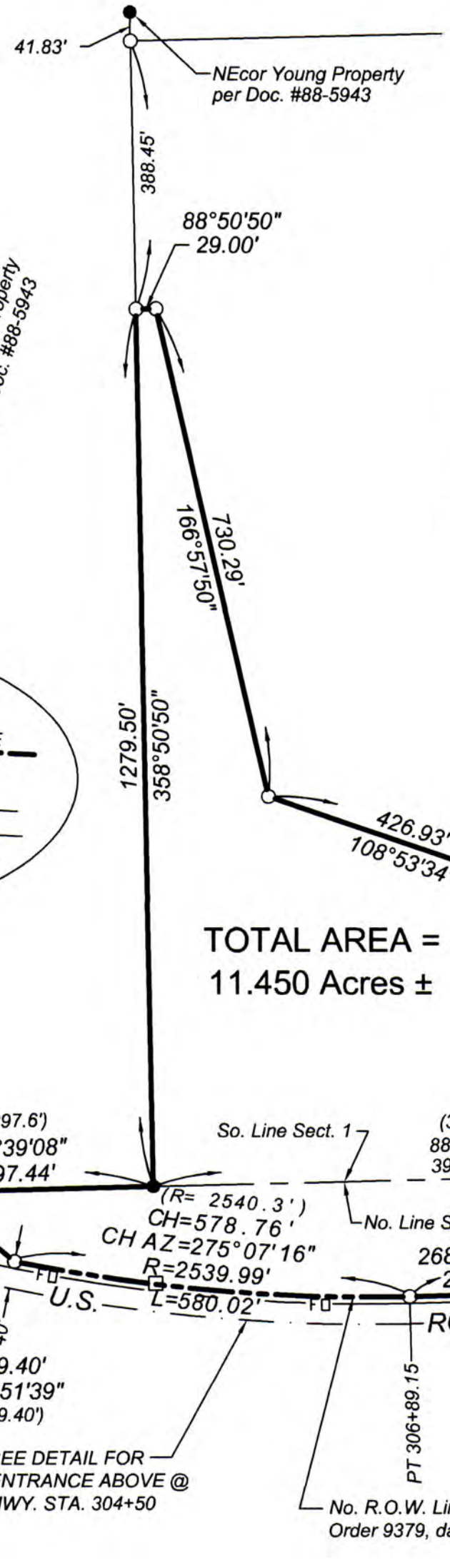
VERMILION COUNTY, ILLINOIS



CENTERLINE US 136 SURVEYED				
CURVE	DELTA	L	T	R
CL	21°56'09"	987.76'	500.00'	2579.99'



DETAIL HIGHWAY ENTRANCE
NO SCALE



LEGEND

○	5/8" X 24" IRON ROD SET WITH L.S. 3106 IDENTIFICATION CAP
●	IRON ROD OR PIPE FOUND
Ⓜ	MAG NAIL SET
△	STONE FOUND
◓	PERMANENT SURVEY MARKER VAULT
□	FENCE POST
(190.40')	RECORD DISTANCE
426.93'	MEASURED DISTANCE
———	BOUNDARY OF SURVEY
—FO—	FIBER OPTIC LINE

To: Stewart Title Guaranty Company, First Indiana Resource, LLC, and Robert B. Brennan.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1-4, 6a, 6b, 8, 11, 13, 16 and 19 of Table A thereof.

The field work was completed on October 3, 2017.

Date of Plat or Map: October 25, 2017.

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Scott W. Ross
Illinois Professional Land Surveyor No. 3106

SCOTT W. ROSS
3106
PROFESSIONAL
LAND
SURVEYOR
STATE OF
ILLINOIS
CHRISMAN, ILLINOIS

LICENSE EXPIRES 11/30/2018

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC #1374 : C:\CARLSON PROJECTS\1374\1374A NORTH WOODS.DWG

TABLE "A" NOTES FROM ALTA/NSPS LAND TITLE SURVEYS

ITEM	
2	NO ADDRESS OF PROPERTY SHOWN OR OBSERVED.
3	NO PART OF THIS PROPERTY IS LOCATED IN A FLOOD ZONE "A" AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT FLOOD INSURANCE RATE MAP NUMBER 17183C0150D EFFECTIVE DATE 5/16/2012.
4	TOTAL AREA = 11.450 ACRES MORE OR LESS.
6(a)	PROPERTY IS NOT ZONED PER VERMILION COUNTY RECORDERS OFFICE .
6(b)	NO CURRENT ZONING CLASSIFICATION. NO BUILDING SETBACKS
11	NO OBSERVED EVIDENCE OF UTILITIES ON THIS PROPERTY.
16	THERE IS NO OBSERVED EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

TABLE "B" NOTES FROM COMMITMENT FOR TITLE INSURANCE FILE NO. 17000332938

I HAVE REVIEWED ALL ITEMS IN SCHEDULE "B" OF STEWART TITLE GUARANTY COMPANY FILE NUMBER 17000332938, EFFECTIVE DATE AUGUST 24, 2017 AND ARE SHOWN ON THIS SURVEY. I HAVE NOT MADE A SEPARATE SEARCH OF THE RECORDS FOR EASEMENTS, DEDICATIONS, VACATIONS OR RIGHT-OF-WAYS.

ITEM #4: IN SCHEDULE "B PART TWO" EASEMENT IS ON PROPERTY SURVEYED. IT IS A BLANKET EASEMENT FOR REPAIRING, MAINTAINING AND REPLACING DRAINAGE TILE TO THE PROPERTY LYING EAST OF AND ADJACENT TO THE PROPERTY SURVEYED.

NO BUILDINGS OBSERVED

GENERAL NOTES

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SUMMARY OF RIGHT-OF-WAYS AND EASEMENTS

TYPE	DOCUMENT #	NOTE
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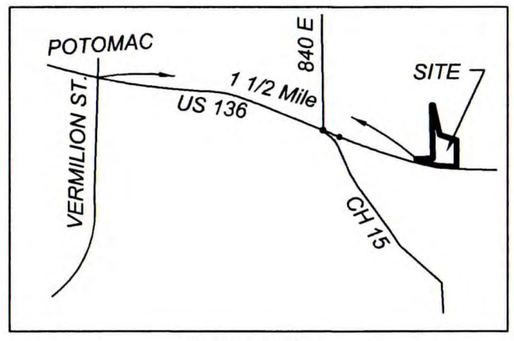
RIGHT-OF-WAY	9379	SHOWN ON PLAT, COURT ORDER
EASEMENT	17-05921	IT IS A BLANKET EASEMENT FOR DRAINAGE TO THE PROPERTY TO THE EAST

LEGAL DESCRIPTION FROM STEWART TITLE GUARANTY COMPANY, FILE NO. 17000332938.
EFFECTIVE DATE: AUGUST 24, 2017 at 8:00 am. SHOWN AS PARCEL 3, TRACT 2

PART OF THE SOUTH HALF OF SECTION 1, AND PART OF THE NORTH HALF OF SECTION 12 ALL IN TOWNSHIP 21 NORTH, RANGE 13 WEST OF THE 2ND P.M., VERMILION COUNTY, ILLINOIS, BEING FURTHER DESCRIBED AS FOLLOWS: COMMENCING AT A STONE FOUND AT THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 12; THENCE SOUTH ON A LOCAL AZIMUTH OF 178 DEGREES 51 MINUTES 23 SECONDS ALONG THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 12 A DISTANCE OF 165.54 FEET TO A MAG NAIL SET ON THE EXTENSION OF THE NORTH RIGHT OF WAY LINE OF U.S. ROUTE 136; THENCE WEST 268 DEGREES 34 MINUTES 45 SECONDS ALONG THE NORTH RIGHT OF WAY LINE OF U.S. ROUTE 136 PER COURT ORDER 9379, DATED APRIL 4, 1932 A DISTANCE OF 3387.61 FEET TO AN IRON ROD SET FOR A PLACE OF BEGINNING; THENCE CONTINUING WEST 268 DEGREES 34 MINUTES 45 SECONDS ALONG SAID RIGHT OF WAY LINE A DISTANCE OF 201.71 FEET TO AN IRON ROD SET; THENCE NORTHWESTERLY AROUND A CURVE TO THE RIGHT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 580.02 FEET, SAID CURVE HAVING A RADIUS OF 2539.99 FEET, A CHORD AZIMUTH OF 275 DEGREES 07 MINUTES 16 SECONDS, AND A CHORD LENGTH OF 578.76 FEET TO AN IRON ROD SET; THENCE NORTHWESTERLY 309 DEGREES 51 MINUTES 39 SECONDS ALONG SAID RIGHT OF WAY LINE PER DEED BOOK 796 PAGE 317 IN THE OFFICE OF THE VERMILION COUNTY RECORDER A DISTANCE OF 109.40 FEET TO AN IRON ROD FOUND; THENCE NORTHWESTERLY AROUND A CURVE TO THE RIGHT ALONG SAID RIGHT OF WAY LINE AN ARC LENGTH OF 115.19 FEET, SAID CURVE HAVING A RADIUS OF 2490.16 FEET, A CHORD AZIMUTH OF 285 DEGREES 12 MINUTES 26 SECONDS, AND A CHORD LENGTH OF 115.18 FEET TO AN IRON ROD FOUND SITUATED ON THE SOUTH LINE OF SAID SECTION 1; THENCE EAST 88 DEGREES 39 MINUTES 08 SECONDS ALONG SAID SOUTH LINE A DISTANCE OF 397.44 FEET TO AN IRON ROD FOUND; THENCE NORTH 358 DEGREES 50 MINUTES 50 SECONDS A DISTANCE OF 1279.50 FEET TO AN IRON ROD SET; THENCE EAST 88 DEGREES 50 MINUTES 50 SECONDS A DISTANCE OF 29.00 FEET TO AN IRON ROD SET; THENCE SOUTHEASTERLY 166 DEGREES 57 MINUTES 50 SECONDS A DISTANCE OF 730.29 FEET TO AN IRON ROD SET; THENCE SOUTHEASTERLY 108 DEGREES 53 MINUTES 34 SECONDS A DISTANCE OF 426.93 FEET TO AN IRON ROD SET; THENCE SOUTH 179 DEGREES 36 MINUTES 41 SECONDS A DISTANCE OF 586.47 FEET TO THE PLACE OF BEGINNING, SITUATED IN VERMILION COUNTY, ILLINOIS.



VICINITY MAP
SCALE 1"=3700'

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Appendix C: Bat Mitigation Site Assessments

Indiana bat and northern long-eared bat Phase I Habitat Survey Report Sheets property Vermilion County, Illinois

Prepared For:

USFWS Rock Island Field Office

Prepared By:

Alex Silvis, Kevin Reilly, Tony Jenkins

July 9, 2019

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Table of Tables

Technical Summary

Project name:	Sheets property bat mitigation site
Site ID:	Sheets
County and state:	Vermilion County, Illinois
General site coordinates:	40.296815, -87.777423
Survey type:	Phase I habitat
Site area:	123.384 acres
Survey dates:	25 – 26 February, 201
Surveyor:	Alexander Silvis, PhD
Habitat condition:	Predominantly forested. Suitable high-quality Indiana bat and northern long-eared bat maternity habitat. Water sources and potential roost trees abundant.

Project Background

This survey is intended to document habitat conditions and suitability for Indiana bats and northern long-eared bats at the Sheets property bat mitigation site.

Project Location

The Sheets property is an approximately 123.38 acre parcel located in north-central Vermilion County, Illinois in the Middle Fork Vermillion watershed (Figure 1; general coordinates: 40.296815, -87.777423, HUC10 id 0512010905). The property lies approximately 1.2 miles east of Potomac, and 14 miles northwest Danville, and 5 miles north of Horseshoe Bottom Nature Preserve. The property is approximately 10.5 miles downstream of known Indiana bat and northern long-eared bat maternity sites and is adjacent to properties with confirmed presence of Indiana bats and northern long-eared bats. Landcover on the parcel primarily is forested (Figure 2). Location of the property relative to these existing bat records indicates both suitable habitat within the broader area surrounding the property, as well as possible current presence of both species.

Methods

Habitat Assessment

A desktop Phase I habitat assessment was performed in accordance with the 2018 Range-wide Indiana bat summer survey guidance and validated using a field habitat assessment (USFWS 2018). Landcover condition and canopy cover level were assessed using the USGS National Land Cover Dataset (NLCD; 2011 edition) and National Agricultural Imagery Program (NAIP) imagery. Stand age was assessed using the USGS LandCarbon forest stand age data. Amount and extent of streams and wetlands on site were assessed by type using the USGS National Hydrography Dataset and the USFWS National Wetlands Inventory, respectively.

Field assessment was performed to confirm the desktop habitat assessment and further classify water resources by number, type, and amount, and forest resources by dominant cover type, canopy cover, relative tree size distribution, species composition, and relative availability of

potential roosts, with multiple data points collected within each forest type to provide a summary of that condition. Representative photographs were taken as references for dominant habitat conditions.

Results

Habitat Overview

Analysis of NAIP imagery and NLCD data indicates that approximately 94% percent of the property is covered by forest, with the remainder covered by agricultural fields and/or early successional grassland and shrub habitat. Forest stand age data suggests that forest on property is approximately 60 years old, with exception of a white pine (*Pinus strobus*) plantation planted in 2006. Analysis of historical aerial imagery dating to 1998 identified no evidence of forest clearing from that time to present. USGS NLCD canopy cover data indicates canopy cover in forest ranging from 63 to 85%. National Wetlands Inventory data and National Hydrology Dataset data indicate presence of both wetland and stream features on the property.

Field assessment confirmed predominance of forest landcover on site, mature closed-canopy forest conditions, and presence of forested and riverine wetlands. Multiple forest cover types were identified on the property. Mean overall canopy closure 76% in the canopy, 74% in the midstory, and 54% in the understory. Tree diameter distribution was relatively balanced between large (>15" DBH) and medium (9-15" DBH) stems, with overall averages 31% and 42% of trees in these size classes, respectively. Understory cover generally was low due to the closed canopy conditions, and saturation of bottomland areas.

Landcover

Six land cover types were identified on the property; bottomland hardwood forest, mixed hardwood forest, upland hardwood forest, white pine plantation, early successional grassland/shrub and agricultural field (Table 1; Appendix 1). Forest collectively represented 94% of all landcover on site.

Table 1. Approximate habitat acreages and percent landcover for the Sheets property, Vermilion County, Illinois.

Landcover Type	Percent Landcover	Acres
Bottomland hardwood	42.3%	52.2
Upland hardwood	26.0%	32.1
White pine	13.0%	16.1
Mixed hardwood	12.4%	15.4
Early successional	4.0%	4.9
Field	2.2%	2.8

Bottomland hardwood forest is the most prevalent land cover type, covering approximately 42% of the property (Figure 1); three data points were collected in this forest type. Bottomland hardwood forest on the property generally is mature, with a closed canopy and open understory, with moderate midstory regeneration (Table 2). Overstory species composition in bottomland hardwood forest predominantly was split between cottonwoods (*Populus deltoides*; average of 32% of trees at sample points), silver maples (*Acer saccharinum*; 35%), and hackberry (*Celtis occidentalis*; 28%; note that percentages are not normalized across plots and so do not sum to 100%). Midstory composition was similar to overstory condition with dominance of cottonwood (27%), silver maple (27%), and hackberry (28%). Understory cover was low, and seasonal

flooding appeared to be common. Mean canopy cover was 85%, Approximately 15% of all canopy trees in this forest type exhibited exfoliating bark or cavities suitable for Indiana bats and northern long-eared bats. Water availability was high in this forest type, with both standing and flowing water sources.

Upland hardwoods were the second most abundant landcover type, and exhibited generally closed canopy with frequent gaps, and relatively high midstory structure (4 data points). Forest canopy was dominated by white oak (*Quercus alba*; 60%), red oak (*Q. rubra*; 40%), and shagbark hickory (*Carya ovata*; 21%; 4 sample plots). Midstory composition was more diverse, with large components of honey locust (*Gleditsia triacanthos*; 30%), hackberry (26%) white oak (20%), and shagbark hickory (20%). This forest type generally was younger than other forest types on site, and small stems accounted for a relatively larger proportion of stems. Canopy cover concordantly was lower than in older forest types, with a mean value of 66%. However, residual canopy trees generally were older than average forest conditions within other forest types, the result of a historical shelterwood timber harvesting. As a function of the older age of the canopy trees, PRT density was relatively high within this stand type, with approximately 20% of all canopy trees in this forest type exhibited exfoliating bark or cavities suitable for Indiana bats and northern long-eared bats.

White pine plantation consisted almost entirely of white pines (100%), but a small number of additional species including red maples (*Acer rubrum*) and green ash (*Fraxinus pennsylvanica*) captured some canopy position in areas of poor initial survival within the planting (< 2%; 1 data point).

Mixed hardwood forest contained a mix of shade adapted and shade intolerant species, and with white oak (50%), shagbark hickory (28%), and white ash (*Fraxinus americana*; 20%) being dominant in the overstory (3 data points). Red maple (50%) was dominant in the midstory, but red oak (18%) and white ash (20%) were common. Overall stand age was greatest in this forest type, as reflected in the skew of diameter distribution toward large stems relative to other forest types on the property. Canopy cover was contiguous, and midstory conditions were relatively open but structure was common. Mean canopy cover was 78%. Approximately 13% of all canopy trees in this forest type exhibited exfoliating bark or cavities suitable for Indiana bats and northern long-eared bats.

Table 2. Tree diameter distribution percentages in large (>15" DBH), medium (9-15" DBH), and small (3-8" DBH) size classes by forest type on the Sheets property, Vermilion County, Illinois.

	Stem size by size class			
Forest Type	**Large**	**Medium**	**Small**	**Canopy Cover**
Bottomland hardwood	21.7	45.0	33.3	85%
Mixed hardwood	55.0	41.7	23.3	78%
Upland hardwood	15.5	37.5	47.0	66%
White pine plantation	49.0	49.0	2.0	85%

Fallow agricultural fields and early successional/shrub comprised a small component of the site.

Potential Roost Trees

Potential primary and secondary roost trees (PRTs) were identified in all forest landcover classes except white pine plantation (Appendix 2). Roosting habitat for Indiana bats and northern long-eared bats on-site includes a range of tree species as well as roosting conditions. Despite a relatively young overall stand age, the few large trees present in the upland hardwood landcover class generally were remnants from historical timber harvest and therefore older than most other trees on site, and frequently provided suitable roosting conditions (20% of all trees). As a result, the upland hardwood forest class provided the greatest relative availability of PRTs. Bottomland hardwood forest and mixed hardwood also exhibited a relatively high density of PRTs, with approximately 20% of all canopy trees providing exfoliating bark or cavities suitable for Indiana bat and northern long-eared roosting. Although 15% of all white pines exhibited exfoliating bark, this forest cover class did not provide suitable roosting opportunities.

PRTs on site generally consisted of canopy emergent snags and snags within canopy openings. Preferred roost species within the overstory and midstory of these forest types were common and included red oak, white oak, and shagbark hickory. Cavity trees were common in all canopy positions, providing an abundance of potential roosts for northern long-eared bats.

Water Resources

The primary water sources available to bats on the property are the Middle Fork Vermillion River, which comprises the eastern border of the property, and Bean Creek, which passes through the northern portion of the property. Both provide connectivity to forested habitat off-site, and both provide adequate drinking and foraging resources for Indiana bats and northern long-eared bats. Intermittent streams generally are open and contain low pools that may provide suitable drinking sources for bats after flow events.

National Hydrology dataset data indicate presence of approximately 1,389 linear feet of intermittent stream, 146 linear feet of perennial stream (Bean Creek), and a small amount of ephemeral streams completely within the property. On-site investigation confirmed presence of water features, and identified presence of approximately 200 additional linear feet of intermittent stream. Although not entirely within the property, the Middle Fork Vermillion River constitutes the westernmost property border and provides approximately 2,800 linear feet of perennial stream directly connected to the property.

National Wetland Inventory data show approximately 28.5 acres of freshwater forested/shrub wetlands, and 2.1 acres of riverine wetlands on site. On-site investigation confirmed considerable acreage of wetland conditions, including the bottomland hardwood forest. Seasonally standing water within bottomland hardwood forest wetlands will provide suitable drinking sources for bats, as well as high quality foraging areas.

Flyways

A small network of closed-canopy trails provides suitable flyways across the property, and linkage among habitat types. Additionally, streams on site generally were open and accessible to bats, and provide additional suitable flyways, including to forested habitat offsite.

Conclusion

The Sheets property represents considerable forested acreage of suitable habitat in close proximity to known historical and recent records of Indiana bats and northern long-eared bats. Protection of this property will maintain a mix of high quality habitats for current and future use by

both northern long-eared and Indiana bats, and will prevent potential loss of this habitat. Proximity and connectivity to existing conservation via the Middle Fork Vermillion River provides benefits of scale, and, increases the overall connectivity of forested habitat in this landscape.

Literature Cited

United States Fish and Wildlife Service (USFWS). 2018. Range-wide Indiana bat summer survey guidelines. Updated April 2018.

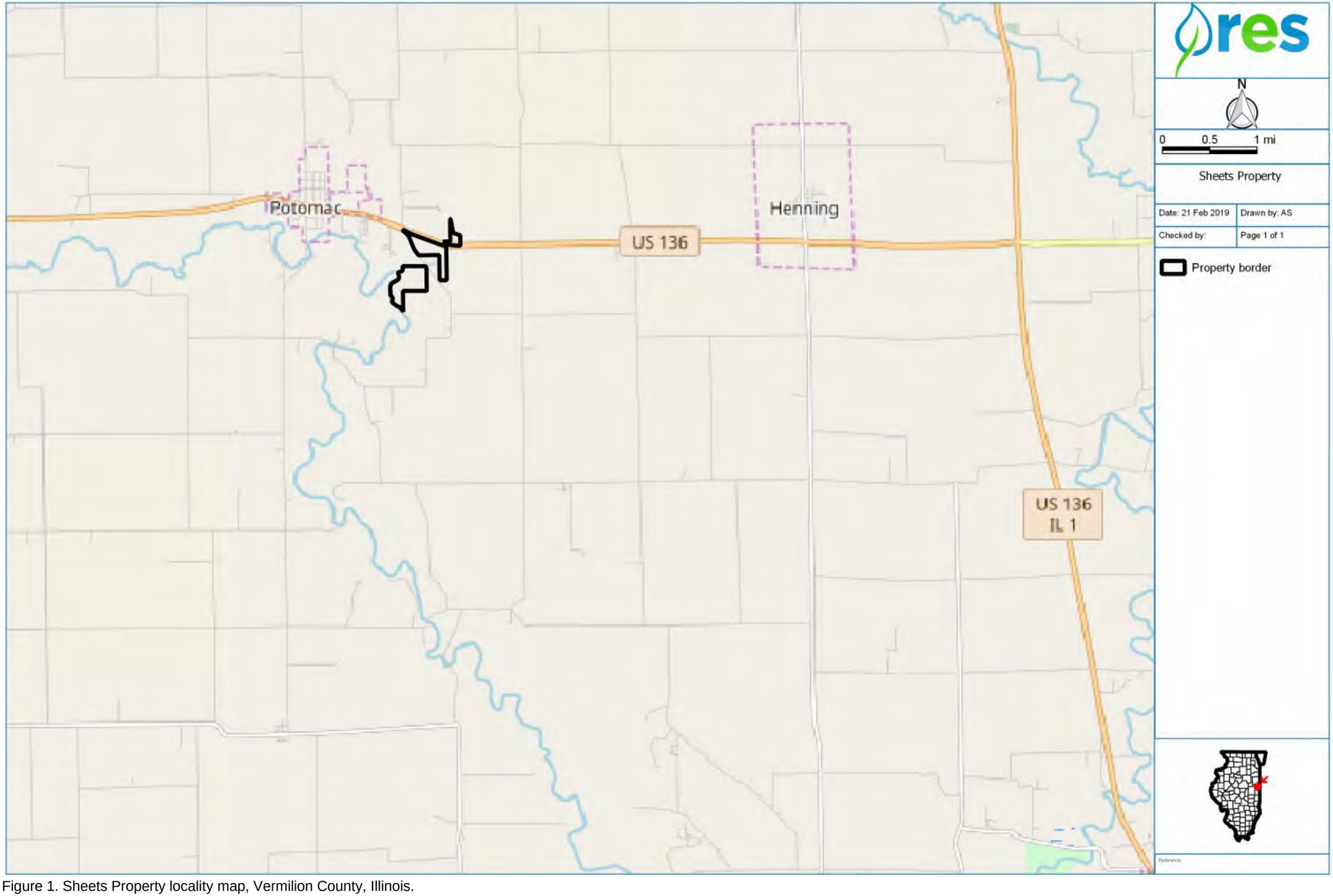

Figure 1. Sheets Property locality map, Vermilion County, Illinois.

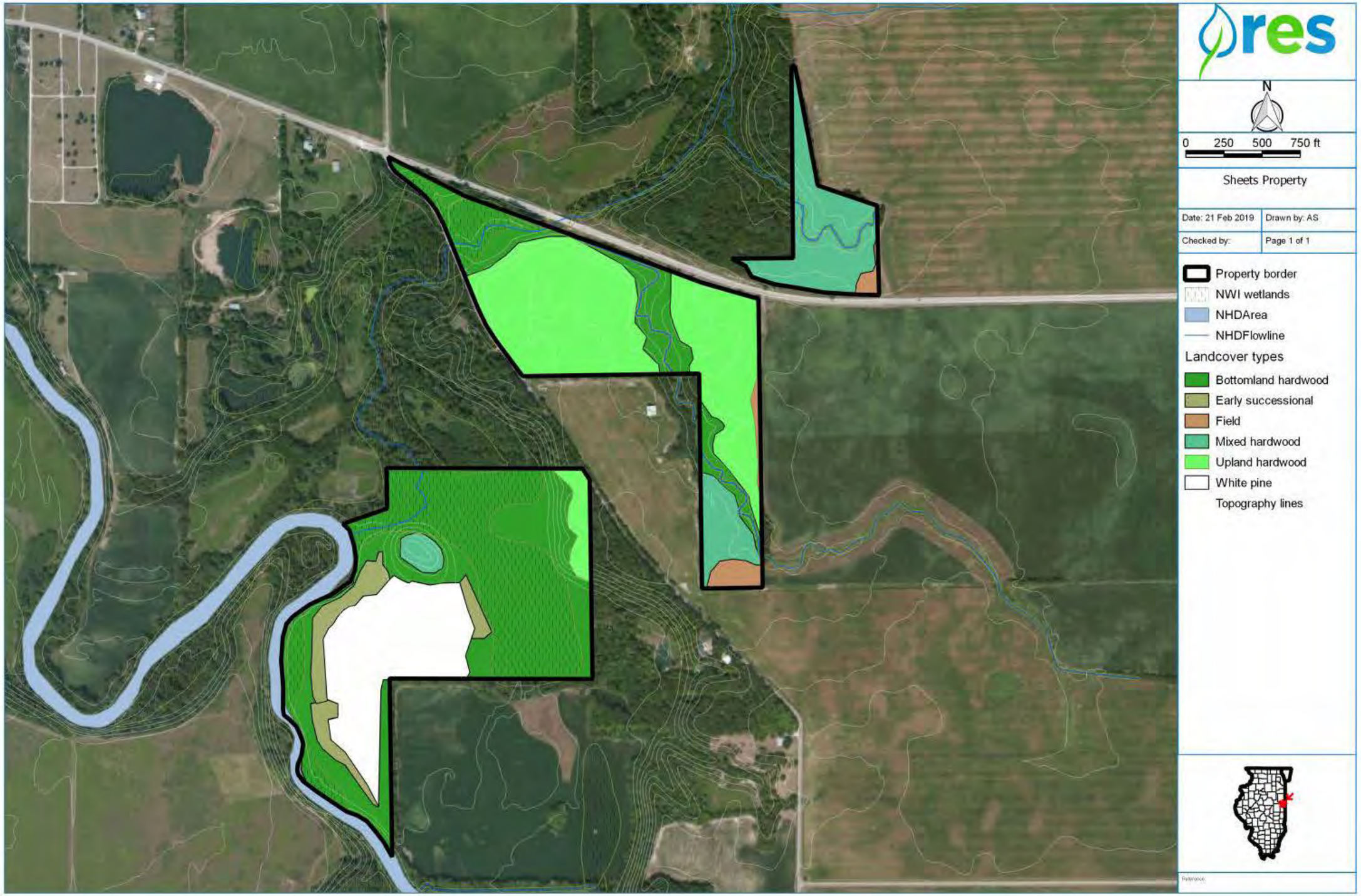

Figure 2. Habitat types on the Sheets parcel, Vermilion County, Illinois. Topographic lines and streams are included for reference. Wetlands are indicated across habitat types with stippling.

Surveyor qualifications

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Dr. Silvis has a decade of experience working with threatened and endangered bats and bat acoustics. Dr. Silvis has served as the principal investigator for numerous bat research projects across the eastern United States, which have resulted in >15 peer-reviewed publications, technical publications, and book chapters, and >30 technical presentations. Dr. Silvis serves as an advisor to the U.S. Fish and Wildlife Service on the evaluation of automated acoustic software and its application for surveys of threatened and endangered bats, and, is an instructor for the National Conservation Training Center course on the use of acoustics for bat regulatory surveys. Additionally, Dr. Silvis is an editor for an upcoming international handbook on the use of bat acoustics.

In addition to experience with acoustics, Dr. Silvis has directed and co-directed northern long-eared bat and Indiana bat that included mist-netting, harp-trapping, identifying, weighing, measuring, sexing, wing-punching, banding, radio-tagging and radio-tracking 100's of individuals (northern long-eared bat: >120 at Fort Knox, numerous elsewhere; Indiana bat: >12 at Fernow Experimental Forest, >12 across locations in Virginia; 5 in central Ohio). Estimated total hours in mist-netting: >810; harp-trapping: >84; radio-tracking: >950; handing and processing: >150.

Locations of Dr. Silvis' work include Zaleski State Forest, Ohio (2008-2011); Richland Furnace State Forest, Ohio (2008-2011); Old Woman Creek, Ohio (2009-2011); Fort Knox, Kentucky (2011-2014, 2017); Fort AP Hill, Virginia (2014-2017); Fort Lee, Virginia (2015); Quantico Marine Corps Base, Virginia (2016-2017); the Fernow Experimental Forest, West Virginia (2011-2017); George Washington-Jefferson National Forest, Virginia (2014-2017); Wallkill National Wildlife Refuge, New Jersey (2015-2016) and Great Bay National Wildlife Refuge, New Hampshire (2015).

Appendix 1. Sheets property representative site photographs

Image 1. Representative photograph of bottomland hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 2. Representative photograph of bottomland hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 3. Representative photograph of bottomland hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 4. Representative photograph of upland hardwood forest on the property.

Image 5. Representative photograph of upland hardwood forest on the property.

Image 6. Representative photograph of upland hardwood forest on the property.

Image 7. Representative photograph of white pine plantation on the Sheets property, Vermilion County, Illinois.

Image 8. Representative photograph of white pine plantation on the Sheets property, Vermilion County, Illinois.

Image 9. Representative photograph of mixed hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 10. Representative photograph of mixed hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 11. Representative photograph of mixed hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 12. Representative photograph of a potential roost tree located on the Sheets property, Vermilion County, Illinois.

Image 13. Representative photograph of a potential roost tree located on the Sheets property, Vermilion County, Illinois.

Image 14. Representative photograph of a potential roost tree located on the Sheets property, Vermilion County, Illinois.

Image 15. Representative photograph of a potential roost tree located on the Sheets property, Vermilion County, Illinois.

Image 16. Representative photograph of a potential roost tree located on the Sheets property, Vermilion County, Illinois.

Image 17. Representative image of Middle Fork Vermillion River on the Sheets property, Vermilion County, Illinois.

Image 18. Representative image of Middle Fork Vermillion River on the Sheets property, Vermilion County, Illinois.

Image 19. Representative image of Bean Creek on the Sheets property, Vermilion County, Illinois.

Image 20. Representative image of standing water in bottomland hardwood forest on the Sheets property, Vermilion County, Illinois.

Image 21. Representative image of an unnamed section of perennial stream on the Sheets property, Vermilion County, Illinois.

Image 22. Representative image of an unnamed section of perennial stream on the Sheets property, Vermilion County, Illinois.

Image 23. Representative image of an intermittent stream on the Sheets property, Vermilion County, Illinois.

Appendix D: Performance Bond

(To be included in Final Submission)

Appendix E: REA Model Calculations

Service's Region 3 Indiana Bat REA Model designed for Wind Energy Projects (Ibat REA Model_Public_v1_Dec2016)

Input Parameters		
Permit start year:	2018	
Injured Adult Females Annually:	0.75	
Permitted take years	30	years to 2048
Lambda condition	Stationary	
Adult Female Breeding Rate	0.691	pups/female/year = AP*AB
Juvenile Female Breeding Rate	0.143	pups/female/year
Pup Survival to juvenile	0.636	rate
Juvenile Annual Survival	0.897	rate
Adult Annual Survival	0.873	rate

Output

Debit Accrued

Undiscounted		
Direct take	23	female adults
Total lost reproduction	43	female pups
Total Lost	65	

Mitigation Credit Accrued

Undiscounted		
Direct females added by project	19	female adults
Summer habitat protection	19	female adults
Hibernaculum protection	-	female adults
Maternity habitat restoration	-	female adults
Total reproduction gained	45	female pups
Total Gain	65	females

Mitigation Credit Due

Net gained	0	
Total qualifying mitigation acres	73	must be >46 acres

Summer habitat protection				
Project Details:				
Project start year	2018			
Project end year (include 10 years beyond last monitoring year)	2058			
Habitat function served by the "to be protected" habitat	Roosting & Foraging	1.00		
Acres "to be protected" of occupied forest block/at terminus 1	73		Qualifying acreage	73.4
Acres of "to be protected" corridor habitat		0		
Acres of "to be protected" forest at terminus 2	46	46		
Required Conditions:		1.00		implies 46 acres/bat
Is the "to be protected" roosting and foraging habitat≥5 acres?	Yes	1.00		
Are the termini blocks >500 ft apart?	Yes	1.00		
Are the occupied termini blocks ≥ 5acres?	Yes	1.00		
Will or are both termini forest blocks protected?	Yes	1.00		
Level of threat	Habitat threatened	1.00		
Expected female gain	**1.60**		Expected K	1.60

Tables for Summer Habitat Protection model drop downs	
Maternity Colony Habitat Function:	
Roosting & Foraging	1.00
Roosting & Foraging + Corridor	1.00
Functional travel corridor	1.00
Foraging only	0.75

Unoccupied terminus >500' from occupied habitat	
Yes	1.00
No	0.00

Forest Block more than 5 acres:	
Yes	1.00
No	0.00

Degree of Threat	
Habitat threatened	1.00
Habitat is managed for bats	0.00

Service's Region 3 Northern long-eared Bat REA Model designed for Wind Energy Projects NLEB REA Model_Public_v1_Dec2016)

Input Parameters		
Permit start year:	2018	
Injured Adult Females Annually:	1.5	
Permitted take years	30	years to 2048
Lambda condition	Stationary	
Adult Female Breeding Rate	0.601	pups/female/year = AP*AB
Juvenile Female Breeding Rate	0.141	pups/female/year
Pup Survival to juvenile	0.636	rate
Juvenile Annual Survival	0.697	rate
Adult Annual Survival	0.831	rate

Output		
Debit Accrued		
Undiscounted		
Direct take	45	female adults
Total lost reproduction	86	female pups
Total Lost	131	

Mitigation Credit Accrued		
Undiscounted		
Direct females added by project	39	female adults
Summer habitat protection	39	female adults
Hibernaculum protection	-	female adults
Maternity habitat restoration	-	female adults
Total reproduction gained	92	female pups
Total Gain	131.0	females

Summer Habitat Protection				
Project Details:				
Project start year	2018			
Project end year (include 10 years beyond last monitoring year)	2058			
Artificial habitat	No			
N(population size of maternity colony)	8		implies 2% mortality	
Natural habitat	Yes			
Habitat function served by the "to be protected" habitat	Roosting & Foraging	1.00		
Acres "to be protected" of occupied forest block/at terminus 1	116	= Qualifying acreage		116
Acres of "to be protected" corridor habitat	10	10		
Acres of "to be protected" forest at terminus 2	45	45		
Required Conditions:		1.00	implies 45 acres/bat	
Is the "to be protected" roosting and foraging habitat≥25 acres?	Yes	1	Large block project	1.25
Are the termini blocks >500 ft?	Yes	1		
Is each the terminus forest block, in total, ≥50 ac?	Yes	1		
Will or are both termini forest blocks protected?	Yes	1		
Level of threat	Habitat is not managed for bats	1.00		
			expected K	2.58
Expected female gain	**3.23**			3.23

Tables for Summer Habitat Protection model drop downs	
Maternity Colony Habitat Function:	
Roosting & Foraging	1.00
Corridor only	1.00
Roosting, Foraging & Corridor	1.00

Immediacy/Degree of Threat	
Habitat is not managed for bats	1.00
Habitat is specifically managed for bats	0.00