

October 27, 2022

Ms. Tanowa Troupe, Secretary
Ohio Power Siting Board
Docketing Division
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3797

Re: Case No. 22-549-EL-BGN

In the Matter of the Application of Oak Run Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Madison County, Ohio.

Case No. 22-550-EL-BTX

In the Matter of the Application of Oak Run Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Transmission Line in Madison County, Ohio.

Response to Fourth Data Request from Staff of the Ohio Power Siting Board

Dear Ms. Troupe:

Attached please find Oak Run Solar Project, LLC's ("Applicant") Response to the Fourth Data Request from the staff of the Ohio Power Siting Board ("OPSB Staff"). The Applicant provided this response to OPSB Staff on October 27, 2022.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

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Ms. Tanowa Troupe
Oak Run Solar Project, LLC
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CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 27th day of October, 2022.

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4881-2426-7573 v1 [88534-8]

**BEFORE
THE OHIO POWER SITING BOARD**

In the Matter of the Application of Oak Run Solar)
Project, LLC for a Certificate of Environmental)
Compatibility and Public Need to Construct a Solar-) Case No. 22-549-EL-BGN
Powered Electric Generation Facility in Madison)
County, Ohio.)

In the Matter of the Application of Oak Run Solar)
Project, LLC for a Certificate of Environmental) Case No. 22-550-EL-BTX
Compatibility and Public Need to Construct a)
Transmission Line in Madison County, Ohio.)

**OAK RUN SOLAR PROJECT, LLC 'S
RESPONSE TO THE FOURTH DATA REQUEST
FROM THE STAFF OF THE OHIO POWER SITING BOARD**

On September 2, 2022, Oak Run Solar Project, LLC (“Applicant”) filed an application (“Application”) with the Ohio Power Siting Board (“OPSB”) proposing to construct a solar-powered electric generation facility in Madison County, Ohio.

On October 13, 2022, the Staff of the OPSB (“OPSB Staff”) provided the Applicant with OPSB Staff’s Fourth Data Request. Now comes the Applicant providing the following response to the Fourth Data Request from the OPSB Staff.

ODNR guidance

1. **For the following questions please indicate if the project will adhere to ODNR’s guidelines. If there any that the project cannot adhere to please indicate and provide an explanation. If the application addresses how the project will adhere to a specific guideline please indicate where in the application that can be found.**

A. Design Requirements

- 1) **Construction of utility-scale installations on ODNR owned or managed lands will not be permitted.**

Response: The Project will adhere to this guideline. There are no Ohio Department of Natural Resources (“ODNR”) owned or managed lands within the Project area as specified in Section 6(A) of the Application.

- 2) **Avoid unstable land surfaces such as karst features and hillslopes in landslide-prone formations. Projects located in areas with a history of mining (both surface and underground mining) should not be advanced unless geotechnical, engineering, and constructability evaluations and reports demonstrate the project is suitable for the area being considered. Developers should be cautious of unstable slopes, surface settling, and rapid erosion when constructing and managing solar facilities on reclaimed mine lands.**

Response: The Project will adhere to this guideline. There are no known mining or karst areas within the Project area and the topography in the Project area is relatively flat, making it unlikely to have landslide-prone formations. This information is provided in Section 8(B)(1)(e) of the Application.

- 3) **Developers should be conscious of oil, gas, and water wells to avoid impeding the extraction of other natural resources.**

Response: The Project will adhere to this guideline. As specified in Section 8(A)(5) of the Application, there are no oil or gas wells within the Project area. There are 11 water wells within the Project area which will be owned by the Applicant. As stated in Section 8(A)(4) of the Application, if necessary, the Applicant will proceed with capping and closing the wells in accordance with Madison County and Ohio Environmental Protection Agency requirements to ensure that groundwater resources are not affected by the Project.

- 4) **Permanent security lighting should be designed to minimize light pollution and take into consideration lighting initiatives that aim to reduce impacts to wildlife (shielded, motion triggered, and directed lighting).**

Response: The Project will adhere to this guideline. The Applicant included a section regarding lighting practices within Application Exhibit Y – Visual Impact Mitigation Plan that outlines the practices to be implemented during construction and operation of the Project to minimize lighting impacts.

- 5) **Conduct environmental resource surveys as described in the ODNR Environmental Review process. Delineate wetlands and streams, prior to OPSB application submission.**

Response: The Project will adhere to this guideline. The Applicant has completed wetland and stream delineation surveys, a habitat assessment, and bat presence/absence surveys prior to submittal of the Application. Summaries of the wetland and stream delineation and habitat assessment efforts are summarized in Exhibits S and T and within Section 8(B)(1)(b) within the application. The bat presence/absence surveys recommended by ODNR are referenced in Section 8(B)(1)(e) of the Application. The report documenting the results of the bat surveys are provided in Attachment 1 to this data request response.

- 6) **Avoid existing wetlands and adjacent woodlands. A minimum 120-foot buffer should be maintained on Category 1 and 2 wetlands. A minimum 300-foot buffer should be maintained on Category 3 wetlands to preserve ecological integrity. This recommendation is based on research by Semlitsch and Bodie (Semlitsch, R. D., and J. R. Bodie. 2003. Biological Criteria for Buffer Zones around Wetlands and Riparian Habitats for Amphibians and Reptiles. Conservation Biology 17(5): 1219-1228) and further utilized by New Jersey (Landscape Project Version 3.3 methodology - <https://www.state.nj.us/dep/fgw/ensp/landscape/>). Buffer distances for wetlands should be measured from delineated and verified wetland boundaries.**

Response: The Project will adhere to this guideline. Project infrastructure has been sited to avoid impacts to all wetlands and a 120-foot buffer from wetlands was established so that no adjacent woodlands would be impacted. There are no Category 3 wetlands identified within the Project area. The Project setbacks are described in Section 4(B)(2) of the Application.

- 7) **Maintain a minimum 120-foot buffer along streams (including ephemeral and intermittent streams), retaining existing, non-invasive trees or shrubs. Buffer distances for streams should be measured from delineated and verified stream boundaries.**

Response: The Project will adhere to this guideline. Project infrastructure has been sited to avoid direct impacts to all streams and a 120-foot buffer from streams was established. The Project setbacks are described in Section 4(B)(2) of the Application. There are a limited number of proposed stream crossings, but they will not result in streambed impacts as they include spanning of the stream or horizontal directional drilling (“HDD”) under the stream. A summary of the anticipated stream crossings is provided in Section 8(B)(2)(a) of the Application.

The Applicant is also coordinating with the ODNR Scenic Rivers Office and the Darby Creek Association to identify voluntary conservation measures that the Project can implement near Spring Fork Creek and a Spring Fork Creek tributary to protect water quality in these streams.

- 8) **A layout that maintains riparian/corridor access and connectivity for wildlife is preferred.**

Response: The Project will adhere to this guideline. As explained in Section 8(B)(3)(a) of the Application, the Applicant has proposed to develop wildlife corridors, including locations within the riparian corridor of streams within the Project area to allow for wildlife movement and access to these important water resources.

B. Construction Best Management Practices (BMPs)

- 1) **Fencing around panels should incorporate gaps or spaces of at least 6 inches x 6 inches to allow passage of small mammals.**

Response: The Project will adhere to this guideline. The Applicant has committed to wildlife friendly fencing with spaces of at least 6 inches by 6 inches, as stated in Section 8(B)(3)(a) of the Application.

- 2) **Efforts should be taken to avoid entrapping wildlife within the facility during construction of the fence and that the solar facility be checked regularly or structures installed to allow animals to escape.**

Response: The Project will adhere to this guideline. A training session will be required for all Project construction and operations and maintenance staff that outlines monitoring and reporting requirements for wildlife. The training plan will be documented in the Environmental Management Plan (“EMP”) developed for the Project prior to the start of construction.

- 3) **ODNR recommends that the construction plan minimize the amount of exposed or open trenches. If spans of trenching will be open for extended periods of time ODNR recommends the installation of trench plugs, earthen ramps, or other means as necessary to ensure that open trenches do not trap wildlife or impair wildlife movement.**

Response: The Project will adhere to this guideline. The Applicant does not anticipate areas of trenching that will be open for extended periods of time, however, if trenches do remain open, the mitigation measures listed to limit trapping or impairing wildlife movement will be implemented. The mitigation measures will be included within the EMP developed for the Project prior to start of construction.

- 4) **Developers should avoid installing new drain tile systems that may drain or impede replenishment of nearby wetlands or significantly increase drainage into adjacent waterways during precipitation events.**

Response: The Project will adhere to this guideline. There is no plan for additional drain tile systems to be installed for the Project, with the exception of tiles that may be included in the design and construction of the Project to preserve the existing drainage of the site.

C. Post-construction/operational requirements

- 1) **Solar development sites are required to plant a minimum of 70% of the developed project area in beneficial vegetation, utilizing plant species as described in Attachment A (or other suitable species as approved) and follow the Ohio Solar Site Pollinator Habitat Planning and Assessment Form with a minimum score of 80 points. Routine mowing**

will be limited to fall/spring seasons, as needed, to allow for natural reseedling of plantings and reduce impacts to ground-nesting birds. These requirements are intended to provide wildlife habitat, encourage water infiltration, and reduce erosion. This requirement not applicable to sites committed to alternative agricultural uses to control vegetation, as described in the vegetation management plan.

Response: The Project anticipates adhering to this guideline. However, as described in Section 8(B)(2)(b)(i) of the Application, there is the potential for agrivoltaics on some portion of the Project area which could limit the ability to achieve the 70% planting of beneficial vegetation and OPHI score of 80.

- 2) Should solar facilities be proposed adjacent to environmentally sensitive sites such as State Scenic Rivers or State Nature Preserves with significant and unique plant and/or animal communities, additional species or seed mixes may be recommended.**

Response: The Project anticipates adhering to this guideline. Within 8(B)(2)(b)(i) of the Application, the Applicant notes that Darby Creek Association is being engaged to discuss what native vegetation should be utilized onsite. Further, a site visit with Darby Creek Association, Ohio Department of Natural Resources Scenic Rivers, and Metro Parks staff was held on September 1, 2022, and a follow-up site visit was conducted October 6, 2022, to discuss the Project's location relative to Spring Fork, which is designated as a state Scenic River. The Applicant is committed to ongoing conversations with these entities about onsite vegetation and methods to minimize impacts to Spring Fork.

- 3) The Applicant shall contact OPSB staff, ODNR DOW, and USFWS within 24 hours if state or federal listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be immediately halted until an appropriate course of action has been agreed upon by the Applicant, OPSB staff, and the appropriate agencies. The Applicant shall also notify OPSB staff, ODNR DOW, and USFWS within 24 hours if any mortality, injury, or entrapment of a state or federal threatened and endangered listed species is discovered in the facility during operation. For wildlife not categorized as state or federal threatened or**

endangered, the Applicant shall also notify OPSB Staff, ODNR DOW, and USFWS at annual intervals if any mortality, injury, or entrapment of wildlife is discovered in the facility during operation for the purpose of general data collection.

Response: The Project will adhere to this guideline. As previously mentioned, a training session will be required for all Project construction and operations and maintenance staff that outlines monitoring and reporting requirements for wildlife, including state and federal threatened and endangered species. The training plan and reporting requirements will be documented in the EMP developed for the Project prior to the start of construction.

2. Will the project adhere to ODNR's guidance below concerning the clearing of trees that could used by bats for roosting?

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW.

Response: The Project will adhere to this guideline. Further, bat presence/absence surveys have been completed within portions of the Project area where tree clearing is anticipated. The results of that survey effort are included as Attachment 1. United States Fish and Wildlife Service and ODNR have concurred with the survey protocol and the survey findings.

Respectfully submitted,

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CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 27th day of October, 2022.

/s/ Christine M.T. Pirik

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4860-6264-6584 v1 [88534-8]

Attachment 1

Bat Survey Results and Correspondence

- 1. Indiana Bat and Northern Long-eared Bat Presence Acoustic Survey**
- 2. Ohio Department of Natural Resources and U.S. Fish and Wildlife Service Correspondence**

Attachment 1

Bat Survey Results and Correspondence

1. Indiana Bat and Northern Long-eared Bat Presence Acoustic Survey



Oak Run Solar Project

Madison County, Ohio

Indiana Bat and Northern Long-eared Bat
Presence or Probable Absence Acoustic
Survey (USFWS Reference No. 22-048)

Prepared for:
Oak Run Solar Project, LLC
422 Admiral Boulevard
Kansas City, MO 64106

Prepared by:
Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

Project # 2028113244

September 12, 2022

**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE ACOUSTIC
SURVEY (USFWS REFERENCE NO. 22-048)**

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INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)

September 12, 2022

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Stantec Consulting Services Inc. (Stantec), on behalf of Oak Run Solar, LLC, conducted a presence or probable absence acoustic survey for the federally endangered Indiana bat (*Myotis sodalis*), federally threatened northern long-eared bat (*Myotis septentrionalis*), the state-listed endangered little brown bat (*Myotis lucifugus*), and state-listed endangered tricolored bat (*Perimyotis subflavus*) at the proposed Oak Run Solar Project (Project). The Project area is approximately 6,050 acres (ac) in size and is located approximately five miles north of the City of London, Madison County, Ohio (Figure 1, Appendix A). The United States Fish and Wildlife Service's (USFWS) Midwest Region website (USFWS 2022) currently lists the Indiana bat and northern long-eared bat as potentially occurring in Madison County. Furthermore, the Ohio Department of Natural Resources (ODNR) considers the entire state of Ohio to be within the range of the little brown bat and tricolored bat.

1.2 SURVEY OBJECTIVE

The purpose of this investigation was to determine presence or probable absence of the focal species, as identified by USFWS and the 2022 *Ohio Division of Wildlife (ODOW) and U.S. Fish and Wildlife Service (OH-Field Office) Joint Guidance for Bat Surveys and Tree Clearing* (ODOW Guidelines; ODNR and USFWS 2022a), including the Indiana bat, northern long-eared bat, little brown bat, and tricolored bat within the Project area during the summer maternity season. The acoustic bat survey used to evaluate the Project area followed the USFWS 2022 *Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines* (USFWS Guidelines; USFWS 2022a). As per the USFWS Guidelines and ODOW Guidelines, the survey protocols can also be used for presence or probable absence surveys of the other focal species during the 2022 field season. This report presents the methods, results, and conclusions of the bat habitat assessment and presence or probable absence survey.

1.3 BAT HABITAT ASSESSMENT

Stantec conducted a preliminary habitat assessment of the Project area on October 12-15, October 20, November 9-10, 2021, and March 28, April 6, and June 2, 2022, concurrent with the wetland and waterbody delineation surveys. The Project area consists primarily of agricultural fields with scattered patches of forest, wetlands and streams, and grassed areas (Figure 1, Appendix A). The Project area has approximately 136 acres of forested areas dominated by black locust (*Robinia pseudoacacia*), slippery elm (*Ulmus rubra*), hackberry (*Celtis occidentalis*), black cherry (*Prunus serotina*), shagbark hickory (*Carya ovata*), cottonwood (*Populus deltoides*), shellbark hickory (*Carya laciniosa*), white oak (*Quercus alba*), black walnut (*Juglans nigra*), honey locust (*Gleditsia triacanthos*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), and box elder (*Acer negundo*). Within the sapling stratum the dominant species include amur honeysuckle (*Lonicera maackii*), European privet (*Ligustrum vulgare*) and a layer of vines including Virginia creeper (*Parthenocissus quinquefolia*) and multiflora rose (*Rosa multiflora*). In the surrounding areas were agriculture fields planted primarily with soybean (*Glycine max*) and corn (*Zea mays*), with limited

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areas of amaranth (*Amaranthus viridis*) and common ragweed (*Ambrosia artemisiifolia*). Also, observed were areas of palustrine emergent, scrub-shrub, and forested wetland, that had soft rush (*Juncus effusus*), broadleaf cattail (*Typha latifolia*), northern blue flag (*Iris versicolor*), rice cut grass (*Leersia oryzoides*), cockspur grass (*Echinochloa crus-galli*), hawthorn (*Crataegus mollis*), northern spicebush (*Lindera benzoin*), button bush (*Cephalanthus occidentalis*), and dark green bulrush (*Scirpus atrovirens*). The remainder of the Project area consists of maintained lawns, industrial land, scrub-shrub, and roadways.

2.0 METHODS

2.1 PRESENCE OR PROBABLE ABSENCE ACOUSTIC SURVEY

To determine presence or probable absence of focal species in the Project area, an acoustic bat survey was conducted. The USFWS Guidelines state that after suitable summer habitat is determined present at a site, then a presence or probable absence mist-net or acoustic survey should be conducted. The following table outlines the acoustic survey guidelines within the USFWS Guidelines (USFWS 2022a) and summarizes the proposed work plan submitted to USFWS and approved on July 21, 2022 (Appendix B).

USFWS Acoustic Survey Guidelines	
1.	Acoustic Survey Season: May 15 (ODOW Guidelines; June 1) to 15 August, when Indiana bats and northern long-eared bats occupy summer habitat
2.	Equipment: <ul style="list-style-type: none">• Full-spectrum and/or zero-crossing detectors• Directional, hemispherical, or omnidirectional microphones
3.	Acoustic Detector Placement: <ul style="list-style-type: none">• At least 3 meters (m; 10 feet [ft]) in any direction from vegetation or other obstructions• In areas without vegetation or with minimal vegetation within 10 m (33 ft) in front of microphone• Parallel to woodlands• At least 15 m (49 ft) from known or suitable roosts (e.g., trees/snags, buildings, bridges, bat houses, caves, or mine portals)• Forest canopy openings• Near water sources• Wooded fence lines, adjacent to large openings or connecting two larger blocks of suitable habitat• Blocks of recently logged forest where some potential roost trees remain• Road or stream corridors with open tree canopies or canopy height more than 10 m (33 ft)• Woodland edges
4.	Acoustic Detector Spacing: Acoustic sites should be a minimum of 200 m (656 ft) apart.

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USFWS Acoustic Survey Guidelines	
5. Minimum Level of Effort:	<ul style="list-style-type: none">• Non-linear projects – a minimum of 10 detector for Indiana bat, 14 detector nights for northern long-eared bat, per 123 acres of suitable summer habitat• Acoustic sampling period begins at sunset and ends at sunrise• Detector nights must consist of at least 2 calendar nights and 2 detector locations
6. Weather Conditions	<p>– Keep acoustic data only if the following weather conditions are met for the first 5 hours after sunset:</p> <ul style="list-style-type: none">• No more than 30 consecutive or cumulative minutes of precipitation• Temperature $\geq 10^{\circ}\text{C}$ (50°F)• No strong winds, maximum of 9 miles per hour (mph; 4 meters per second [m/s] or 3 on Beaufort scale for up to 30 minutes)• Nightly weather observations, addressing precipitation, temperature, and wind, must be recorded from the nearest NOAA Weather Service Station and summarized in report
7. Orientation of Acoustic Detector:	Directional and omnidirectional microphones should be oriented towards the majority of the flight path, while hemispherical microphones should be oriented vertically.
8. Weatherproofing Acoustic Detector:	If necessary, detectors should be placed within weatherproof containers. Wildlife Acoustics SM4BAT acoustic detectors and SMM-U2 acoustic microphones are both weatherproof, requiring no after-market alterations.

Stantec submitted the Bat Habitat Assessment findings (Section 1.3) to the USFWS and ODNR and a bat presence or probable absence survey approval was requested. Based on this approval from USFWS and ODNR, Stantec conducted an acoustic survey in suitable summer habitat from August 2 through August 4, 2022 at the Project area (see figure in Appendix A). Suitable habitat was determined based on data collected during the desktop review and on-site observations. The USFWS Guidelines specify that non-linear projects should have a minimum of 10 detector nights for Indiana bat and 14 detector nights for northern long-eared bat per 123 acres of suitable summer habitat. A minimum of 14 detector nights were sampled to ensure an appropriate level of coverage for the Project (Figure 1, Appendix A).

Biologists deployed seven Wildlife Acoustics Song Meter SM4BAT Full Spectrum Ultrasonic Recorder acoustic detectors with one SMM-U2 omnidirectional microphone for each detector (Wildlife Acoustics, Inc.). Microphone placement was based on a variety of characteristics, including canopy cover, presence of a flight corridor or forest edge, water, and forest conditions near the acoustic site. Representative photos of each detector site are found in Appendix C. Datasheets, including descriptions of surrounding habitat, deployment details, and microphone orientation, are found in Appendix D. All detectors were calibrated and tested before deployment using an Ultrasonic Calibrator (Wildlife Acoustics, Inc.). To ensure the full recording period required by the Guidelines was met, detectors were programmed to begin monitoring 30 minutes prior to sunset and conclude 30 minutes after sunrise.

Because severe weather adversely affects the activity levels of bats, temperature, rainfall, and wind conditions on the nights when acoustic sampling was conducted were monitored to ensure compliance with USFWS Guidelines (USFWS 2022a). Details on weather conditions during deployment are found on the datasheets in Appendix C.

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All acoustic data were processed using the USFWS-approved acoustic bat identification program Kaleidoscope Pro 5.4.7 (KPro; Wildlife Acoustics, Inc.), using the -1 sensitivity setting, per the approved program setting established by the USFWS (USFWS 2019). Default signal parameters were used, including a minimum of 2 pulses per call and advanced signal processing. Analysis was conducted only for species known to occur within the Project area, including:

- Big brown bat (*Eptesicus fuscus*)
- Eastern red bat (*Lasiurus borealis*)
- Hoary bat (*Lasiurus cinereus*)
- Silver-haired bat (*Lasionycteris noctivagans*)
- Evening bat (*Nycticeius humeralis*)
- Indiana bat (*Myotis sodalis*)
- Little brown bat (*Myotis lucifugus*)
- Northern long-eared bat (*Myotis septentrionalis*)
- Tricolored bat (*Perimyotis subflavus*)

The KPro program calculates a maximum likelihood estimate (MLE) based on the total dataset recorded for each site and each night. The MLE value represents the likelihood of a species being present in the dataset given multiple parameters including possible species, the number of calls assigned to each species, and the probability of any species being confused with another species according to a classification confusion matrix. A low MLE value (< 0.05) indicates that a species is likely present at a site. The USFWS Guidelines state that a MLE value < 0.05 for a species recorded during a given detector night represents a probable presence for a species with a high level of certainty, though qualitative analysis was also be conducted as described below.

If a detector night at a site had a MLE value of < 0.05 for the Indiana bat, northern long-eared bat, little brown bat, or tricolored bat, files recorded at the site were visually analyzed in zero crossing format by a qualified bat biologist using AnalookW software (Windows version 4.2n or newer). This involved visually analyzing each call recorded from the detector on the night the species was detected, starting with the first call of the night and continuing until the species is either confirmed present, or until all calls from that night had been visually assessed. The visual review involved comparing echolocation call structures of files in question to characteristics (e.g., frequency, slope, duration) from a known call library by a qualified bat biologist with experience acoustically identifying the species. The results were used to determine bat species presence or probable absence at each site. Probable absence was assumed for focal species at any acoustic site where they were not identified by KPro, species that lacked an MLE value of < 0.05 , or if qualitative analysis of calls at an acoustic site determined that the automated focal species identification was inaccurate.

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3.0 RESULTS

Seven detector locations (AS-01a-AS-01g) were monitored within the Project area as shown in Appendix A. Each detector ran for two nights during acceptable weather parameters, as outlined in the USFWS Guidelines (USFWS 2022). See Table 1 and datasheets in Appendix D for more information pertaining to the weather conditions during the survey period.

Table 1. Weather parameters for nights of bat acoustic survey at Oak Run Solar Project, Madison County, Ohio

Date	Temperature (°F)		Wind Speed (mph)		Precipitation	Within USFWS Guidelines Weather Parameters During 5 Hours After Sunset
	Minimum	Average	Average	Maximum	Yes/No	
8/2	67	75	1.9	7.3	No	Yes
8/3	72	76	5.8	8.6	No	Yes

Source: Weather Underground (<https://www.wunderground.com/weather/us/oh/columbus/39.96,-82.99>)

KPro identified 12,360 of the 12,728 files recorded to species. Nine bat species were initially identified by KPro at the detectors and are listed in Table 2. No detector nights had a MLE value of < 0.05 for northern long-eared bats, indicating probable absence of this species within the Project area. One detector night had a MLE value < 0.05 for the Indiana bat and the tricolored bat (AS-01g on 8/2/22).

The little brown bat had four detector nights with a MLE value < 0.05 (AS-01a on 8/2/22, AS-01c on 8/2/22 and 8/3/22, and AS-01f on 8/2/22). The results of the quantitative analysis from the acoustic site based on the KPro acoustic identification program are shown in Appendix E and Table 3.

Table 2. Proportions of each bat species detected at Oak Run Solar Project, Madison County, Ohio

Bat Species	# of Calls	% of Calls Identified to Species by KPro	MLE p-value <0.05 for at least 1 night (Y/N)	Qualitatively Identified for at least 1 night (Y/N) ¹
Big Brown Bat (<i>Eptesicus fuscus</i>)	4,261	34.5%	Y	N/A
Eastern Red (<i>Lasiurus borealis</i>)	3,292	26.6%	Y	N/A
Hoary Bat (<i>Lasiurus cinereus</i>)	931	7.5%	Y	N/A
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	854	6.9%	Y	N/A

INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)

September 12, 2022

Bat Species	# of Calls	% of Calls Identified to Species by KPro	MLE p-value <0.05 for at least 1 night (Y/N)	Qualitatively Identified for at least 1 night (Y/N) ¹
Little Brown Bat* (<i>Myotis lucifugus</i>)	590	4.8%	Y	Y
Northern Long-eared Bat* (<i>Myotis septentrionalis</i>)	7	<0.1%	N	N
Indiana Bat* (<i>Myotis sodalis</i>)	54	0.4%	Y	N
Evening Bat (<i>Nycticeius humeralis</i>)	1,587	12.8%	N	N/A
Tricolored Bat* (<i>Perimyotis subflavus</i>)	784	6.3%	Y	N
Total	12,360			

* Focal species

¹Qualitative identification was only conducted for federal and state-listed species

3.1 QUALITATIVE ANALYSIS

Focal species with MLE values of < 0.05 triggered qualitative review of all calls for the associated detector nights by a qualified Stantec biologist (see resume in Appendix F). These included calls associated with the Indiana bat, little brown bat, and tricolored bat. Of all detector nights manually reviewed for the focal species, only one call file was found to be consistent with a focal species, the little brown bat. The call from AS-01c on 8/2/22 had consistent characteristics typically observed for the little brown bat. The qualitative review found that the majority of the calls did not show consistent call characteristics typical of the focal species, including most of those identified as little brown bat. Many of the call files that were identified by KPro did not have an acceptable number of pulses (≥ 5 pulses) in which to base a manual identification. Although most call files had pulses within the frequency range of focal species (~38 – 43 kHz), individual pulses of call files had inconsistent minimum frequency, with fluctuations of at least 3 kHz, which is typical of eastern red bats. In addition, some call files minimum frequency were too low or high for the typical focal species characteristics.

Most files that were identified as *Myotis* species that did have pulses with a consistent minimum frequency and were within the typical kHz range had a “time between call” (TBC; space between pulses of individual call file) less than what would be expected for a typical search phase call. When call pulses are closer than expected, this is usually associated with “foraging activity” where the bat has increased the rate of their echolocations to focus in on an object (e.g., insect, vegetation). Typically, a TBC should be near 100 milliseconds (ms), call files with a TBC smaller than that are predominantly deemed as foraging activity.

**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

Based on the inconsistent minimum frequency, fluctuation, and TBC of less than 100ms, none of the KPro calls identified as Indiana bat or northern long-eared bat were qualitatively confirmed. In addition, the KPro files that were labeled as tricolored bat did not illustrate the typical characteristics (short, backwards 'j's, consistent minimum frequency of ~43 kHz). Therefore, it is Stantec's opinion that probable absence of the Indiana bat, northern long-eared bat, and tricolored bat within the Project area are assumed, whereas little brown bat presence can be assumed.

INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)

September 12, 2022

Table 3. Analysis of Kaleidoscope Pro Output and Qualitative Review for the Oak Run Solar Project, Madison County, Ohio

Site	Night	# Bat Passes	# Files Identified to Species by Kaleidoscope	# Northern Long-eared Bat Passes Identified by Kaleidoscope	Northern Long-eared Bat MLE	# Indiana Bat Passes Identified by Kaleidoscope	Indiana Bat MLE	# Little Brown Bat Passes Identified by Kaleidoscope	Little Brown Bat MLE	# Tricolored Bat Passes Identified by Kaleidoscope	Tricolored Bat MLE	Qualitative Review Determinations ¹
AS-01a	8/2	266	263	1	1.00	2	1.00	20	0.00	5	1.00	Not a little brown bat
	8/3	271	264	0	1.00	2	1.00	16	0.06	13	0.87	-
AS-01b	8/2	462	448	0	1.00	1	1.00	20	0.54	24	0.75	-
	8/3	375	359	0	1.00	0	1.00	27	0.41	32	0.46	-
AS-01c	8/2	270	256	1	1.00	12	0.02	29	0.00	23	0.27	Not an Indiana bat Possible little brown bat
	8/3	333	312	2	1.00	9	0.44	38	0.00	35	0.05	Not a little brown bat Not a tricolored bat
AS-01d	8/2	1,662	1,636	0	1.00	10	0.66	52	1.00	80	1.00	-
	8/3	1,919	1,846	1	1.00	2	1.00	50	1.00	144	1.00	-
AS-01e	8/2	1,756	1,713	1	1.00	6	1.00	108	1.00	89	1.00	-
	8/3	1,381	1,343	1	1.00	4	1.00	106	0.64	101	1.00	-
AS-01f	8/2	500	496	0	1.00	4	0.18	8	0.02	3	1.00	Not a little brown bat
	8/3	409	401	0	1.00	0	1.00	34	0.00	4	1.00	Not a little brown bat
AS-01g	8/2	1,407	1,445	0	1.00	1	1.00	35	1.00	107	0.01	Not a tricolored bat
	8/3	1,654	1,578	0	1.00	1	1.00	47	1.00	124	1.00	-

¹Dash indicates that a qualitative review was not triggered by the MLE value on any species

INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)

September 12, 2022

4.0 CONCLUSIONS

Based on the data collected during a USFWS and ODNR-approved survey effort in the Project area and the output from the automated identification program KPro and the qualitative analysis of calls at the acoustic sites with a MLE value < 0.05 for focal species, Stantec determined the acoustic data collected during the 2022 summer maternity season indicate the **probable absence of Indiana bats, northern long-eared bats, and tricolored bats** within the Project area, and the **probable presence of little brown bats**.

INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)

September 12, 2022

5.0 REFERENCES

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**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

Appendix A **FIGURES**

A.1 VEGETATION COMMUNITIES MAP

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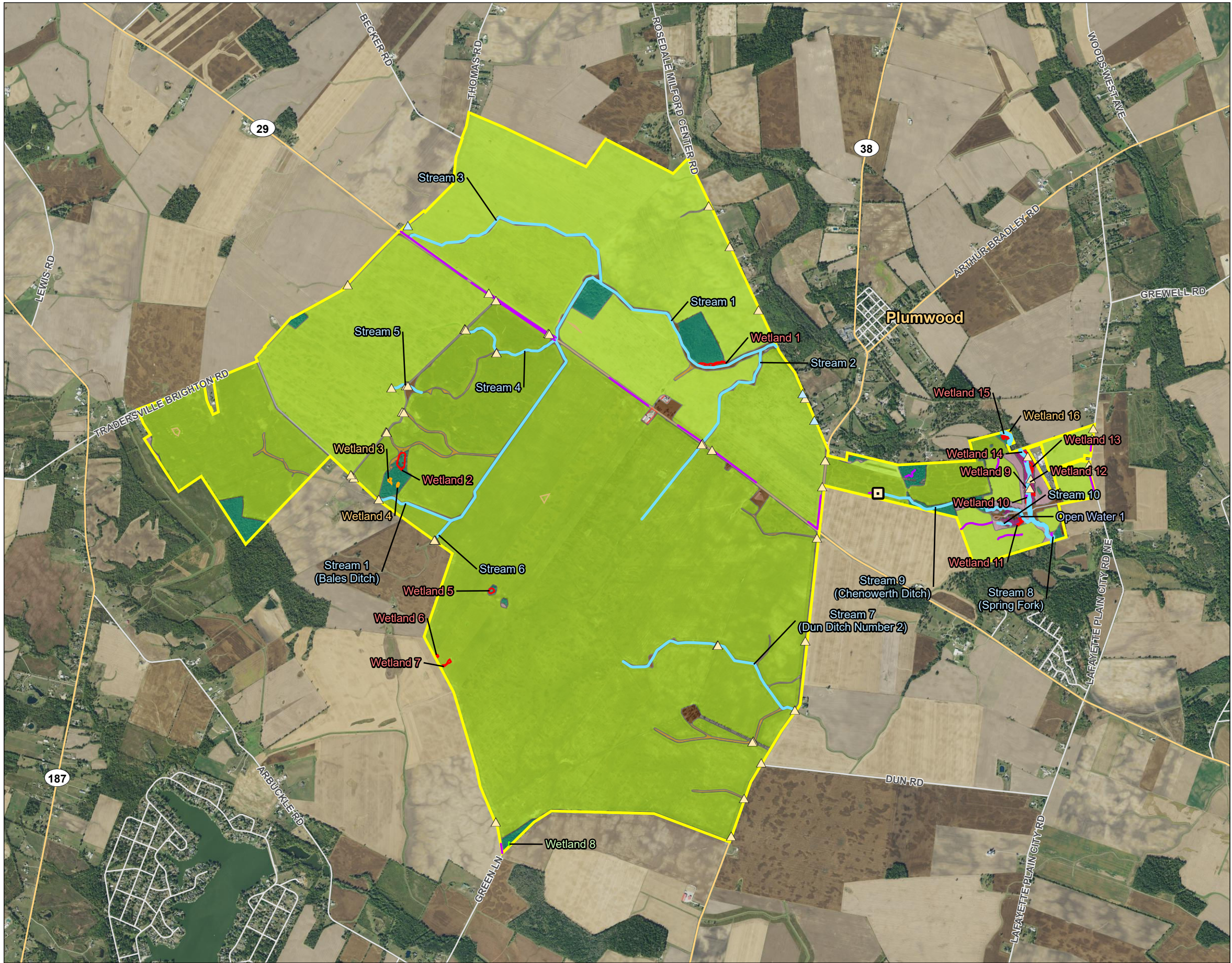


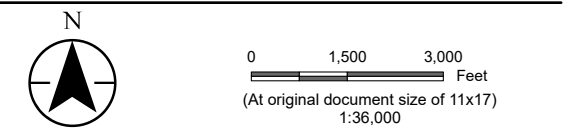
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Title
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Oak Run Solar Project, LLC
Oak Run Solar Project

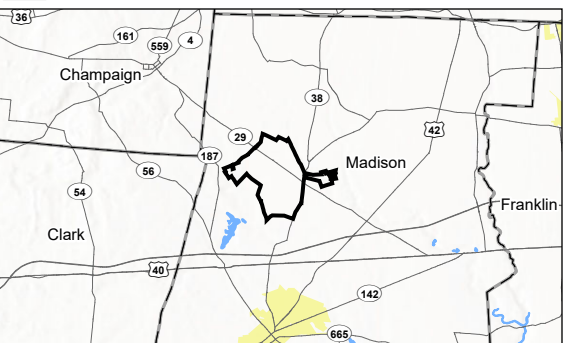
2028113244

Project Location
Madison County, Ohio

Prepared by J.L.H. on 2022-06-06
TR by MK on 2022-06-07
IR by CMD on 2022-06-09



- Legend
- Project Area
 - Culvert
 - Storm Drain
 - Drain Tile Outfall
 - Upland Drainage Feature
 - Field Delineated Waterway
 - Field Delineated Waterway Area
 - Field Delineated Open Water
 - Field Delineated Emergent Wetland
 - Field Delineated Forested Wetland
 - Field Delineated Scrub Shrub Wetland
 - Potential Wet Area
- Habitat Area
- Agricultural Field (93%)
 - Scrub-Shrub (0.6%)
 - Early Successional Forest (0.3%)
 - Second Growth Deciduous Forest (2.2%)
 - Grassed Swale (0.5%)
 - Fence Row (0.1%)
 - Maintained Lawn (2.6%)
 - Industrial (0.1%)
 - Existing Roadway (0.5%)



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, Savion, USGS, NADS, OGRIP
3. Background: 2019 NAIP



**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

A.2 ACOUSTIC BAT SURVEY PLAN MAP

V:\2028\Active\2028113244\03_data\gis\mxd\acoustic_bat_survey_figures\2028113244_OakRunSolar_AcousticBatSurvey.aprx
Revised: 2022-07-19 By: JHeldman

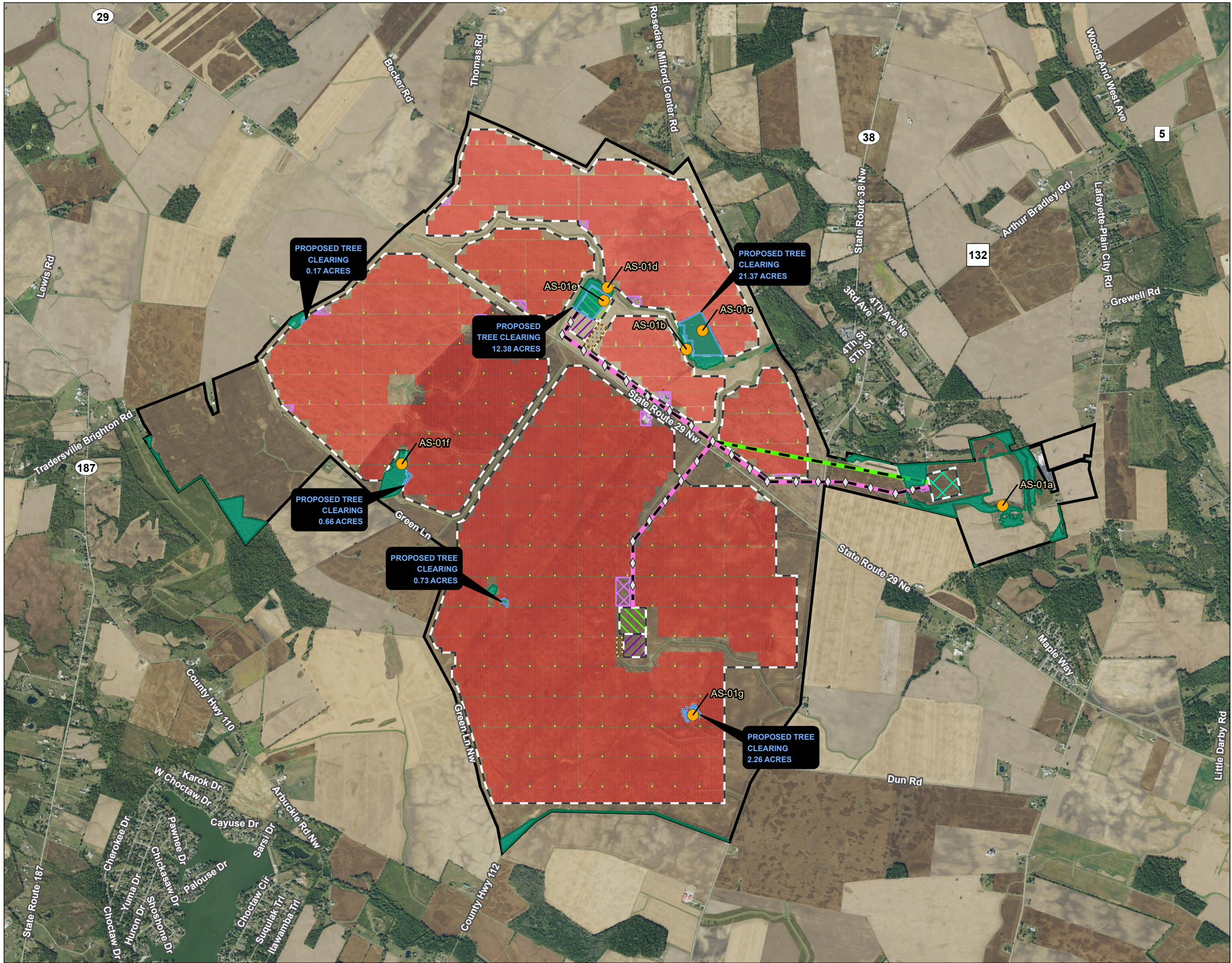


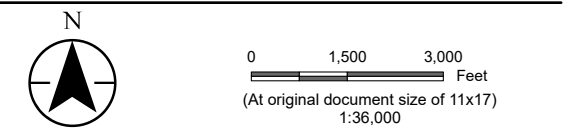
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Acoustic Bat Survey Plan Map

Client/Project
Oak Run Solar Project, LLC
Oak Run Solar Project

2028113244

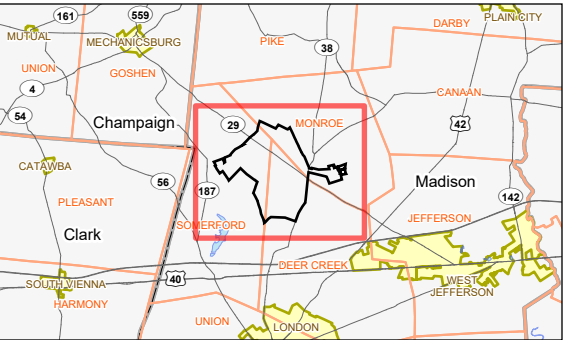
Project Location
Madison County, Ohio

Prepared by JLH on 2022-07-13
TR by HS on 2022-07-15
IR by KC on 2022-07-18



Legend

- Project Area
- Solar Array
- Inverter
- O&M Facility
- BESS Building
- Substation
- Step Up Substation
- Laydown Yard
- Gen-Tie Structure
- Gen-Tie Line
- Alternate Gen-Tie Line
- Fence
- Proposed Tree Clearing
- Forested Area
- Proposed Detector Location



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, Savion, USGS, NADS
3. Orthophotography: 2019 NAIP



**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

**Appendix B ACOUSTIC WORK PLAN AND USFWS
CONCURRENCE**



Oak Run Solar Project

Indiana Bat and Northern Long-eared
Bat Presence/Probable Absence
Acoustic Bat Survey Plan (IPaC Project
Code: 2022-0011961)

July 21, 2022

Submitted to:

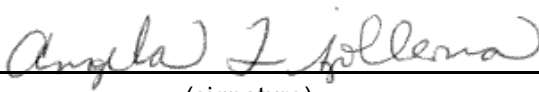
Ms. Angela Boyer
U.S. Fish and Wildlife Service
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230

Prepared by:


Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

OAK RUN SOLAR PROJECT

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Prepared by 
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Reviewed by 
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Kim Carter

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1.0 INTRODUCTION

Oak Run Solar Project, LLC (Oak Run Solar) is proposing to construct a commercial solar energy project with capacity up to 800 megawatts (MW) in size on private land in Madison County, Ohio (the Project). The Project would include construction of photovoltaic solar modules mounted on a racking system, inverters, an electrical collection system transferring power from the inverters to two new Project substations, and two 230 kilovolt (kV) aboveground transmission lines to facilitate the Project's interconnection to the regional transmission grid via a Project Step-up transformer and switchyard at the site. The Project is also proposed to include an operations and maintenance building and the potential for a large-scale advanced co-located battery system up to 300-MW in size. In addition to the described Project equipment, internal access roads will be constructed to allow access throughout the Project area and perimeter fence will be installed securing the area. The Project will be constructed on approximately 6,050 acres of land (Project area) that currently consists of agriculture, maintained lawn, scrub-shrub, grassed swales, fence row, second growth deciduous forest, early successional forest, industrial, and existing roadways. The Project area is located west of Plumwood and within the Townships of Somerford, Deer Creek, and Monroe, in Madison County, Ohio (Appendix A, Figure 1).

During consultation with the U.S. Fish and Wildlife Service (USFWS), a presence/probable absence survey for the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*) was recommended by USFWS due to the potential presence of these species and the tree clearing necessary for this Project (Appendix B). The USFWS has issued guidance for acoustic bat surveys in the *Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines* (USFWS Guidelines; USFWS 2022). The objective of our survey will be to determine presence or probable absence of the Indiana bat and the northern long-eared bat in the Project area. To fulfill requirements of the Ohio Department of Natural Resources (ODNR) Division of Wildlife (DOW) guidelines contained in the *Ohio Division of Wildlife and U.S. Fish and Wildlife Service (OH-Field Office) Joint Guidance for Bat Surveys and Tree Clearing* (ODNR Guidelines; ODOW and USFWS 2022), our survey will also target Ohio-listed endangered little brown bat (*Myotis lucifugus*) and tricolored bat (*Perimyotis subflavus*).

This study plan has been developed to fulfill requirements of the USFWS Guidelines and the ODNR Guidelines. Stantec is notifying the ODNR DOW and the USFWS Ohio Ecological Services Field Office of plans to conduct an acoustic bat presence/probable absence survey for the Indiana bat, northern long-eared bat, little brown bat, and tricolored bat (study species) within the proposed Project area. In addition, Stantec must receive written concurrence from the USFWS Ohio Ecological Services Field Office and ODNR DOW accepting the amount of survey effort and methods proposed in this study plan. Information from this survey will be used to inform Oak Run Solar about any study species using the Project area and, if necessary, will be used during the state and federal permit process.

2.0 ACOUSTIC BAT STUDY PLAN

2.1 SITE DESCRIPTION

A desktop review of the proposed Project area indicated that approximately 37.6 acres of tree clearing is anticipated for the Project. Forested areas within the Project area include second growth deciduous forests and early successional forests that are widely spaced and isolated. Following the review of available remote information, a reconnaissance-level field visit was conducted of forest stands during wetland delineation field work. This field visit was used to determine habitat quality and acoustic detector locations were approximately located in Figure 1 (Appendix A). The Project has less than 123 acres of potential bat summer habitat.

2.2 ACOUSTIC GUIDELINES

Acoustic bat surveys will follow methods outlined by the USFWS Guidelines and be conducted during the summer maternity season, which is defined by the ODNR (ODOW and USFWS 2022) and USFWS (USFWS 2022) as June 1 to August 15. According to the Guidelines for acoustic surveys of non-linear projects within the range of the northern long-eared bat, 14 detector nights is the minimum survey effort and within the Indiana bat's Midwest Recovery Unit (which includes Ohio), a minimum of 9 detector nights is the minimum for a project with 123 acres or less of total tree removal. Because the Project is within the range of the northern long-eared bat, the higher level of effort for the northern long-eared bat will be needed to achieve probable absence determinations for that species. A detector night is defined as 1 detector set to record bats from sunset to sunrise over 1 calendar night (USFWS 2022). Stantec will initiate acoustic surveys upon USFWS and ODNR approval in early August in order to complete surveys complete by August 15, 2022 (per USFWS Guidelines and ODNR Guidelines).

The acoustic survey will begin 30 minutes prior to sunset and continue until 30 minutes after sunrise. Acoustic survey equipment will consist of the Wildlife Acoustics SM4BAT-FS Ultrasonic Recorder and associated SMM-U2 Ultrasonic Microphone. The following outlines the USFWS guidelines for acoustic surveys (USFWS 2022).

USFWS Acoustic Survey Guidelines	
1.	Acoustic Survey Season: 1 June to 15 August, when Indiana bats and northern long-eared bats occupy summer habitat
2.	Equipment: <ul style="list-style-type: none">◆ Full-spectrum and/or zero-crossing detectors◆ Directional, hemispherical, or omnidirectional microphones
3.	Acoustic Detector Placement: <ul style="list-style-type: none">◆ At least 3 meters (m; 10 feet [ft]) in any direction from vegetation or other obstructions◆ In areas without vegetation or with minimal vegetation within 10 m (33 ft) in front of microphone◆ Parallel to woodlands

USFWS Acoustic Survey Guidelines	
	<ul style="list-style-type: none"> ◆ At least 15 m (49 ft) from known or suitable roosts (e.g., trees/snags, buildings, bridges, bat houses, caves, or mine portals) ◆ Forest canopy openings ◆ Near water sources ◆ Wooded fence lines, adjacent to large openings or connecting two larger blocks of suitable habitat ◆ Blocks of recently logged forest where some potential roost trees remain ◆ Road or stream corridors with open tree canopies or canopy height more than 10 m (33 ft) ◆ Woodland edges
4.	Acoustic Detector Spacing: Acoustic sites should be a minimum of 200 m (656 ft) apart.
5.	Minimum Level of Effort: <ul style="list-style-type: none"> ◆ Non-linear projects – a minimum of 14 detector nights per 123 acres of suitable summer habitat ◆ Acoustic sampling period begins at sunset and ends at sunrise ◆ Fourteen (14) detector nights must consist of at least 2 calendar nights and 2 detector locations
6.	Weather Conditions – Keep acoustic data only if the following weather conditions are met for the first 5 hours after sunset: <ul style="list-style-type: none"> ◆ No more than 30 consecutive or cumulative minutes of precipitation ◆ Temperature $\geq 10^{\circ}\text{C}$ (50°F) ◆ No strong winds, maximum of 9 miles per hour (mph; 4 meters per second [m/s] or 3 on Beaufort scale for up to 30 minutes) ◆ Nightly weather observations, addressing precipitation, temperature, and wind, must be recorded from the nearest NOAA Weather Service Station and summarized in report
7.	Orientation of Acoustic Detector: Directional and omnidirectional microphones should be oriented towards the majority of the flight path, while hemispherical microphones should be oriented vertically.
8.	Weatherproofing Acoustic Detector: If necessary, detectors should be placed within weatherproof containers. Wildlife Acoustics SM4BAT acoustic detectors and SMM-U2 acoustic microphones are both weatherproof, requiring no after-market alterations.

Stantec proposes a survey effort of one acoustic site encompassing the entire Project area, using 7 detectors, dispersed at the 5 forested areas within the Project boundary, for 2 detector nights for a total cumulative effort of 14 detector nights (Appendix A). The detectors will be deployed from 30 minutes prior to sunset to 30 minutes after sunrise each night of sampling and will follow the guidelines described above from the USFWS.

2.3 SITE SELECTION

Acoustic detector locations will be chosen based on the presence of suitable habitat conducive for bat foraging (e.g., forest canopy cover, natural flyways, and water resources) on the properties within the Project area.

2.4 DATA PROCESSING PROTOCOLS

Analysis methods (quantitative and qualitative) will follow the USFWS Guidelines and ODNR Guidelines. Acoustic data will be analyzed to assess whether the Project area has presence of Indiana bats, northern long-eared bats, little brown bats, and tricolored bats. Each data file will be processed to screen out noise files. The quantitative analysis will include processing all recorded files through Kaleidoscope Pro 5.4.7 (using the setting -1 sensitivity, per USFWS Guidelines), an automated acoustic bat identification software program approved by the USFWS. The classifier is version 5.4.0 (Wildlife Acoustics). Default signal parameters will be used, including a minimum of 2 pulses per call and advanced signal processing. Analysis will be conducted only for species known to occur within the Project area, including:

- Big brown bat (*Eptesicus fuscus*)
- Eastern red bat (*Lasiurus borealis*)
- Hoary bat (*Lasiurus cinereus*)
- Silver-haired bat (*Lasionycteris noctivagans*)
- Evening bat (*Nycticeius humeralis*)
- Indiana bat
- Little brown bat
- Northern long-eared bat
- Tricolored bat

The automated program assigns a species identification to individual echolocation calls, and then uses a Maximum Likelihood Estimate (MLE) for the site and each night and assigns a p-value for presence. A low MLE value indicates that a species is likely present at a site. The USFWS Guidelines state that a MLE value < 0.05 for a species recorded during a given detector night represents a probable presence for a species with a high level of certainty, though qualitative analysis will also be conducted as described below.

If a detector night at a site has a MLE value of < 0.05 for the Indiana bat, northern long-eared bat, little brown bat, or tricolored bat, files recorded at the site will be visually analyzed in zero crossing format by a qualified bat biologist using AnalookW software (Windows version 4.2 or newer). This will involve visually analyzing each call recorded from the detector on the night the species was detected, starting with the first call of the night and continuing until the species is either confirmed present, or until all calls from that night have been visually assessed and probable absence can be assumed. The visual review will involve comparing echolocation call structures of files in question to characteristics (e.g., frequency, slope, duration) from a known call library by a qualified bat biologist with experience acoustically identifying the species within the Project area. The results will be used to determine bat species presence and activity levels at each site.

3.0 BIOLOGIST QUALIFICATIONS

One or more of the following biologists will complete acoustic detector placement and acoustic call analysis (resumes included in Appendix C):

OAK RUN SOLAR PROJECT

- Angela Sjollem (Federal Permit #ES15027A-7)
- Jason Layne (Federal Permit #TE98673B-0)
- Charlie Allen

4.0 REPORTING AND DOCUMENTATION

Upon completion of the acoustic survey, a report summarizing methods and results of the survey will be submitted to Oak Run Solar for their use in consultation with the USFWS. The final report will include the location of the detectors, the habitat at the survey site, weather data by survey night, number of bat passes recorded by detector night, the final number of passes of study species, and what percent of the total bat activity (total number of bat passes identified by the automated programs) each species represents. In addition, for sites with study species activity, the results of any qualitative analysis will be reported. The report will include a description of methods, results and summarized data, a discussion, and conclusion of the survey. The report will include an electronic summary of acoustic identification as specified in the USFWS Guidelines. Tables of survey data and data sheets will be included as appendices in the report. Maps, representative photographs of site locations, and illustrations will be included as appropriate.

5.0 CONCLUSIONS

As part of Oak Run Solar's pre-construction and environmental due diligence, Stantec has prepared this study plan for the proposed Project in Madison County, Ohio. It describes the Indiana bat and northern long-eared bat presence/probable absence studies, methods, and data analyses to be completed prior to development to provide a "path forward" for biological studies and risk assessment for the Project. Stantec requests the USFWS and ODNR provide written concurrence for this study plan.

6.0 REFERENCES

Ohio Division of Wildlife (ODOW) and U.S. Fish and Wildlife Service (USFWS). Ohio Division of Wildlife and U.S. Fish and Wildlife Service (OH-Field Office) Joint Guidance for Bat Surveys and Tree Clearing (May 2022). Available at <https://ohiodnr.gov/static/documents/wildlife/permits/2022+State+Bat+Survey+Guidance.pdf>. Accessed on July 13, 2022.

USFWS. 2022. Range-wide Indiana bat and northern long-eared survey guidelines. Available at <https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>. Accessed July 13, 2022.

Appendix A FIGURE 1 – ACOUSTIC BAT SURVEY PLAN

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Revised: 2022-07-19 By: JHeldman

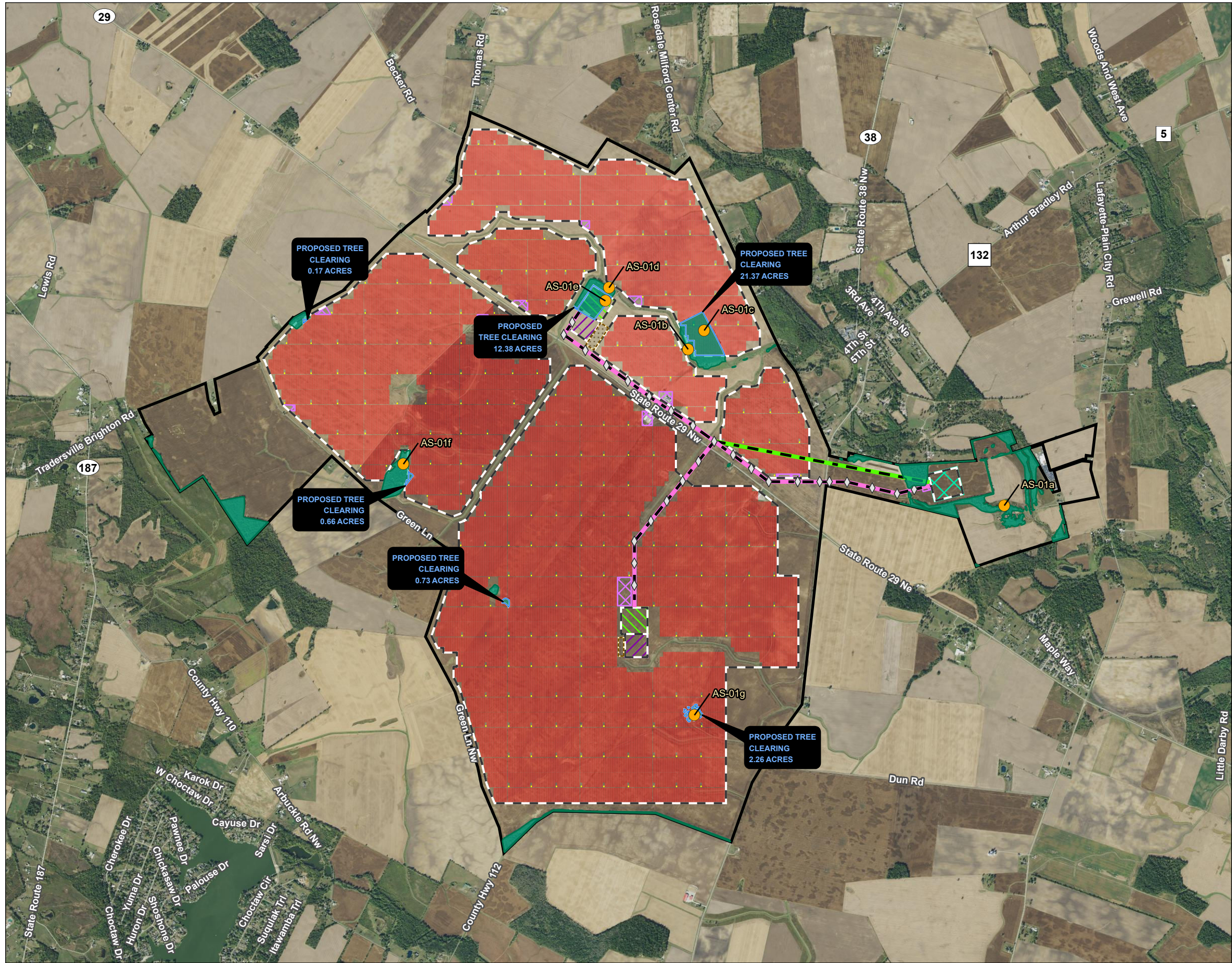
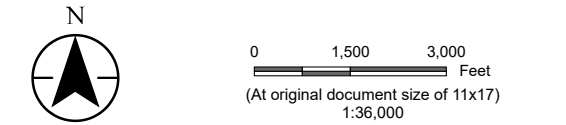


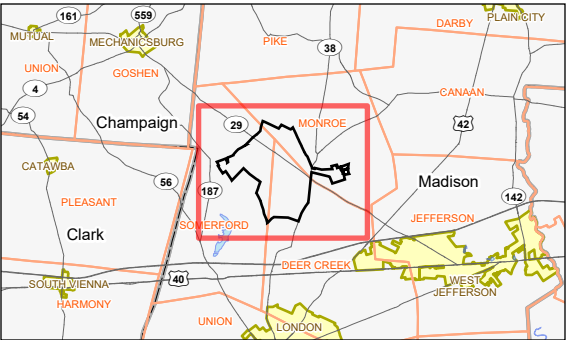
Figure No. 1
Title Acoustic Bat Survey Plan Map

Client/Project Oak Run Solar Project, LLC
Oak Run Solar Project

Project Location Madison County, Ohio
Prepared by JLH on 2022-07-13
TR by HS on 2022-07-15
IR by KC on 2022-07-18



- Legend
- Project Area
 - Solar Array
 - Inverter
 - O&M Facility
 - BESS Building
 - Substation
 - Step Up Substation
 - Laydown Yard
 - Gen-Tie Structure
 - Gen-Tie Line
 - Alternate Gen-Tie Line
 - Fence
 - Proposed Tree Clearing
 - Forested Area
 - Proposed Detector Location



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, Savion, USGS, NADS
3. Orthophotography: 2019 NAIIP



Appendix B AGENCY COORDINATION



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

John Kessler, Chief

2045 Morse Road – Bldg. E-2

Columbus, OH 43229

Phone: (614) 265-6621

Fax: (614) 267-4764

April 1, 2022

Courtney Dohoney
Stantec
3001 Washington Blvd, Suite 500
Arlington, VA 22201

Re: 22-0160; Oak Run Solar Project

Project: The proposed project involves the construction of an 800-megawatt (MW) alternating current utility-scale photovoltaic solar energy facility.

Location: The proposed project is located in Somerford Township, Madison County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Real Estate and Land Management (REALM): The Office of Real Estate and Land Management (REALM) has the following comments.

The [ODNR Recommended Requirements for Proposed Solar Energy Facilities in Ohio](#) should be incorporated into the project design and site development plan. This guidance document was developed by multiple Divisions within the Ohio Department of Natural Resources. The guidance document is non-exhaustive and project recommendations are made on a site-specific basis and may include additional considerations. The document utilizes the [Ohio Solar Pollinator Habitat Planning and Assessment Form](#). The incorporation of these conditions will help ensure that the project will result in the minimum adverse environmental impact.

Natural Heritage Database: The Natural Heritage Database has the following data at or within one mile of the project area:

Western Creek Chubsucker (*Erimyzon claviformis*), SC
Least Darter (*Etheostoma microperca*), SC
Purple Wartyback (*Cyclonaias tuberculata*), SC
Northern Riffleshell (*Epioblasma rangiana*), E, FE
Snuffbox (*Epioblasma triquetra*), E, FE
Wavy-rayed Lampmussel (*Lampsilis fasciola*), SC

Clubshell (*Pleurobema clava*), E, **FE**
Round Pigtoe (*Pleurobema sintoxia*), SC
Kidneyshell (*Ptychobranhus fasciolaris*), SC
Salamander Mussel (*Simpsonaias ambigua*), SC
Rabbitsfoot (*Theliderma cylindrica*), E, **FT**
Great Blue Heron Rookery Animal Assemblage
Mussel Bed Animal Assemblage

The review was performed on the project area specified in the request as well as an additional one-mile radius. Records searched date from 1980. Conservation status abbreviations are as follows: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; U = state status under review; X = presumed extirpated in Ohio; FE = federal endangered, and FT = federal threatened.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

An additional search for unique ecological sites, scenic rivers, state nature preserves, wildlife areas, national wildlife refuges, parks, forests, and other protected natural areas indicates that the following sites occur within or adjacent to the project area:

Little Darby Creek State Scenic River

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the “OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING”. If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS “Range-wide Indiana Bat Survey Guidelines.” If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Erin Hazelton for

project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)

Northern riffleshell (*Epioblasma torulosa rangiana*)

rayed bean (*Villosa fabalis*)

snuffbox (*Epioblasma triquetra*)

Federally Threatened

rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered

elephant-ear (*Elliptio crassidens crassidens*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at:

<https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf>

The project is within the range of the following listed fish species.

State Endangered

spotted darter (*Etheostoma maculatum*)

State Threatened

Tippecanoe darter (*Etheostoma Tippecanoe*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the black-crowned night-heron (*Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through

December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If no wetland habitat will be impacted, the project is not likely to impact this species.

The project is within the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. The loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. If thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, the project is not likely to impact this species.

The project is within the range of the sandhill crane (*Grus canadensis*), a state threatened species. Sandhill cranes are primarily a wetland-dependent species. On their wintering grounds, they will utilize agricultural fields; however, they roost in shallow, standing water or moist bottomlands. On breeding grounds they require a rather large tract of wet meadow, shallow marsh, or bog for nesting. If grassland, prairie, or wetland habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 through August 31. If this habitat will not be impacted, this project is not likely to have an impact on this species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this type of habitat will not be impacted, the project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Geological Survey: The Division of Geological Survey has the following comments.

Physiographic Region

The proposed project area is in Deer Creek, Monroe, and Somerford townships, Madison County. This area is in the Darby Plain physiographic region. This region is characterized by moderately low relief and few large streams. The region is primarily made up of broad hummocky ground moraine and includes several indistinct recessional moraines. Loamy Wisconsinan till, with a high lime concentration, covers Silurian and Devonian-aged carbonate and shale bedrock (Ohio Department of Natural Resources, Division of Geological Survey, 1998).

Surficial/Glacial Geology

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. The project area is covered by the silty loam till of the flat to gently undulating Wisconsinan ground moraine. The far western portion of the project area is on the London Moraine. Outwash and alluvium is adjacent to small streams that run through the project area (Pavey et al, 1999). Glacial drift throughout most of the study area is between 18 and 224 feet thick. Drift is thickest in the western half of the project area and thinnest in the center of the project area (Powers and Swinford, 2004).

Bedrock Geology

The uppermost bedrock unit in the project area is the Salina Undifferentiated. This unit is Silurian-age and consists of a gray to brown dolomite which contains argillaceous partings, brecciated intervals, algal laminations, and anhydrite/gypsum zones. Underlying the Salina Undifferentiated is the Silurian-age Tymochtee Dolomite. This unit is characterized by an olive gray to yellowish brown dolomite. It frequently contains brownish-black to gray shale laminae. It should be noted that bedrock is not exposed at the surface within the boundaries of the project area due to glacial drift (Slucher et al, 2006).

Oil, Gas and Mining

ODNR has no record of oil and gas wells within one mile of the proposed project area (Ohio Department of Natural Resources, Division of Oil and Gas, Ohio Oil and Gas Wells Locator).

ODNR does not have record of any mining operations within the project area. The nearest mine to the project area is an active sand and gravel pit operated by Ernst Enterprises Inc and located 5.1 miles to the south (Ohio Department of Natural Resources, Division of Mineral Resources, Mines of Ohio).

Seismic Activity

Several small earthquakes have historically been recorded in central and west-central Ohio. The three events closest to the site are listed in the chart below (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Earthquake Epicenters):

Date	Magnitude	Distance to Site Boundary	County	Township
June 19, 1843	3.5	17.7 miles	Champaign	Urbana
October 4, 1980	2.0	19.4 miles	Clark	Green
January 4, 1873	3.8	24.8 miles	Delaware	Orange

Karst

Karst features usually form in areas that are covered by thin or no glacial drift and the bedrock is limestone or dolomite. The nearest verified sinkholes are 10 miles to the southwest of the project area. Although there are no sinkholes in the project area, the underlying limestone and dolomite formations of the project area are susceptible to the formation of sinkholes. Significant glacial drift deposits within the project area makes the formation of sinkholes unlikely (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Karst).

Soils

According to the USDA Web Soil Survey, the project area consists primarily of soils derived from loess, till, and glacial fluvial deposits. Crosby, Kokomo, and Lewisburg are the most common soil series found within the boundaries of the project area. These soils have a silt loam and silty clay loam texture and together cover over 91% of the project area. The Kokomo Soil which makes up approximately 36% of the project area is a hydric soil and is frequently ponded from December through May (USDA Web Soil Survey).

There is a low to moderate risk of shrink-swell potential in these soils. Slope is variable, with slope seldom exceeding a 12% grade. Slopes are steepest in the west near the London Moraine and along stream valleys (Gerken and Scherzinger, 1981 and USDA Web Soil Survey).

Groundwater

Groundwater resources are plentiful throughout the project area. Wells developed in bedrock are likely to yield over 100 gallons per minute (Hallfrisch, 1994 and Ohio Department of Natural Resources, Division of Water, Bedrock Aquifer Map, 2000). Wells developed in glacial material are likely to yield 5 to 100 gallons per minute. Wells developed in glacial material are most productive in sand and gravel deposits along Spring Fork. Wells with yields up to 25 gallons per minute may also be developed in sand and gravel lenses within upland till deposits (Ohio Department of Natural Resources, Division of Water, Statewide Unconsolidated Aquifer Map, 2000).

ODNR has record of 178 water wells drilled within one mile of the project area, twelve of which are within the bounds of the project area. Wells within one mile of the project area range in depth from 30 to 290 feet, with an average depth of 103 feet. The most common aquifer listed is sand and gravel. Limestone is listed as the primary aquifer on 82 of the wells. The remaining wells are completed in sand and gravel lenses within the glacial deposits. Sustainable yields of 5 to 200 gallons per minute have been reported for 51 wells within one mile of the project area, with the average sustainable yield being 14 gallons per minute (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Water Wells).

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ohio Ecological Services Field Office

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

Phone: (614) 416-8993 Fax: (614) 416-8994



In Reply Refer To:

February 23, 2022

Project Code: 2022-0011961

Project Name: Stantec Consulting - Oak Run Solar Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ohio Ecological Services Field Office

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

(614) 416-8993

Project Summary

Project Code: 2022-0011961

Event Code: None

Project Name: Stantec Consulting - Oak Run Solar Project

Project Type: Power Gen - Solar

Project Description: Oak Run Solar is a proposed 800-megawatt (MW) alternating current utility-scale photovoltaic solar energy project in Madison County, Ohio. The Project area encompasses approximately 6,063 acres of private land, adjacent to the community of Plumwood. The Project will include solar modules, a racking system, a medium-voltage electrical collection system, inverters, meteorological towers, perimeter fencing, internal access roads, an operation and maintenance facility, Project substations, a generation tie-line, and a point of interconnection substation and switchyard. Temporary laydown areas will also be needed during construction. The actual area of disturbance for the Project will be less than the approximately 6,063 acres that is depicted within the Project boundary.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@39.997088649999995,-83.43046758631323,14z>



Counties: Madison County, Ohio

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> ▪ Incidental take of the northern long-eared bat is not prohibited at this location. Federal action agencies may conclude consultation using the streamlined process described at https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Scioto Madtom <i>Noturus trautmani</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5395	Endangered

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Name: Courtney Dohoney
Address: 3001 Washington Blvd
City: Arlington
State: VA
Zip: 22201
Email: courtney.dohoney@stantec.com
Phone: 3126366848

From: Ohio, FW3 <ohio@fws.gov>
Sent: Thursday, March 3, 2022 2:51 PM
To: Dohoney, Courtney
Cc: nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject: Oak Run Solar Project, LLC, Madison County, Ohio
Attachments: 2022 USFWS Federally Listed Bat Permittees - Ohio.pdf



UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994



Project Code: 64664455=:5

Dear Ms. Dohoney,

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption.

Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas, meaning that they return to the same area, and often the same trees, to roost year after year. Because the project will result in a large amount of forest clearing relative to the available habitat in the immediately surrounding area, habitat removal could result in significant impacts to Indiana bats. Because of this, the proposed project may result in indirect adverse effects to Indiana bats, even if tree clearing is conducted during the winter season when Indiana bats are not present. *Therefore, we recommend that a summer survey be conducted to determine presence or absence of*

Indiana bats at the project site. The summer survey must be conducted in coordination with the Ohio Field Office.

If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are also warranted. Portal surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office.

Survey results should be coordinated with this office prior to initiation of any work at the project area. Based on the results of the survey(s), we will evaluate potential impacts to the Indiana bat from the proposed project. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus it is important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Patrice Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW

Appendix C PERSONNEL RESUMES

Angela Sjollema

Wildlife Biologist

18 years of experience · Columbus, Ohio

Angela has been with Stantec in the role of biologist for 11 years but has been working in wildlife biologist for 18 years. She has experience working with various species of wildlife throughout the U.S. and abroad. Her expertise includes bats, passerines, raptors, and freshwater mussels. With Stantec, she performs threatened and endangered species surveys, habitat surveys, wetland and stream delineations, Section 7 consultation, Clean Water Act permitting, and mitigation monitoring. Angela's project work includes natural gas and natural gas liquids pipelines, oil pipelines, wind farms, low-head dam removals, transportation, wastewater treatment plants, and various other types of projects. She also has recent experience writing USFWS Habitat Conservation Plans (section 10 consultation) and Biological Opinions (section 7 consultation).

EDUCATION

BS, Wildlife Biology, University of Minnesota, Twin Cities, Minnesota, USA, 2003

MS, Wildlife Biology, Frostburg State University, Frostburg, Maryland, USA, 2011

CERTIFICATIONS & TRAINING

Wild Animal Bat Capture and Mussel Collection, Permit #20-080 2017-2020, ODNR, Statewide, Ohio, 2017

Indiana Bat, Gray Bat, and Northern Long-eared Bat Capture 2018-2020, USFWS Native Endangered and Threatened Species Recovery Permit #TE15027A-6, Range-wide, 2018

Certified Wildlife Biologist 2017-2022, The Wildlife Society, Columbus, Ohio, 2017

PROJECT EXPERIENCE

Grace's Place Residential Development Project | Pre-

ENDANGERED SPECIES/SPECIES AT RISK ASSESSMENTS

I-75 Passing Line Bat Survey Project | Tennessee Department of Transportation | Campbell County, Tennessee | 2014

Angela assisted with all aspects of bat mist netting efforts for a transportation related bat survey in summer of 2014. She assisted in mist net set up, bat capture, identification, measurement and habitat descriptions. When a federally listed bat was captured, Angela participated in radio tracking the bats to their day roosts.

Mirasol Development Bat Surveys | Delaware County, Ohio | 2014

Angela assisted with all aspects of bat mist netting efforts for a residential development related bat survey in summer of 2014. She assisted in mist net set up, bat capture, identification, measurement and habitat descriptions. One site was surveyed for this project and three species were captured.

State Road 32, Cocke County Endangered Bat Survey | Cocke County, Tennessee | 2013

Angela assisted with all aspects of bat mist netting efforts for a transportation related bat survey in summer of 2013. She assisted in mist net set up, bat capture, identification, measurement and habitat descriptions. Angela participated in four nights of capture involving four species of bats and 17 individuals.

Orangeville Wind Project Bat Surveys | Wyoming County, New York | 2015

Angela assisted with bat mist netting efforts for an existing wind project. She completed mist net set up and capture at three sites and captured sixteen bats of two species. Angela also assisted with the state and federal results reporting.

UMTP Project Bat Surveys | Kinder Morgan | Muskingum County, Ohio | 2014

Angela assisted with all aspects of bat mist netting efforts for a gas pipeline related bat survey in summer of 2014. She assisted in mist net set up, bat capture, identification, measurement and habitat descriptions. When a federally listed bat was captured, Angela participated in radio tracking the bats to their day roosts.

Line 6B Endangered Bat Survey | Enbridge Inc. | Indiana and Michigan | 2013

Angela assisted with an endangered bat survey of a proposed pipeline replacement through northern Indiana and southern Michigan. She assisted with locating mist net and Anabat survey sites, Anabat deployment and downloading, mist net set up, bat capture, identification and measurement of bats. Angela participated in nine nights of survey involving three species of bats. Her and other biologists also composed the survey reports for the agencies.

Defiance Airport Endangered Bat Survey | Defiance County, Ohio | 2013

Angela assisted with all aspects of an endangered bat survey for a tree cutting project at a regional airport in the summer of 2013. She assisted with the study plan composition, locating a mist net site, mist net set up, bat capture, identification and measurement of bats. Angela participated in two nights of bat capture involving two species of bats and two individuals.

Marsh Hill Wind Project Bat Surveys | Steuben County, New York | 2015

Angela assisted with bat mist netting efforts for an existing wind project. She completed mist net set up and capture at two sites and captured seven bats of two species. Angela also assisted with the state and federal results reporting.

High Prairie Wind Project Bat Surveys | Schuyler County, Missouri | 2016

In 2016 and 2018, Angela performed bat mist netting efforts for a proposed wind project. She completed mist net set up and capture at 15 sites and captured 141 bats of seven species in 2016. Nine of the captured bats were endangered Indiana bats (*Myotis sodalis*) and when project specifications dictated, Angela applied a radio transmitter to the bat. In 2018, Angela performed bat mist net efforts for five sites and caught 52 bats of four species. Five of the captured bats were endangered Indiana bats and two radio transmitters were applied by Angela.

Confidential Pipeline Project | Ohio and Kentucky | 2013

Angela assisted with an endangered bat survey of a proposed pipeline through Ohio and Kentucky. She assisted with all aspects of bat capture including locating mist net sites, mist net set up, bat capture, identification, measurement, and habitat descriptions. Angela participated in 29 nights of bat capture involving six species of bats and 231 individuals.

American Ordnance M Yard Bat Survey | Des Moines County, Iowa | 2016

Angela completed bat mist netting efforts of a structure within a military base. She completed mist net set up and capture at one site and captured three big brown bats (*Eptesicus fuscus*). She also assisted with the visual search of the structure, nightly bat emergence counts, and acoustic monitoring.

Confidential Pipeline Corridor | Confidential Client | Ohio

Angela assisted with rare, threatened, and endangered (RTE) species coordination with USFWS Ohio Field Office and Ohio DNR for a multi-mile pipeline corridor terminating at the Ohio River. Summer mist net surveys were completed at 29 sites along the corridor for the endangered Indiana bat and she assisted in locating and set up of mist net sites, bat capture, and collection of data.

TP-371 Pipeline Replacement Bat Surveys | EQT Corporation | Armstrong and Indiana Counties, Pennsylvania | 2015

Angela completed bat mist netting efforts for a natural gas pipeline replacement. She completed mist net set up and capture at 10 sites and captured 117 bats of three species. Angela also assisted with radio telemetry of threatened bat species.

Tennessee Department of Transportation, SR-93 Bat Survey Project | Sullivan and Washington Counties, Tennessee

Angela led all aspects of bat mist netting efforts for two closely related transportation projects in the summer of 2016. She set up mist nets, captured, identified, and measured. Three species of bats were captured within two weeks of effort including 51 federally endangered gray bats (*Myotis grisescens*).

Conesville Reclamation Project Indiana Bat Surveys | Conesville, Ohio | 2011

Angela provided support for Indiana bat capture at one site near the Conesville Power Plant for a reclamation and mitigation project in 2011. She assisted with all aspects of mist netting efforts, including the set-up of nets, species identification, and weighing and measuring of individual bats. The project included one site.

Gas Pipeline Indiana Bat Surveys | Carroll & Jefferson Counties, Ohio

Angela provided support for Indiana bat surveys at a linear gas transmission pipeline project in the summer of 2011. She assisted with all aspects of mist netting efforts, including the set-up of nets, species identification, habitat assessment, and weighing and measuring of individual bats. She participated in bat capture at eight sites.

Wind Power Acoustical Bat Surveys | Hardin County, Ohio | 2011

Angela assisted with long term bat acoustic monitoring at a wind power project site in 2011. When necessary, she traveled to the project site to perform maintenance on or replace Anabat systems installed on meteorological towers. She also compiled data from avian surveys and wrote sections of the final avian and bat reports to be submitted to agencies.

SR 266 Endangered Bat Surveys | Smyrna, Tennessee | 2011

Angela provided support for Indiana and grey bat surveys on a road construction project in 2011. She assisted with all aspects of bat capture using mist nets and bat acoustic monitoring at three locations on the connector project.

I-40 Connector with State Route 32 and 73 Bat Survey | Cocke County, Tennessee | 2011

Angela provided support for Indiana and grey bat surveys for a road construction project in the summer of 2011. She assisted with all aspects of bat capture and bat acoustic monitoring at two locations on the connector project.

I-40 Interchange at O'Neill Road Endangered Bat Survey | Cocke County, Tennessee | 2011

Angela provided support for Indiana and grey bat surveys for a road construction project. She assisted with all aspects of mist netting and bat acoustic monitoring efforts at one project site.

Corridor K Bat Acoustic Monitoring Project | Polk County, Tennessee | 2011

Angela provided field support for a bat survey using Anabat acoustic monitors for a road construction project in summer 2011. She operated the acoustic detectors and drove three different transects.

Polk County State Road Eco Study Endangered Bat Surveys | Polk County, Tennessee | 2011

Angela provided support for Indiana and grey bat surveys for a road construction project. She assisted with all aspects of mist netting and acoustic monitoring efforts at one survey site.

Wind Power Project Endangered Bat Surveys | Roanoke County, Virginia

Angela provided support for an Indiana bat mist net survey at a wind project site in Virginia. She was involved with all aspects of mist netting efforts, including the set up of nets, species identification, and weighing and measuring of individual bats at four locations.

Wind Power Project Endangered Bat Surveys | Hillsdale County, Michigan | 2011

Angela assisted with Indiana bat mist netting surveys for a wind power project in Michigan during the summer of 2011. She assisted in all aspects of mist netting, including the location of mist net sites, set up of nets, species identification, weighing and measuring individual bats, and surrounding habitat descriptions at six locations.

Gas Pipeline Indiana Bat Surveys | Confidential Client | Carroll, Harrison & Jefferson Counties, Ohio | 2012

Angela assisted with mist netting efforts for Indiana bats in eastern Ohio. She assisted with all aspects of mist netting, including set up of nets, species identification, weighing and measuring individual bats, and surrounding habitat descriptions. She participated in bat capture at 20 sites and four species were caught.

Thornville-Lancaster 69 kV Line Rebuild Bat Survey Project | Fairfield and Perry Counties, Ohio | Burns & McDonnell

Angela led all aspects of bat mist netting efforts for two sites during the summer of 2018. She set up mist nets, captured, identified, and measured the bats. Two big brown bats and one red bat were captured.

Line AM-04b Replacement Bat Survey Project | Duke Energy | Highland Heights, Kentucky

Angela led all aspects of bat mist netting efforts for two sites during the summer of 2018. She set up mist nets, captured, identified, and measured the bats. Nine big brown bats and two red bats were captured.

Portsmouth Gaseous Diffusion Bat Survey Project | Department of Energy | Pike County, Ohio

Angela led all aspects of bat mist netting efforts for two sites and three nights during the summer of 2020. She set up mist nets, captured, identified, and measured the bats. One northern long-eared bat and five red bats were captured. Angela attached a radio transmitter to the northern long-eared bat and radio tracked the bat and performed emergence counts for three days.

State Route 126 Bat Survey Project | Tennessee Department of Transportation | Sullivan County, Tennessee

Angela led all aspects of bat mist netting efforts for two sites and four nights during the summer of 2020. She set up mist nets, captured, identified, and measured the bats. Four big brown bats and two red bats were captured.

State Route 32 Bat Survey Project | Tennessee Department of Transportation | Cocke County, Tennessee

Angela led all aspects of bat mist netting efforts for two sites and four nights during the summer of 2020. She set up mist nets, captured, identified, and measured the bats. Four eastern red bats, two gray bats, one tri-colored bat, and one big brown bat were captured.

State Route 1 Bat Survey Project | Tennessee Department of Transportation | Roane County, Tennessee

Angela led all aspects of bat mist netting efforts for two sites during the summer of 2017. She set up mist nets, captured, identified, and measured the bats. One eastern red bat was captured.

State Route 35 Cocke County Line-North Nolichucky Bat Survey Project | Tennessee Department of Transportation | Greene County, Tennessee

Angela led all aspects of bat mist netting efforts for two sites during the summer of 2017. She set up mist nets, captured, identified, and measured the bats. Four bats were captured including big brown bats (*Eptesicus fuscus*) and the federally endangered gray bat (*Myotis grisescens*).

State Route 14 to State Route 385 Bat Survey Project | Tennessee Department of Transportation | Shelby County, Tennessee

Angela led all aspects of bat mist netting effort for two closely related projects including six project sites in the summer of 2017. She set up mist nets, captured, identified, and measured the bats. Forty-eight individuals were captured including southeastern myotis (*Myotis austroriparius*), eastern red bat (*Lasiurus borealis*), eastern tri-colored bat (*Perimyotis subflavus*), and evening bat (*Nycticeius humeralis*).

Various Projects | Tennessee Department of Transportation | Greene, Roane, and Shelby Counties, Tennessee

Angela performed bat mist netting efforts for a three transportation related bat surveys in summer of 2017. She performed capture at 10 sites for 20 nights. Twenty four bats of six species were captured.

Bat Habitat Surveys | NiSource/Columbia Gas of Ohio | Various Locations, Ohio

Angela performed bat habitat surveys at three proposed pipeline projects. She gathered data such as species, diameter, and characteristics of tree proposed for clearing with the pipeline right-of-way and submitted the information in a report to U.S. Fish and Wildlife Service.

Stoneco Portage Quarry Bat Survey | The Shelly Company | Portage, Ohio

Angela performed bat mist netting efforts for a proposed quarry expansion project. She completed mist net set up and capture at one site for three nights and caught 35 bats of two species.

PUBLICATIONS

Sjollema, A.S., J.E. Gates, R.H. Hilderbrand, J. Sherwell. Offshore activity of bats along the Mid-Atlantic Coast. *Northeastern Naturalist*, 2014.

Presentation. Bat activity in the vicinity of proposed wind facilities along the Mid-Atlantic coast. *Northeast Region Biologists Conference*, 2011.

Presentation. Bat activity and patterns in the vicinity of proposed wind facilities along the Mid-Atlantic coast. *66th Annual Northeast Fish and Wildlife Conference*, 2010.

Presentation. Bat activity in the vicinity of proposed wind facilities along the Mid-Atlantic coast. *National Wind Coordinating Collaborative: Wind Wildlife Research Meeting VIII*, 2010.

Presentation. Bat activity in the vicinity of proposed wind facilities along the Mid-Atlantic coast. *40th Annual North American Symposium on Bat Research*, 2010.

Jason Layne M.S.

Wildlife Biologist

15 years of experience · Overland Park, Kansas

As a Wildlife Biologist, Mr. Layne has over 15 years of experience in wildlife monitoring, endangered species surveys, experimental research, and federal and state regulatory permitting and approvals. Mr. Layne is a USFWS permitted bat biologist with experience conducting bat surveys to determine the presence or probable absence of federally threatened/endangered Indiana bat, gray bat, and northern long-eared bat. He is proficient in the identification of all Eastern United States bat species and in the use of various field techniques, including acoustic detector deployment, echolocation call analysis, mist-net and harp trap surveys, habitat analysis, radio-telemetry, roost emergence, and bat banding.

EDUCATION

Master of Science, Wildlife Biology, Missouri State University, Springfield, Missouri, 2009

Bachelor of Science, Biology, University of Central Missouri, Warrensburg, Missouri, 2006

CERTIFICATIONS & TRAINING

Permit # TE15027A-5, Native Endangered & Threatened Species Recovery, USFWS, nationwide, United States, 2022

Permitted Biologist for Indiana, Gray, Northern long-eared, Ozark Big-eared, and Virginia Big-eared Bat , USFWS, Nationwide, United States, 2016

PROJECT EXPERIENCE

ENDANGERED SPECIES/SPECIES AT RISK ASSESSMENTS

Federally Threatened & Endangered Bat Surveys | Stantec Consulting Services Inc

As an employee of Stantec, Mr. Layne is responsible for coordinating and implementing bat surveys to determine presence or probable absence of bat species throughout the USA. He participates in and oversees all aspects of net/detector deployment, maintenance of field sampling equipment, quality control of data for presentation in reports and agency meetings, and utilization of ArcGIS maps for habitat use by wildlife. He analyzes acoustic bat passes to qualify species identification via automated call identification programs. He prepares assessment reports on findings and maintains databases of results. He has lead bat mist-netting and acoustic detector survey efforts for Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and gray bat (*Myotis grisescens*) surveys in Iowa and Missouri. In Kansas, he was the lead investigator for bat surveys at a Kansas Army National Guard Facility.

Multiple Wind Farms | Stantec Consulting Services Inc | Missouri, United States

Mr. Layne was the lead for qualitatively assessing acoustic bat passes recorded at over 100 sites within three proposed wind farms in Missouri. He conducted acoustic analysis for the Indiana bat, northern long-eared bat, gray bat, little brown bat, and tri-colored bat based on data collected using wildlife acoustic detectors.

Northern Long-eared Bat Migration Study | Stantec Consulting Services Inc | Iowa, United States

Mr. Layne was a lead for bat mist-netting northern long-eared bats to track fall migration movements in north-central Iowa. In partnership with Copperhead Consulting, radio tags were affixed to bats which were then tracked using aerial radio telemetry methods. He was also responsible for qualitatively assessing acoustic bat passes recorded near suspected bat hibernacula to determine species presence and relative activity rates.

Acoustic Surveys for Proposed Wind Energy Farms | Stantec Consulting Services Inc

Mr. Layne is responsible for coordinating and implementing remote detector surveys for proposed wind energy farms to assess relative bat activity at several confidential projects throughout the Midwest and Great Plains since 2016. Detectors are deployed on meteorological towers at heights above 55 meters, or ground based above 2 meters. Surveys are conducted from early spring through late fall. He oversees all aspect of detector deployment, maintenance of field sampling equipment, quality control of data for presentation in reports and agency meetings, and utilization of ArcGIS maps. He prepares assessment reports on findings and maintains databases of results. He attends meetings between multiple state and federal regulatory agencies to discuss habitat and wildlife issues at construction projects.

Federally Threatened & Endangered Bat Surveys, Missouri Department of Conservation* | Northeast, Missouri

Mr. Layne was responsible for leading bat mist-netting and acoustic detector survey efforts for four separate Indiana bat and northern long-eared bat surveys on public lands in summer of 2015. Both federally listed bats were captured and tracked to day roosts.

Bat Occupancy Modeling Project, Missouri Department of Conservation* | Northern, Missouri

Mr. Layne was the project manager and field crew leader for a multi-year bat occupancy modeling research project using acoustic detectors and targeted mist-netting across Northern Missouri (project spanned 22 counties, encompassing over 30 Missouri Department of Conservation areas, two state parks, and a USFWS National Wildlife Refuge) from 2012 through 2015. He analyzed recorded echolocation calls to verify species identification via automated call identification programs and visual confirmation. He oversaw all aspects of detector placement, mist net set up, bat capture, identification, measurement, and habitat descriptions. Bats recorded and captured included Indiana bats (*Myotis sodalis*), northern long-eared bats (*Myotis septentrionalis*), little brown bats (*Myotis lucifugus*), eastern red bats (*Lasiurus borealis*), silver-haired bats (*Lasionycteris noctivagans*), hoary bats (*Lasiurus cinereus*), big brown bats (*Eptesicus fuscus*), evening bats (*Nycticeius humeralis*), and tri-colored bats (*Perimyotis subflavus*).

Winter Ecology and Behavior Studies of Tree Bats, Missouri State University* | Shannon County, Missouri

Mr. Layne designed and implemented graduate research on the arousal response of eastern red bats to prescribed fire stimuli. This research was used to guide forest management techniques to reduce negative impacts on bats. He designed and conducted an acoustic survey to quantify activity of bats during winter months. He affixed radio transmitters and tracked eastern red bats and silver-haired bats for telemetry surveys of roosting habitat and foraging behavior.

Winter Bat Hibernacula and White Nose Syndrome Monitoring* | Missouri

Mr. Layne assisted with population count surveys throughout Missouri for cave/mine roosting species: Indiana bat, northern long-eared bat, gray bat (*Myotis grisescens*), little brown bat, big brown bat, and tri-colored bat. In 2013 and 2015 he led one of six teams on a population count through a recently discovered hibernacula that is considered the largest congregation of Indiana bats in its range. He collected data for white nose syndrome monitoring, resulting in range map expansions of the disease.

Rare Bat Species Surveys, Missouri Department of Conservation* | Southeast, Missouri

Mr. Layne conducted bat mist-netting and acoustic detector survey efforts for rare species surveys on public lands in summer of 2013. He captured and identified the Missouri listed Species of Concern southeastern myotis bat (*Myotis austroriparius*), and identified a captured Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) and tracked the bats to day roosts.

Indiana Bat Mist-Net and Acoustic Surveys for Proposed Wind Energy Farms | AR, IA, IN, KS, MO, OH

Mr. Layne was responsible for leading mist-netting efforts to determine presence or probable absence of Indiana bats at several confidential projects throughout the Midwest from 2009 through 2012. He oversaw and participated in all aspects of mist-netting, including coordination with land agents, setting up nets, species identification, weighing and measuring individuals, affixing radio transmitters, and surrounding habitat descriptions. He was a crew leader for radio-tracking of Indiana bats, little brown bats, and big brown bats to roost locations and foraging areas. He oversaw and conducted roost emergence counts of radio-tracked species. He managed and implemented acoustic surveys including detector deployment, analysis of calls to species, and reporting at mist-net sites. Species captured include: hoary bats, silver-haired bats, eastern red bats, big brown bats, Indiana bats, northern long-eared bats, little brown bats, evening bats, and tri-colored bats.

WILDLIFE SURVEYS AND STUDIES

Passive Acoustic Detector Surveys for Proposed Wind Energy Farms, Various Sites* | AR, CA, IA, IL, IN, KS, MI, MO, MT, ND, NE, NM, NV, NY, OH, OK, TX

Ms. Layne is responsible for coordinating and implementing remote detector surveys for proposed wind energy development to determine activity of bat species throughout the USA from 2009 through present. Detectors are deployed on meteorological towers at heights above 50 meters. Surveys occur from early spring through late fall. He participates in and oversees all aspects of detector deployment, maintenance of field sampling equipment, quality control of data for presentation in reports and agency meetings, utilization of ArcGIS maps for habitat use by wildlife. Prepares assessment reports on findings, and maintains databases of results. Coordinates with multiple state and federal regulatory agencies on wildlife issues at construction projects.

Charlie Allen

Environmental Scientist

7 years of experience · Columbus, Ohio

As an environmental scientist, Charlie has 7 years of experience specializing in natural resources management and regulatory compliance associated with a wide variety of projects including natural gas pipeline, water pipelines, electrical transmission, solar, residential development, and transportation. He assists clients with federal and state regulatory permitting and approvals including coordination with US Fish and Wildlife Service under Section 7, of the Endangered Species Act, USACE Section 404 permits, state 401 Water Quality Certifications, storm water permits, floodplain permits, and Ohio Power Sighting Board (OPSB) applications for solar and gas projects. In the field he acts as a lead wetland delineator, and assists with habitat assessments for endangered species, conducts bat surveys, and freshwater mussel surveys and relocations.

EDUCATION

Bachelor of Arts, Environmental Studies, Biology Minor, Denison University, Granville, Ohio, United States, 2014

CERTIFICATIONS & TRAINING

Wetland Delineation Training, Midwest Biodiversity Institute, Columbus, Ohio, USA, 2021

Ohio Rapid Assessment Methods for Wetlands , Ohio Environmental Protection Agency, Columbus, Ohio, United States, 2016

Headwater Habitat Evaluation Index (HHEI) , Midwest Biodiversity Institute, Columbus, Ohio, United States, 2019

Qualitative Habitat Evaluation Index (QHEI), Midwest Biodiversity Institute, Columbus, Ohio, United States, 2019

Open Water Diver , PADI, Columbus, Ohio, United States, 2013

Ohio Boat Operator, Ohio State Parks and Watercraft, Columbus, Ohio, United States, 2019

PROJECT EXPERIENCE

ENDANGERED SPECIES/SPECIES AT RISK ASSESSMENTS

Chickasaw Wind Project | Chickasaw Wind Energy Center LLC | Chickasaw County, Iowa | 2021 | Environmental Scientist

Charlie assisted in completing mist net surveys for endangered bat species for pre-construction monitoring. 34 mist nights were completed at 3 different netting locations across the project area. He also developed a report detailing the methods used and capture results.

Freshwater Solar Project | Freshwater Solar, LLC | Montcalm County, Michigan | 2021 | Environmental Scientist

Charlie assisted in deploying and collecting acoustic detectors for a northern long-eared bat presence / absence survey. A total of 26 acoustic detectors were deployed to survey the site.

Thornville-Lancaster 69 kV Line Rebuild Bat Survey Project | Burns & McDonnell | Fairfield and Perry Counties, Ohio | 2019 | Environmental Scientist

Charlie assisted with all aspects of bat mist netting efforts for two sites during the summer of 2019. He set up mist nets, captured, identified, and measured the bats. Two big brown bats and one red bat were captured.

Portsmouth Gaseous Diffusion Bat Survey Project | Department of Energy | Pike County, Ohio | 2020 | Environmental Scientist

Charlie assisted with all aspects of bat mist netting efforts for two sites and three nights during the summer of 2020. He set up mist nets, captured, identified, and measured the bats. One northern long-eared bat and five red bats were captured. Charlie assisted with radio tracking the bat and performed emergence counts for three days.

Various Pipeline Projects | Columbia Gas of Ohio | Various Counties, Ohio | 2019 - 2022 | Environmental Scientist

Charlie led and assisted with all aspects of bat habitat surveys. He assesses trees for bat summer roosting characteristics. When necessary, Charlie performs emergence surveys on trees to determine if bats are using these trees.

From: [Boyer, Angela](#)
To: [Sjollema, Angela](#)
Subject: Re: [EXTERNAL] Oak Run Bat Study Plan
Date: Thursday, July 21, 2022 2:00:17 PM

Thanks. I realized I forgot to adjust the authorization language. You are good to go.

From: Sjollema, Angela <Angela.Sjollema@stantec.com>
Sent: Thursday, July 21, 2022 1:40 PM
To: Boyer, Angela <angela_boyer@fws.gov>; Eileen.Wyza@dnr.ohio.gov
<eileen.wyza@dnr.ohio.gov>
Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com
<sflannery@savionenergy.com>; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie
<Charlie.Allen@stantec.com>
Subject: RE: [EXTERNAL] Oak Run Bat Study Plan

Hi Angie,

Thank you for the quick response! I just wanted to clarify for your records that this survey will be acoustics. I am choosing the sites and Jason Layne will likely conduct our qualitative ID of acoustic files (if necessary). Please let me know if this changes anything about how you view our survey.

I appreciate it!
Angela

Angela Sjollema CWB, MS
Senior Biologist

Direct: 614-643-4400
Mobile: 513-400-8773
angela.sjollema@stantec.com

Stantec
1500 Lake Shore Drive Suite 100
Columbus OH 43204-3800



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From: Boyer, Angela <angela_boyer@fws.gov>
Sent: Thursday, July 21, 2022 1:33 PM
To: Sjollema, Angela <Angela.Sjollema@stantec.com>; Eileen.Wyza@dnr.ohio.gov
Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie <Charlie.Allen@stantec.com>
Subject: Re: [EXTERNAL] Oak Run Bat Study Plan

Angela,

This is in response to a July 21, 2022, request for an amendment to Federal Fish and Wildlife Permit Numbers ES15027A-7 (Stantec) and ES98673B-1 (Jason Layne) to conduct a summer mist-net survey for the Oak Run Solar Project in Madison County, Ohio. This survey effort has been assigned the reference number **22-048**. Please include this project reference number in all correspondence to the U.S. Fish and Wildlife Service and the Ohio Division of Wildlife.

This email serves as site-specific authorization to proceed in accordance with Federal permit requirements. Summer mist netting is authorized to occur between June 1 and August 15, 2022. All federal permittees must also have valid Ohio Scientific Collecting Permits and plans must also be reviewed and approved by the Ohio Division of Wildlife before any surveys take place. Please note that a federally permitted person must remain present at the mist net sites while they are being operated. This notification serves as written concurrence that Stantec Consulting Services and Jason Layne are authorized to proceed with the proposed bat survey. This survey will serve as a presence absence survey for the Indiana bat and northern long-eared bat.

By January 31, 2023, we request that you submit an annual report of your Ohio survey work to this office using the 2022 Midwestern U.S. Spreadsheet in electronic format. Be sure to include data for the site even if no bats were captured.

Sincerely,
Angela Boyer
Endangered Species Coordinator for Ohio
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, Ohio 43230

From: Sjollema, Angela <Angela.Sjollema@stantec.com>
Sent: Thursday, July 21, 2022 12:01 PM
To: Boyer, Angela <angela_boyer@fws.gov>; Eileen.Wyza@dnr.ohio.gov <eileen.wyza@dnr.ohio.gov>
Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com <sflannery@savionenergy.com>; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie <Charlie.Allen@stantec.com>
Subject: [EXTERNAL] Oak Run Bat Study Plan

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good afternoon,

Attached is a acoustic bat survey study plan for your review. Please contact me if you have any questions or would like to discuss the effort or methods further.

Thank you,
Angela

Angela Sjollema CWB, MS

Senior Biologist

Direct: 614-643-4400

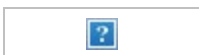
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**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

Appendix C ACOUSTIC SITE PHOTOGRAPHS



Photograph 1. View of AS-01a microphone.



Photograph 2. View of AS-01a facing north.



Photograph 3. View of AS-01a facing east.



Photograph 4. View of AS-01a facing south.



Photograph 5. View of AS-01a facing west.



Photograph 6. View of AS-01b microphone.



Photograph 7. View of AS-01b facing north



Photograph 8. View of AS-01b facing east



Photograph 9. View of AS-01b facing south.



Photograph 10. View of AS-01b facing west.



Photograph 11. View of AS-01c microphone.



Photograph 12. View of AS-01c facing north.



Photograph 13. View of AS-01c facing east.



Photograph 14. View of AS-01c facing south.



Photograph 15. View of AS-01c facing west.



Photograph 16. View of AS-01d microphone.



Photograph 17. View of AS-01d facing north.



Photograph 18. View of AS-01d facing east.



Photograph 19. View of AS-01d facing south.



Photograph 20. View of AS-01d facing west.



Photograph 21. View of AS-01e microphone.



Photograph 22. View of AS-01e north.



Photograph 23. View of AS-01e east.



Photograph 24. View of AS-01e south.



Photograph 25. View of AS-01e west.



Photograph 26. View of AS-01f microphone



Photograph 27. View of AS-01f north.



Photograph 28. View of AS-01f northeast



Photograph 29. View of AS-01f south.



Photograph 30. View of AS-01f west.



Photograph 31. View of AS-01g microphone.



Photograph 32. View of AS-01g north.



Photograph 33. View of AS-01g east.



Photograph 34. View of AS-01g south.



Photograph 35. View of AS-01g west.

**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

Appendix D ACOUSTIC SITE DATASHEETS

Collect position of pole prior to collecting

Stantec Presence/Absence Acoustic Bat Detector Datasheet									
Site ID: AS-01a		Project Number: 2028113244		Project Name: Oak Run Solar		Pg 1 of 1			
State: OH		County: Madison		Weather Conditions During Deployment					
Site Selector: A. Sjollema	Lat: 39.995492	Long: -83.400931	Date	Low Temp	Rain (Y/N)	Rain length (hrs)	Wind Avg		
Deployer: Charlie Allen	Notes: Night 2 had some higher gusts of wind average for first 5 hrs was 7.7mph		Night One	67°F	N	0	1.9 mph		
Date Deployed: 8/2/22			Night Two	72°F	N	0	5.8 mph		
Date Collected: 8/4/22			Night Three						
Detector #: 54014799	Time on Detector Correct? Yes No		Night Four						
Mic #: MU 215684									
Detector Setup									
Detector Make: Wildlife Acoustics	Detector Model: SM4BAT-FS	Dist to Obstruct (m): 5 m							
Microphone Model: SMM-U2	Directionality: Omnidirectional	Mic Height (AGL; m): 3m							
Weatherproofing: NA	Mic Angle: 90°	Call Data Type: Full Spectrum							
Mic Direction (deg): N/A	In-Field Calibration: PASS FAIL	Notes:							
HABITAT DESCRIPTION									
VEGETATION CHARACTERISTICS					Detector Startup				
Habitat Type: Riparian (USFWS acceptable answers)					Card in A: Y				
Canopy Closure (%): N: 0 E: 0 S: 0 W: 20 Avg: 5					Memory A: 0/32				
Estimated Subcanopy Closure: Closed Moderate Open % Closure 10					Battery: 6.2 V				
Dominant Sized Canopy Species: Avg. DBH (cm)					Temperature: 26.00				
1. Black Walnut (6")					Mic O Type: U2				
2. "					Cal Ch 0:				
3. "					Going to Sleep Until: 20:16				
4. "									
Subdominant Sized Canopy Species: Avg. DBH (cm)					Photos:				
1. Honey Locust (43")					North: 3				
2. "					East: 4				
3. Sumac (23")					South: 5				
4. "					West: 6				
Subcanopy Dominant Species					Microphone: 2				
1. Teasel					Full Setup: 1				
2. "					Misc:				
3. "					Misc:				
Roost Tree Potential Consists of: Large Trees Snags Both									
Roost Tree Numbers for Area: High Moderate Low									
Travel Corridor Present: Yes No									
Overall Habitat: Great Good Fair Poor None									
Potential Mist Net Locations: Yes No Number 1									
Additional Site Notes: located in open area along riparian corridor. Stream was not flowing on date of deployment									

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

Stantec Presence/Absence Acoustic Bat Detector Datasheet

Site ID: AS-016	Project Number: 20231124 Project Name: Oak Run Solar Pg 1 of 1	
State:	County: Madison	Weather Conditions During Deployment
Site Selector: A. Siollama	Lat: 40.008104 Long: -83.434897	Date
Deployer: C. Allen	Notes:	Low Temp
Date Deployed: 8/2/22	Night 2 had some higher winds. The Average for first 5 hrs was 7.7 mph Time on Detector Correct? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Mic #: MU214018	Rain (Y/N)
Date Collected: 8/4/22		Rain length (hrs)
Detector #: 54413976		Wind Avg

Detector Setup

Detector Make: Wildlife Acoustics Detector Model: SM4BAT-FS Dist to Obstruct (m): **6 m**
 Microphone Model: SMM-U2 Directionality: Omnidirectional Mic Height (AGL;m): **3m**
 Weatherproofing: NA Mic Angle: **90°** Call Data Type: Full Spectrum
 Mic Direction (deg): **N/A** In-Field Calibration: **PASS** FAIL Notes:

HABITAT DESCRIPTION

VEGETATION CHARACTERISTICS		Detector Startup
Habitat Type: Forest Edge (USFWS acceptable answers)		Card in A: Yes
Canopy Closure (%): N: 5 E: 15 S: 10 W: 0 Avg:		Memory A: 0131
Estimated Subcanopy Closure: Closed Moderate Open % Closure _____		Battery: 6.2
Dominant Sized Canopy Species: Avg. DBH (cm)		Temperature: 31.50
1. Honey locust (20")	2. Black Walnut (10")	Mic O Type: U2
3.	4.	Cal Ch 0:
Subdominant Sized Canopy Species: Avg. DBH (cm)		Going to Sleep Until: 20:16
1. Mulberry	2.	Photos:
3.	4.	North: 5
Subcanopy Dominant Species		East: 6
1.	3.	South: 3
2.		West: 4
Roost Tree Potential Consists of: Large Trees Snags Both		Microphone: 2
Roost Tree Numbers for Area: High Moderate Low		Full Setup: 1
Travel Corridor Present: Yes No		Misc:
Overall Habitat: Great Good Fair Poor None		Misc:
Potential Mist Net Locations: Yes No Number _____		
Additional Site Notes:		

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

Stantec Presence/Absence Acoustic Bat Detector Datasheet

Site ID: <i>AS-01c</i>	Project Number: <i>2028113244</i> Project Name: <i>Oak Run Solar</i> Pg of	
State: <i>OH</i> County: <i>Madison</i>	Weather Conditions During Deployment	
Site Selector: <i>A. Sjollene</i>	Lat: <i>40.009642</i> Long: <i>-83.433094</i>	Date
Deployer: <i>C. Allen</i>	Notes:	Night One
Date Deployed: <i>8/2/22</i>	<i>Night 2 had some high winds, the average was 7.7 during the first 5 hrs.</i>	Night Two
Date Collected: <i>8/4/22</i>		Night Three
Detector #: <i>54U13989</i>		Night Four
Time on Detector Correct? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Mic #: <i>MU213270</i>		

Detector Setup

Detector Make: Wildlife Acoustics Detector Model: SM4BAT-FS Dist to Obstruct (m): *3m*
 Microphone Model: SMM-U2 Directionality: Omnidirectional Mic Height (AGL; m): *3m*
 Weatherproofing: NA Mic Angle: *0°* Call Data Type: Full Spectrum
 Mic Direction (deg): *North* In-Field Calibration: PASS FAIL Notes:

HABITAT DESCRIPTION

VEGETATION CHARACTERISTICS Habitat Type: (USFWS acceptable answers) Canopy Closure (%): N: <i>20</i> E: <i>50</i> S: <i>40</i> W: <i>30</i> Avg: Estimated Subcanopy Closure: Closed <u>Moderate</u> Open % Closure Dominant Sized Canopy Species: Avg. DBH (cm) 1. <i>Honey Locust (15)</i> 2. <i>Green Ash (10)</i> 3. 4. Subdominant Sized Canopy Species: Avg. DBH (cm) 1. <i>Mulberry</i> 2. 3. 4. Subcanopy Dominant Species 1. <i>Honeysuckle</i> 2. <i>Mulberry</i> 3. Roost Tree Potential Consists of: Large Trees <u>Snags</u> Both Roost Tree Numbers for Area: High <u>Moderate</u> Low Travel Corridor Present: <u>Yes</u> No Overall Habitat: Great Good <u>Fair</u> Poor None Potential Mist Net Locations: Yes <u>No</u> Number		Detector Startup Card in A: <i>Yes</i> Memory A: <i>0/31</i> Battery: <i>6.4v</i> Temperature: <i>33.50</i> Mic O Type: <i>U2</i> Cal Ch 0: Going to Sleep Until: <i>20:16</i> Photos: North: <i>3</i> East: <i>4</i> South: <i>5</i> West: <i>6</i> Microphone: <i>2</i> Full Setup: <i>1</i> Misc: Misc:
Additional Site Notes:		

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

Stantec Presence/Absence Acoustic Bat Detector Datasheet

Site ID: AS-01d		Project Number: 2023113244		Project Name: Oak Run Solar		Pg 1 of 1		
State: OH		County: Madison		Weather Conditions During Deployment				
Site Selector: A. Siollemma	Lat: 40.013599	Long: -83.444742	Date:	Low Temp:	Rain (Y/N):	Rain length (hrs):	Wind Avg:	
Deployer: C. Allen	Notes: Night 2 had some high winds. The average for first 5 hrs was 7.7 mph Time on Detector Correct? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Mic #: M11201617			Night One: 67°F	N	0	1.9 mph	
Date Deployed: 8/2/22				Night Two: 72°F	N	0	5.8 mph	
Date Collected:				Night Three:				
Detector #: 54413960				Night Four:				

Detector Setup

Detector Make: Wildlife Acoustics **Detector Model:** SM4BAT-FS **Dist to Obstruct (m):** 4 m
Microphone Model: SMM-U2 **Directionality:** Omnidirectional **Mic Height (AGL;m):** 3m
Weatherproofing: NA **Mic Angle:** 90° **Call Data Type:** Full Spectrum
Mic Direction (deg): N/A **In-Field Calibration:** ☒ PASS ☐ FAIL **Notes:**

HABITAT DESCRIPTION

VEGETATION CHARACTERISTICS				Detector Startup	
Habitat Type: Forest Edge (USFWS acceptable answers) Canopy Closure (%): N: 0 E: 0 S: 60 W: 0 Avg: 15 Estimated Subcanopy Closure: Closed Moderate Open % Closure 20 Dominant Sized Canopy Species: Avg. DBH (cm) 1. Cottonwood (30") 2. 3. 4. Subdominant Sized Canopy Species: Avg. DBH (cm) 1. Mulberry (10") 2. 3. 4. Subcanopy Dominant Species 1. Honey suckle 3. 2.				Card in A: Yes Memory A: 0131 Battery: 6.3v Temperature: 32.00 Mic O Type: u2 Cal Ch O: Going to Sleep Until: 20:16	
Roost Tree Potential Consists of: Large Trees Snags Both Roost Tree Numbers for Area: High Moderate Low Travel Corridor Present: Yes No Overall Habitat: Great Good Fair Poor None Potential Mist Net Locations: Yes No Number 1				Photos: North: 6 East: 4 South: 5 West: 3 Microphone: 2 Full Setup: 1 Misc: Misc:	
Additional Site Notes: Setup along stream at forest edge next to small opening in forest					

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

Stantec Presence/Absence Acoustic Bat Detector Datasheet

Site ID: AS-01e		Project Number: 2028113244		Project Name: Oak Run Solar		Pg 1 of 1	
State: OH		County: Madison		Weather Conditions During Deployment			
Site Selector: A. Siollemu	Lat: 40.011968	Long: -83.443774	Date	Low Temp	Rain (Y/N)	Rain length (hrs)	Wind Avg
Deployer: C. Allen	Notes: Night 2 had some high winds. The average during hobs 5 hrs was 7.7.		Night One	67°F	N	1.9 mph	
Date Deployed: 8/2/22			Night Two	72°F	N	5.8 mph	
Date Collected: 8/4/22			Night Three				
Detector #: 54U14486			Night Four				
Time on Detector Correct? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Mic #: MU215630							

Detector Setup

Detector Make: Wildlife Acoustics Detector Model: SM4BAT-FS Dist to Obstruct (m): 5m
 Microphone Model: SMM-U2 Directionality: Omnidirectional Mic Height (AGL;m): 3m
 Weatherproofing: NA Mic Angle: 90° Call Data Type: Full Spectrum
 Mic Direction (deg): N/A In-Field Calibration: PASS FAIL Notes:

HABITAT DESCRIPTION

VEGETATION CHARACTERISTICS		Detector Startup
Habitat Type: Field edge (USFWS acceptable answers)		Card in A: Yes
Canopy Closure (%): N: 5 E: 0 S: 15 W: 0 Avg: 10		Memory A: 0/32
Estimated Subcanopy Closure: Closed Moderate <u>Open</u> % Closure _____		Battery: 6.3V
Dominant Sized Canopy Species: Avg. DBH (cm)		Temperature: 29.50
1. Honeylocust (15")	2.	Mic O Type: U2
3.	4.	Cal Ch 0:
Subdominant Sized Canopy Species: Avg. DBH (cm)		Going to Sleep Until: 20:16
1. N/A	2.	Photos:
3.	4.	North: 3
Subcanopy Dominant Species		East: 4
1. Wild persimmon	3.	South: 5
2. golden rod		West: 6
Roost Tree Potential Consists of: Large Trees <u>Snags</u> Both		Microphone: 2
Roost Tree Numbers for Area: High <u>Moderate</u> Low		Full Setup: 1
Travel Corridor Present: <u>Yes</u> No		Misc:
Overall Habitat: Great Good <u>Fair</u> Poor None		Misc:
Potential Mist Net Locations: Yes <u>No</u> Number _____		
Additional Site Notes:		

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

Mint near detector site, only charlie collect

Stantec Presence/Absence Acoustic Bat Detector Datasheet

Site ID: AS-01F		Project Number: 2028113244 Project Name: Oak Run Solar		Pg 1 of 1	
State: OH		County: Madison		Weather Conditions During Deployment	
Site Selector: A. Sjollema	Lat: 39.998298	Long: -83.46928	Date	Low Temp	Rain (Y/N)
Deployer: C. Allen	Notes: Night 2 had some higher winds. The Average for first 5 hrs was 7.7 mph Time on Detector Correct? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Mic #: MU215641		Night One	67°F	N
Date Deployed: 8/2/22			Night Two	72°F	N
Date Collected: 8/4/22			Night Three		
Detector #: 54U14767			Night Four		

Detector Setup

Detector Make: Wildlife Acoustics **Detector Model:** SM4BAT-FS **Dist to Obstruct (m):** 5m
Microphone Model: SMM-U2 **Directionality:** Omnidirectional **Mic Height (AGL;m):** 3m
Weatherproofing: NA **Mic Angle:** 90° **Call Data Type:** Full Spectrum
Mic Direction (deg): N/A **In-Field Calibration:** ☒ PASS ☐ FAIL **Notes:**

HABITAT DESCRIPTION

VEGETATION CHARACTERISTICS		Detector Startup	
Habitat Type: Wetland / Upland Forest (USFWS acceptable answers)		Card in A: Yes	
Canopy Closure (%): N: 15 E: 25 S: 15 W: 0 Avg: _____		Memory A: 0/32	
Estimated Subcanopy Closure: Closed Moderate <u>Open</u> % Closure _____		Battery: 6.3v	
Dominant Sized Canopy Species: Avg. DBH (cm)		Temperature: 29.50	
1. Cottonwood (30")	2. Willow (20")	Mic O Type: U2	
3.	4.	Cal Ch 0:	
Subdominant Sized Canopy Species: Avg. DBH (cm)		Going to Sleep Until: 20:16	
1. Willow (5")	2.	Photos:	
3.	4.	North: 3	
Subcanopy Dominant Species		East: 4	
1.	3.	South: 5	
2.		West: 6	
Roost Tree Potential Consists of: Large Trees Snags <u>Both</u>		Microphone: 2	
Roost Tree Numbers for Area: High Moderate Low		Full Setup: 1	
Travel Corridor Present: Yes <u>No</u>		Misc:	
Overall Habitat: Great Good <u>Fair</u> Poor None		Misc:	
Potential Mist Net Locations: <u>Yes</u> No Number 1			
Additional Site Notes: located at edge of wetland close to tree line of Forest, Wetland is dry on date of deployment			

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

Collect Point of location when return



Stantec Presence/Absence Acoustic Bat Detector Datasheet

Site ID: <i>AS-01g</i>	Project Number: <i>2020113244</i> Project Name: <i>Oak Run Solar</i>		Pg <i>1</i> of <i>1</i>	
	State: <i>OH</i>	County: <i>Madison</i>	Weather Conditions During Deployment	
Site Selector: <i>A. Siolerna</i>	Lat: <i>39.978627</i>	Long: <i>-83.433490</i>	Date	Low Temp
Deployer: <i>C. Allen</i>	Notes: <i>Night 2 had some higher winds. Average for first 5 hrs was 7.7 mph</i>		Night One	<i>67°F</i>
Date Deployed: <i>8/2/22</i>			Night Two	<i>72°F</i>
Date Collected: <i>8/4/22</i>			Night Three	
Detector #: <i>54U4763</i>			Night Four	
	Time on Detector Correct? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
	Mic #: <i>MU715454</i>			

Detector Setup

Detector Make: <i>Wildlife Acoustics</i>	Detector Model: <i>SM4BAT-FS</i>	Dist to Obstruct (m): <i>7m</i>
Microphone Model: <i>SMM-U2</i>	Directionality: <i>Omnidirectional</i>	Mic Height (AGL;m): <i>3m</i>
Weatherproofing: <i>NA</i>	Mic Angle: <i>90°</i>	Call Data Type: <i>Full Spectrum</i>
Mic Direction (deg): <i>N/A</i>	In-Field Calibration: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	Notes:

HABITAT DESCRIPTION

VEGETATION CHARACTERISTICS		Detector Startup
Habitat Type: <i>Upland Forest</i> (USFWS acceptable answers)		Card in A: <i>Yes</i>
Canopy Closure (%): N: <i>40</i> E: <i>60</i> S: <i>40</i> W: <i>60</i> Avg: <i>50</i>		Memory A: <i>0/32</i>
Estimated Subcanopy Closure: Closed Moderate <input checked="" type="checkbox"/> Open % Closure _____		Battery: <i>6.4v</i>
Dominant Sized Canopy Species: Avg. DBH (cm)		Temperature: <i>23.75</i>
1. <i>Honey Locust (25")</i>	2. <i>Black Walnut (20")</i>	Mic O Type: <i>U2</i>
3. <i>White Oak (25")</i>	4. <i>Cottonwood (30")</i>	Cal Ch 0:
Subdominant Sized Canopy Species: Avg. DBH (cm)		Going to Sleep Until: <i>20:16</i>
1. <i>N/A</i>	2.	Photos:
3.	4.	North: <i>3</i>
Subcanopy Dominant Species		East: <i>4</i>
1. <i>N/A</i>	3.	South: <i>5</i>
2.		West: <i>6</i>
Roost Tree Potential Consists of: <input checked="" type="checkbox"/> Large Trees <input type="checkbox"/> Snags <input type="checkbox"/> Both		Microphone: <i>2</i>
Roost Tree Numbers for Area: High Moderate <input checked="" type="checkbox"/> Low		Full Setup: <i>1</i>
Travel Corridor Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Misc: <i>7 - View of large potential roost</i>
Overall Habitat: Great Good <input checked="" type="checkbox"/> Fair <input type="checkbox"/> Poor None		Misc: <i>8 - " " "</i>
Potential Mist Net Locations: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Number <i>1-2</i>		
Additional Site Notes: <i>located in maintained undergrowth area with large trees sparsely dispersed throughout</i> <i>One large potential roost ~ 35m from mic.</i>		

USFWS accepted answers:

Mic Angle: 0 = parallel to ground, 45 = angled up, 90 = straight up, 315 = angled down, 270 = pointed down

Habitat Type: creek/riparian, pond, mine portal, field edge, bottomland forest, cave entrance, bridge, open field, upland forest, structure, other

**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

**Appendix E QUANTITATIVE ANALYSIS OF BAT CALLS
 USING KALEIDOSCOPE PRO**

Table 1. Kaleidoscope Pro output by site for acoustic presence/absence surveys conducted at the Oak Run Solar Project in Madison County, Ohio from August 2 through 4, 2022.

The “-1 Sensitivity” setting was used for the classifier, and the results presented include the number of files identified to each species (# calls) and the maximum likelihood estimator (MLE) output.

Site Detector	Date	Big Brown Bat (EPFU)		Eastern Red Bat (LABO)		Hoary Bat (LACI)		Silver-haired Bat (LANO)		Little Brown Bat (MYLU)		Northern Long-eared Bat (MYSE)		Indiana Bat (MYSO)		Evening Bat (NYHU)		Tri-colored Bat (PESU)		No ID	Noise
		# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	MLE	# Calls	# Calls
AS-01a	8/2	136	0	49	0	18	0.198	19	1	20	<0.01	1	1	2	1	13	1	5	1	3	35
	8/3	144	0	42	0	19	0.178	13	1	16	0.06	0	1	2	1	15	1	13	0.87	7	73
AS-01b	8/2	168	0	73	0	74	0	57	0.83	20	0.54	0	1	1	1	31	1	24	0.75	14	361
	8/3	77	0	78	0	55	0	39	0.22	27	0.41	0	1	0	1	51	1	32	0.46	16	517
AS-01c	8/2	42	0	42	0	29	0	25	0.11	29	<0.01	1	1	12	0.02	53	0.10	23	0.03	14	812
	8/3	76	0	65	0	7	0.10	33	0.03	38	<0.01	2	1	9	0.44	47	1	35	0.05	21	702
AS-01d	8/2	675	0	326	0	167	0	171	1	52	1	0	1	10	0.66	155	1	80	1	26	117
	8/3	362	0	610	0	164	0	91	1	50	1	1	1	2	1	422	0.87	144	1	73	204
AS-01e	8/2	509	0	616	0	91	0	81	1	108	1	1	1	6	1	212	1	89	1	43	68
	8/3	257	0	482	0	101	0	77	1	106	0.64	1	1	4	1	214	1	101	1	38	76
AS-01f	8/2	439	0	9	<.001	4	1	23	1	8	0.02	0	1	4	0.18	6	1	3	0.10	4	243
	8/3	318	0	25	0	3	1	6	1	34	0	0	1	0	1	11	1	4	1	8	23
AS-01g	8/2	681	0	326	0	95	<.001	136	1	35	1	0	1	1	1	64	1	107	0.01	25	60
	8/3	377	0	549	0	104	0	83	1	47	1	0	1	1	1	293	1	124	1	76	87

**INDIANA BAT AND NORTHERN LONG-EARED BAT PRESENCE OR PROBABLE ABSENCE
ACOUSTIC SURVEY (USFWS REFERENCE NO. 22-048)**

September 12, 2022

Appendix F RESUME FOR QUALITATIVE IDENTIFICATION

Jason Layne M.S.

Wildlife Biologist

15 years of experience · Overland Park, Kansas

As a Wildlife Biologist, Mr. Layne has over 15 years of experience in wildlife monitoring, endangered species surveys, experimental research, and federal and state regulatory permitting and approvals. Mr. Layne is a USFWS permitted bat biologist with experience conducting bat surveys to determine the presence or probable absence of federally threatened/endangered Indiana bat, gray bat, and northern long-eared bat. He is proficient in the identification of all Eastern United States bat species and in the use of various field techniques, including acoustic detector deployment, echolocation call analysis, mist-net and harp trap surveys, habitat analysis, radio-telemetry, roost emergence, and bat banding.

EDUCATION

Master of Science, Wildlife Biology, Missouri State University, Springfield, Missouri, 2009

Bachelor of Science, Biology, University of Central Missouri, Warrensburg, Missouri, 2006

CERTIFICATIONS & TRAINING

Permit # TE15027A-5, Native Endangered & Threatened Species Recovery, USFWS, nationwide, United States, 2022

Permitted Biologist for Indiana, Gray, Northern long-eared, Ozark Big-eared, and Virginia Big-eared Bat , USFWS, Nationwide, United States, 2016

PROJECT EXPERIENCE

ENDANGERED SPECIES/SPECIES AT RISK ASSESSMENTS

Federally Threatened & Endangered Bat Surveys | Stantec Consulting Services Inc

As an employee of Stantec, Mr. Layne is responsible for coordinating and implementing bat surveys to determine presence or probable absence of bat species throughout the USA. He participates in and oversees all aspects of net/detector deployment, maintenance of field sampling equipment, quality control of data for presentation in reports and agency meetings, and utilization of ArcGIS maps for habitat use by wildlife. He analyzes acoustic bat passes to qualify species identification via automated call identification programs. He prepares assessment reports on findings and maintains databases of results. He has lead bat mist-netting and acoustic detector survey efforts for Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and gray bat (*Myotis grisescens*) surveys in Iowa and Missouri. In Kansas, he was the lead investigator for bat surveys at a Kansas Army National Guard Facility.

Multiple Wind Farms | Stantec Consulting Services Inc | Missouri, United States

Mr. Layne was the lead for qualitatively assessing acoustic bat passes recorded at over 100 sites within three proposed wind farms in Missouri. He conducted acoustic analysis for the Indiana bat, northern long-eared bat, gray bat, little brown bat, and tri-colored bat based on data collected using wildlife acoustic detectors.

Northern Long-eared Bat Migration Study | Stantec Consulting Services Inc | Iowa, United States

Mr. Layne was a lead for bat mist-netting northern long-eared bats to track fall migration movements in north-central Iowa. In partnership with Copperhead Consulting, radio tags were affixed to bats which were then tracked using aerial radio telemetry methods. He was also responsible for qualitatively assessing acoustic bat passes recorded near suspected bat hibernacula to determine species presence and relative activity rates.

Acoustic Surveys for Proposed Wind Energy Farms | Stantec Consulting Services Inc

Mr. Layne is responsible for coordinating and implementing remote detector surveys for proposed wind energy farms to assess relative bat activity at several confidential projects throughout the Midwest and Great Plains since 2016. Detectors are deployed on meteorological towers at heights above 55 meters, or ground based above 2 meters. Surveys are conducted from early spring through late fall. He oversees all aspect of detector deployment, maintenance of field sampling equipment, quality control of data for presentation in reports and agency meetings, and utilization of ArcGIS maps. He prepares assessment reports on findings and maintains databases of results. He attends meetings between multiple state and federal regulatory agencies to discuss habitat and wildlife issues at construction projects.

Federally Threatened & Endangered Bat Surveys, Missouri Department of Conservation* | Northeast, Missouri

Mr. Layne was responsible for leading bat mist-netting and acoustic detector survey efforts for four separate Indiana bat and northern long-eared bat surveys on public lands in summer of 2015. Both federally listed bats were captured and tracked to day roosts.

Bat Occupancy Modeling Project, Missouri Department of Conservation* | Northern, Missouri

Mr. Layne was the project manager and field crew leader for a multi-year bat occupancy modeling research project using acoustic detectors and targeted mist-netting across Northern Missouri (project spanned 22 counties, encompassing over 30 Missouri Department of Conservation areas, two state parks, and a USFWS National Wildlife Refuge) from 2012 through 2015. He analyzed recorded echolocation calls to verify species identification via automated call identification programs and visual confirmation. He oversaw all aspects of detector placement, mist net set up, bat capture, identification, measurement, and habitat descriptions. Bats recorded and captured included Indiana bats (*Myotis sodalis*), northern long-eared bats (*Myotis septentrionalis*), little brown bats (*Myotis lucifugus*), eastern red bats (*Lasiurus borealis*), silver-haired bats (*Lasionycteris noctivagans*), hoary bats (*Lasiurus cinereus*), big brown bats (*Eptesicus fuscus*), evening bats (*Nycticeius humeralis*), and tri-colored bats (*Perimyotis subflavus*).

Winter Ecology and Behavior Studies of Tree Bats, Missouri State University* | Shannon County, Missouri

Mr. Layne designed and implemented graduate research on the arousal response of eastern red bats to prescribed fire stimuli. This research was used to guide forest management techniques to reduce negative impacts on bats. He designed and conducted an acoustic survey to quantify activity of bats during winter months. He affixed radio transmitters and tracked eastern red bats and silver-haired bats for telemetry surveys of roosting habitat and foraging behavior.

Winter Bat Hibernacula and White Nose Syndrome Monitoring* | Missouri

Mr. Layne assisted with population count surveys throughout Missouri for cave/mine roosting species: Indiana bat, northern long-eared bat, gray bat (*Myotis grisescens*), little brown bat, big brown bat, and tri-colored bat. In 2013 and 2015 he led one of six teams on a population count through a recently discovered hibernacula that is considered the largest congregation of Indiana bats in its range. He collected data for white nose syndrome monitoring, resulting in range map expansions of the disease.

Rare Bat Species Surveys, Missouri Department of Conservation* | Southeast, Missouri

Mr. Layne conducted bat mist-netting and acoustic detector survey efforts for rare species surveys on public lands in summer of 2013. He captured and identified the Missouri listed Species of Concern southeastern myotis bat (*Myotis austroriparius*), and identified a captured Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) and tracked the bats to day roosts.

Indiana Bat Mist-Net and Acoustic Surveys for Proposed Wind Energy Farms | AR, IA, IN, KS, MO, OH

Mr. Layne was responsible for leading mist-netting efforts to determine presence or probable absence of Indiana bats at several confidential projects throughout the Midwest from 2009 through 2012. He oversaw and participated in all aspects of mist-netting, including coordination with land agents, setting up nets, species identification, weighing and measuring individuals, affixing radio transmitters, and surrounding habitat descriptions. He was a crew leader for radio-tracking of Indiana bats, little brown bats, and big brown bats to roost locations and foraging areas. He oversaw and conducted roost emergence counts of radio-tracked species. He managed and implemented acoustic surveys including detector deployment, analysis of calls to species, and reporting at mist-net sites. Species captured include: hoary bats, silver-haired bats, eastern red bats, big brown bats, Indiana bats, northern long-eared bats, little brown bats, evening bats, and tri-colored bats.

WILDLIFE SURVEYS AND STUDIES

Passive Acoustic Detector Surveys for Proposed Wind Energy Farms, Various Sites* | AR, CA, IA, IL, IN, KS, MI, MO, MT, ND, NE, NM, NV, NY, OH, OK, TX

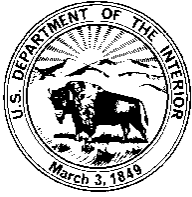
Ms. Layne is responsible for coordinating and implementing remote detector surveys for proposed wind energy development to determine activity of bat species throughout the USA from 2009 through present. Detectors are deployed on meteorological towers at heights above 50 meters. Surveys occur from early spring through late fall. He participates in and oversees all aspects of detector deployment, maintenance of field sampling equipment, quality control of data for presentation in reports and agency meetings, utilization of ArcGIS maps for habitat use by wildlife. Prepares assessment reports on findings, and maintains databases of results. Coordinates with multiple state and federal regulatory agencies on wildlife issues at construction projects.

Attachment 1

Bat Survey Results and Correspondence

2. Ohio Department of Natural Resources and U.S. Fish and Wildlife Service Correspondence

United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994



September 20, 2022

Project Code: 2022-0011961

Dear Ms. Sjollema:

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

We have received your summer bat survey report for the subject project. The survey was conducted following current Service guidelines. No Indiana bats (*Myotis sodalis*) were captured/detected, demonstrating probable absence of Indiana bats in the project area. Currently, the Service has no known hibernacula or maternity roost records for northern long-eared bat (*Myotis septentrionalis*) in the vicinity of the project. Therefore, the 4(d) rule for the northern long-eared bat could be applied (see: <https://ecos.fws.gov/ecp/species/9045>). Tree clearing on the project site at any time of the year is unlikely to result in adverse impacts to Indiana bats and will not result in any unauthorized incidental take of northern long-eared bats. Negative Indiana bat summer surveys are valid for five years. Therefore, no tree clearing should occur on the site after March 31, 2027 without further coordination with this office.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus it is important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant

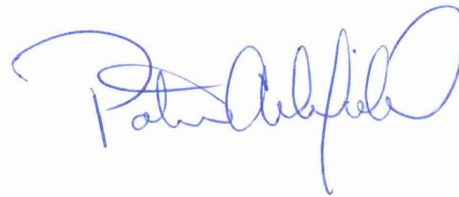
species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Patrice Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Eileen Wyza, ODNR-DOW

From: Eileen.Wyza@dnr.ohio.gov
To: [Boyer, Angela](#); [Sjollema, Angela](#)
Cc: [Dohoney, Courtney](#); sflannery@savionenergy.com; [Carter, Kim](#); [Allen, Charlie](#); [Kearns, Michelle](#)
Subject: RE: [EXTERNAL] Oak Run Bat Study Plan
Date: Tuesday, September 20, 2022 3:14:10 PM
Attachments: [image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[image007.png](#)

Angela,

The Ohio Division of Wildlife (DOW) has received the summer bat survey report for the Oak Run Solar Project, conducted according to current U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources, Division of Wildlife (DOW) guidance. Because the state endangered Little Brown Bat was detected, tree cutting is not recommended in this area between April 1 and September 30. Limited summer tree cutting inside this buffer, as outlined in the DOW guidance for Bat Surveys and Tree clearing (May 2022) may be acceptable after further consultation with DOW.

Thank you,

Eileen Wyza

Wildlife Biologist

Ohio Division of Wildlife

Phone: 614-265-6764

Email: Eileen.Wyza@dnr.ohio.gov

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From: Boyer, Angela <angela_boyer@fws.gov>
Sent: Tuesday, September 20, 2022 3:01 PM
To: Sjollema, Angela <Angela.Sjollema@stantec.com>; Wyza, Eileen <Eileen.Wyza@dnr.ohio.gov>
Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie <Charlie.Allen@stantec.com>; Kearns, Michelle <Michelle.Kearns@stantec.com>
Subject: Re: [EXTERNAL] Oak Run Bat Study Plan

Hello,

The USFWS response letter for survey number 22-048, IPaC project code 2022-0011961 is attached.

Sincerely,
Angie

From: Sjollema, Angela <Angela.Sjollema@stantec.com>
Sent: Monday, September 19, 2022 2:15 PM
To: Boyer, Angela <angela_boyer@fws.gov>; Eileen.Wyza@dnr.ohio.gov <eileen.wyza@dnr.ohio.gov>
Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com <sflannery@savionenergy.com>; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie <Charlie.Allen@stantec.com>; Kearns, Michelle <Michelle.Kearns@stantec.com>
Subject: RE: [EXTERNAL] Oak Run Bat Study Plan

Good afternoon Angela/Eileen,

Please find the acoustic survey report for the Oak Run Solar Project attached to this email. Please let me know if you have any questions about the results. I appreciate your time!

Thank you,
Angela

Angela Sjollema CWB, MS
Senior Biologist
Direct: 614-643-4400
Mobile: 513-400-8773
angela.sjollema@stantec.com

Stantec
1500 Lake Shore Drive Suite 100
Columbus OH 43204-3800



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From: Boyer, Angela <angela_boyer@fws.gov>
Sent: Thursday, July 21, 2022 1:33 PM
To: Sjollema, Angela <Angela.Sjollema@stantec.com>; Eileen.Wyza@dnr.ohio.gov
Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie <Charlie.Allen@stantec.com>
Subject: Re: [EXTERNAL] Oak Run Bat Study Plan

Angela,

This is in response to a July 21, 2022, request for an amendment to Federal Fish and Wildlife Permit Numbers ES15027A-7 (Stantec) and ES98673B-1 (Jason Layne) to conduct a summer mist-net survey for the Oak Run Solar Project in Madison County, Ohio. This survey effort has been assigned the reference number **22-048**. Please include this project reference number in all correspondence to the U.S. Fish and Wildlife Service and the Ohio Division of Wildlife.

This email serves as site-specific authorization to proceed in accordance with Federal permit requirements. Summer mist netting is authorized to occur between June 1 and August 15, 2022. All federal permittees must also have valid Ohio Scientific Collecting Permits and plans must also be reviewed and approved by the Ohio Division of Wildlife before any surveys take place. Please note that a federally permitted person must remain present at the mist net sites while they are being operated. This notification serves as written concurrence that Stantec Consulting Services and Jason Layne are authorized to proceed with the proposed bat survey. This survey will serve as a presence absence survey for the Indiana bat and northern long-eared bat.

By January 31, 2023, we request that you submit an annual report of your Ohio survey work to this office using the 2022 Midwestern U.S. Spreadsheet in electronic format. Be sure to include data for the site even if no bats were captured.

Sincerely,
Angela Boyer
Endangered Species Coordinator for Ohio
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, Ohio 43230

From: Sjollema, Angela <Angela.Sjollema@stantec.com>

Sent: Thursday, July 21, 2022 12:01 PM

To: Boyer, Angela <angela_boyer@fws.gov>; Eileen.Wyza@dnr.ohio.gov
<eileen.wyza@dnr.ohio.gov>

Cc: Dohoney, Courtney <Courtney.Dohoney@stantec.com>; sflannery@savionenergy.com
<sflannery@savionenergy.com>; Carter, Kim <Kim.Carter@stantec.com>; Allen, Charlie
<Charlie.Allen@stantec.com>

Subject: [EXTERNAL] Oak Run Bat Study Plan

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good afternoon,

Attached is a acoustic bat survey study plan for your review. Please contact me if you have any questions or would like to discuss the effort or methods further.

Thank you,
Angela

Angela Sjollema CWB, MS
Senior Biologist

Direct: 614-643-4400

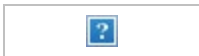
Mobile: 513-400-8773

angela.sjollema@stantec.com

Stantec

1500 Lake Shore Drive Suite 100

Columbus OH 43204-3800



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Commission of Ohio Docketing Information System on
10/27/2022 2:20:56 PM**

in

Case No(s). 22-0549-EL-BGN, 22-0550-EL-BTX

Summary: Response - Response to Fourth Data Request from Staff of the Ohio
Power Siting Board electronically filed by Christine M.T. Pirik on behalf of Oak Run
Solar Project, LLC