Exhibit Q
Threatened and Endangered Species Habitat Survey Report

Stantec

January 22, 2021

DICKINSON WRIGHT PLLC

Birch Solar Project,
Allen and Auglaize Counties, Ohio

Threatened and Endangered Species Habitat Survey Report

Prepared for:

Lightsource bp
400 Montgomery Street
8th Floor
San Francisco, CA 94104

Prepared by:

Stantec Consulting Services Inc.
3001 Washington Blvd, Suite 500
Arlington, VA 22201-2247

January 22, 2021

Sign-off Sheet

This document entitled Birch Solar Project Threatened and Endangered Species Habitat Survey Report was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of Lightsource BP Renewable Energy Investments Limited (the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 

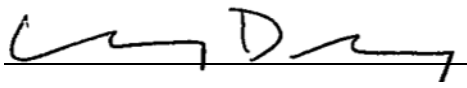
(signature)

Charlie Allen

Reviewed by 

(signature)

Angela Sjollema

Reviewed by 

(signature)

Courtney Dohoney, PMP, Project Manager

Table of Contents

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

Lightsource bp is proposing to construct the Birch Solar Project, a 300-megawatt alternating current solar energy facility, composed of photovoltaic solar modules mounted on a racking system, inverters, an electrical collection system transferring power from the inverters to a new project substation, and internal access roads with perimeter fence, securing the area (the Project). The Project area includes 2,345 acres in a largely agricultural setting approximately 3 miles southwest of the city of Lima, Ohio. The Project is located in Shawnee Township, Allen County, and Logan Township in Auglaize County, Ohio (Figure 1, Appendix A). Stantec Consulting Services Inc. (Stantec) was retained by Lightsource bp to conduct environmental surveys of the Project area, including a threatened and endangered species assessment. Stantec biologists conducted a desktop review using publicly available information and a pedestrian field survey for potential threatened, endangered, and rare species habitat, conducted concurrently with a wetland and waterbody delineation. Field surveys were performed on August 3 – 6, September 3 – 4, and December 16 – 17, 2020.

1.1 REGULATORY FRAMEWORK

1.1.1 Endangered Species Act

The purpose of the Endangered Species Act of 1973, as amended (ESA; 16 United States Code [U.S.C.] §1531–1544) is to conserve threatened and endangered species and the ecosystems upon which they depend. ESA-listed species and designated critical habitat are governed by the ESA and the implementing regulations at 50 Code of Federal Regulations (CFR) Parts 13 and 17. Section 9 of the ESA is most relevant to this Project.

Section 9 of the ESA prohibits the “take” of any fish or wildlife species listed under the ESA as endangered. Take is defined as “…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct” (50 CFR §10.12), and “harm” is “an act which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 CFR §17.3). Harm is further defined to mean “significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering”. Harass is "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering".

Under federal regulation, take of fish or wildlife species listed as threatened is also prohibited unless specifically exempted by a section 4(d) rule. Take of ESA-listed plants is not prohibited unless they are on federal lands, there is a federal nexus (e.g., federal permit), or are taken in knowing violation of any state law or state regulation or in violation of state trespass law.

1.1.2 State Regulations

Ohio Revised Code 1531.25 grants the chief of Ohio Department of Natural Resources (ODNR) Division of Wildlife (DOW), with the approval of the wildlife council, the authority to adopt rules, modify and repeal

rules, restricting the taking or possession of native wildlife that is threatened with state-wide extinction. These rules may only provide for the taking of species for zoological, educational and scientific purpose, and for propagation in captivity to preserve the species. In Ohio, animals and plants listed as threatened or endangered receive regulatory protection under Ohio Revised Code 1518.01 – 99, 1531.25, 1531.99. At this time, the ODNR DOW does not have the explicit authority to authorize take for any ESA-listed species for commercial or business purposes, such as the construction of a development.

1.2 LOCATION OF PROJECT

The Project is located in Shawnee Township, Allen County and Logan Township, Auglaize County, Ohio (Appendix A, Figure 1). The Project area is depicted on the Cridersville, Ohio U.S. Geological Survey (USGS) 7.5-minute series topographic maps and the approximate center point of the Project in latitude and longitude coordinates is 40.675677˚ N, -84.203047˚ W, respectively. The Project area is located in the Sims Run – Auglaize River watershed (HUC 12: 041000070203) that drains into the Auglaize River, the Little Ottawa River watershed (HUC 12: 041000070401) that drains into the Little Ottawa River, and the Twomile Creek watershed (HUC 12: 041000070201) that drains into Twomile Creek. The Little Ottawa River (Stream 3) and Twomile Creek (Stream 9) flow through the Project area and unnamed tributaries of both run through the Project area (Appendix A, Figure 2).

1.3 GEOLOGY AND TOPOGRAPHY

The Project lies within the Till Plains section of the Central Lowland physiographic province. The Project lies within the Central Ohio Clayey Till Plain region, which is characterized by: (1) a surface of clayey till; (2) well-defined moraines with intervening flat-lying ground moraine and intermorainal lake basins; (3) no boulder belts; (4) silt-, clay-, and till-filled lake basins; and (5) few large streams and limited sand and gravel outwashes. The geology of the region consists of clayey, high-lime Wisconsinan-age till from a northeastern source and lacustrine materials over Lower Paleozoic-age carbonate rocks. The eastern side of the region is more shales. Elevation ranges from 700 – 1,150 feet with moderate relief (ODGS 1998).

2.0 METHODS

2.1 DESKTOP REVIEW

Prior to completing the field habitat survey, a desktop review of threatened and endangered species located in Allen and Auglaize counties, Ohio was conducted using the Ohio State Listed Wildlife and Plant Species by County list, revised in March 2020 (ODNR DOW 2020a) and the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation tool (IPaC; USFWS 2020c). This information was used to inform field staff on the threatened and endangered species that could occur in the Project area.

The Ohio State Listed Wildlife by County list (ODNR DOW 2020a) reported two bat species within Allen and Auglaize counties: Indiana bat and northern long-eared bats. These bat species winter in hibernacula that include caves and mines within Ohio (USFWS 2020b). To perform a desktop analysis for this type of habitat, topography and aerial imagery was viewed. A review was also conducted for mines (active or abandoned) and areas of potential cave locations, using interactive tools available on the ODNR website to search for abandoned or active mines and locations of karst geology (ODNR 2020a, 2020b).

2.2 FIELD SURVEY EFFORT

The field survey part of the threatened and endangered species habitat assessment was performed August 3 – 6, September 3 – 4, and December 16 – 17, 2020 and was conducted concurrently with wetland and waterbody delineations. The method used was a pedestrian survey of habitats types within the Project area. Vegetation species within each habitat were recorded, and the boundaries of each habitat are delineated and are represented in Figure 2 (Appendix A). The vegetation communities were categorized using the Ohio Department of Transportation (ODOT) Office of Environmental Services Ecological Manual (ODOT Office of Ecological Services 2014), which is the same system used by the National Land Cover Database (Anderson 1982). However, wetlands were categorized using the Cowardin system (Cowardin et al. 1979).

3.0 RESULTS

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys within the Project area on August 3 – 6, September 3 – 4, and December 16 – 17, 2020, for potentially suitable habitats for threatened and endangered species. Figure 2 (Appendix A) shows the land cover types, as defined by Anderson (1982) and Cowardin et al. (1979) observed in the Project area. Representative photographs of the vegetation communities/habitats identified within the Project area are included in Appendix B of this report (photo locations are shown on Figure 2 in Appendix A). Information regarding the vegetation communities/habitats identified within the Project area is provided in Table 1.

Table 1. Vegetation Communities and Land Cover Found within the Birch Solar Project Area, Allen and Auglaize Counties, Ohio

Land Cover Types and Vegetation Communities within the Project Area	Degree of Human-Related Ecological Disturbance and Representative Species List	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Upland Forest – Second Growth Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species included common hackberry (*Celtis occidentalis*), sugar maple (*Acer saccharum*), silver maple (*Acer saccharinum*), American elm (*Ulmus americana*), northern red oak (*Quercus rubra*), pin oak (*Quercus palustris*), amur honeysuckle (*Loniceria maackii*), black raspberry (*Rubus idaeus*), and poison ivy (*Toxicodendron radicans*).	No	105.1
Palustrine Scrub/Shrub Wetland	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species included black willow (*Salix nigra*) and reed canary grass (*Phalaris arundinacea*).	No	<0.1
Palustrine Forested Wetland	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species included American elm, silver maple, green ash (*Fraxinus pennsylvanica*), swamp white oak (*Quercus bicolor*), Gray's sedge (*Carex grayi*), fowl mannagrass (*Glyceria striata*), cardinal-flower (*Lobelia cardinalis*), and common buttonbush (*Cephalanthus occidentalis*).	No	0.5

Land Cover Types and Vegetation Communities within the Project Area	Degree of Human-Related Ecological Disturbance and Representative Species List	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Scrub/Shrub – Old Field	Moderate to extreme disturbance/ruderal community (dominated by opportunistic invaders and/or native highly tolerant taxa). Dominant plant species included Fuller's teasel (*Dipsacus fullonum*), common dandelion (*Taraxacum officinale*), chicory (*Cichorium intybus*), Canada thistle (*Cirsium arvense*), common ragweed (*Ambrosia artemisiifolia*), Canada goldenrod (*Solidago canadensis*), tall fescue (*Festuca arundinacea*), and nodding foxtail (*Setaria faberi*).	No	1.3
Grassland/Herbaceous - New Field	Moderate to extreme disturbance/ruderal community (dominated by opportunistic invaders and/or native highly tolerant taxa). Dominant plant species included red clover (*Trifolium pratense*), crab grass (*Digitaria sanguinalis*), barnyard grass (*Echinochloa crus-galli*), yellow foxtail (*Setaria pumila*), English plantain (*Plantago lanceolata*), common dandelion, and Queen Ann's lace (*Daucus carota*).	No	70.8
Cultivated Crops	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Dominant species included soybean (*Glycine max*), corn (Zea mays) and winter wheat (*Triticum aestivum*).	No	2,132.5
Developed, Open Space – Residential	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Dominant species included some planted yard trees: silver maple, Kentucky bluegrass (*Poa pratensis*), English plantain, Fuller's teasel, and common dandelion.	No	17.3
Existing Roadway	Moderate to Extreme Disturbance/ Ruderal Community (free of vegetation and/or dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa).	No	16.4
Open Water	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species included tall fescue.	No	0.7
		TOTAL	**2,344.7**

3.2 THREATENED, OR ENDANGERED SPECIES ASSESSMENT

The results from the correspondence letters received from ODNR DOW and USFWS (Appendix E) are listed in Table 2. Species preferred habitats or conditions are included in the tables for each species. Whether the habitat was found within the Project area during field surveys and an impact analysis for each species is also included. Delineation of the habitat types are represented on Figure 2 (Appendix A) and representative photographs of the habitats are in Appendix B.

Table 2. Summary of Potential Federal and State-Listed Species within the Birch Solar Project Area, Allen and Auglaize Counties, Ohio.

Common Name	Scientific Name	Federal/State[1] Listing	Known to Occur in Allen or Auglaize County?[2]	Known Within 1-mile of Project Area?[3]	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW[4] Comments/Recommendations	Impact Assessment
Birds								
Upland Sandpiper	*Bartramia longicauda*	SE	Allen	No	This species is found in extensive, open tracts of short grassland habitat. This species nests in dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through Conservation Reserve Program (ODNR DOW 2020b).	No	**ODNR DOW:** The Project is within the range of the upland sandpiper. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve program. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this Project is not likely to impact this species.	No suitable habitat was observed within the Project area. Therefore, no impacts to this species are anticipated.
Lark Sparrow	*Chondestes grammacus*	SE	Auglaize	No	This species is found in shortgrass, mixed-grass, and tallgrass prairie with shrub components (NatureServe 2020).	Yes	**ODNR DOW:** The Project lies within the range of the lark sparrow. The sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches or bare soil. Therefore, the DOW recommends if this habitat will be impacted, construction should be avoided in this habitat during the species nesting period of May 1 to June 30. If this habitat will not be impacted, the Project is not likely to impact this species.	Potentially suitable habitat (new and old field) was observed. However, the site design has minimized the placement of infrastructure in potentially suitable habitat. In addition, construction will not occur in suitable habitat during the species nesting period, May 1 to June 30. This species is also not known to occur within one mile of the Project. Therefore, no adverse effects to this species are anticipated.
Fish								
Pirate Perch	*Aphredoderus sayanus*	SE	Allen / Auglaize	No	This species is found in clear to turbid lakes, ponds, marshes, quiet pools, and backwaters of low gradient streams with soft bottoms and abundant aquatic plants, organic debris, and other cover (NatureServe 2020).	Yes	**ODNR DOW:** The Project lies within the range of the pirate perch. The DOW recommends no in-water work in perennial streams from April 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.	Suitable habitat (i.e., Little Ottawa River, Twomile Creek) was observed within the Project area. However, infrastructure has been sited to avoid impacts to streams so no in-water work is proposed to occur for the Project. Therefore, no adverse effects to this species are anticipated.
Greater Redhorse	*Moxostoma valenciennesi*	ST	Allen / Auglaize	Yes	This species prefers medium sized to large rivers and sometimes reservoirs or large lakes. They are typically found in moderate to fast flowing streams that flow clear. Substrates include clean sand, gravel, or boulders. This fish cannot tolerate siltation, but can occasionally be found in moderately polluted waters (NatureServe 2020).	Yes	**ODNR DOW:** The Project lies within the range of the greater redhorse. The DOW recommends no in-water work in perennial streams from April 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.	Suitable habitat (i.e., Little Ottawa River, Twomile Creek) and was observed within the Project area. However, infrastructure has been sited to avoid impacts to streams so no in-water work is proposed to occur for the Project. Therefore, no adverse effects to this species are anticipated.
Mussels								
Northern Riffleshell	*Epioblasma torulosa rangiana*	FE/SE	Allen	No	This mussel is found in a wide variety of streams from small to large (USFWS 1994). Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2020).	No	**USFWS:** Due to the Project type, size, and location, the USFWS does not anticipate effects to this species. **ODNR DOW:** The project lies within the range of the northern riffleshell. This project must not have an impact on freshwater native mussels at the Project site. This applies to both listed and non-listed species. Therefore, if in-water work is planned in any stream that meets the criteria listed in the Ohio Mussel Survey Protocol, the DOW recommends the applicant provide information to indicate no mussel impacts will occur.	No suitable habitat (Group 2 or 4 streams [ODNR DOW and USFWS 2020]) was observed within the Project area. Therefore, no impacts to this species are anticipated.
Clubshell	*Pleurobema clava*	FE/SE	Allen / Auglaize	No	Clubshell is found in small to medium rivers, but occasionally found in large rivers,	No	**USFWS:** Due to the Project type, size, and location, the USFWS does not anticipate effects to this species.	No suitable habitat (Group 2 or 4 streams [ODNR DOW and USFWS 2020]) was

Common Name	Scientific Name	Federal/State[1] Listing	Known to Occur in Allen or Auglaize County?[2]	Known Within 1-mile of Project Area?[3]	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW[4] Comments/Recommendations	Impact Assessment
					especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.		**ODNR DOW:** The Project lies within the range of the clubshell. This Project must not have an impact on freshwater native mussels at the Project site. This applies to both listed and non-listed species. Therefore, if in-water work is planned in any stream that meets the criteria listed in the Ohio Mussel Survey Protocol, the DOW recommends the applicant provide information to indicate no mussel impacts will occur.	observed within the Project area. Therefore, no impacts to this species are anticipated.
Pondhorn	*Uniomerus tetralasmus*	ST	Allen / Auglaize	No	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2020).	Yes	**ODNR DOW:** The Project lies within the range of the pondhorn. This Project must not have an impact on freshwater native mussels at the Project site. This applies to both listed and non-listed species. Therefore, if in-water work is planned in any stream that meets the criteria listed in the Ohio Mussel Survey Protocol, the DOW recommends the applicant provide information to indicate no mussel impacts will occur.	Potentially suitable habitat (i.e., Twomile Creek, Little Ottawa River) was observed within the Project area. However, infrastructure has been sited to avoid streams so no in-water work is proposed to occur for the Project. Therefore, no adverse effects to this species are anticipated
Mammals								
Indiana Bat	*Myotis sodalis*	FE/SE	Allen / Auglaize	No	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas. Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007, USFWS 2020b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	**USFWS:** 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, even if tree clearing is conducted during winter season when Indiana bats are not present. Therefore, USFWS recommends that a summer survey be conducted to determine presence or probable absence of Indiana bats at the project site. **ODNR DOW:** The entire state lies within the range of the Indiana bat. Therefore, the DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose shaggy bark and/or crevices, holes, or cavities as well as tress with dbh ≥20 inches if possible.	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Woodlots have been avoided with all Project infrastructure, as shown in Figure 1 (Appendix A). No tree clearing will be necessary, therefore no adverse effects to this species are anticipated.
Northern Long-eared Bat	*Myotis septentrionalis*	FT/SE	Allen	No	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010, USFWS 2020a). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature,	Yes	**USFWS:** Should the Project site contain trees ≥3 inches diameter at breast height (dbh), the USFWS recommends avoiding tree removal whenever possible. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, USFWS recommends tree removal occur between October 1 and March 31. This species has also been observed using human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. Seasonal tree clearing is recommended to avoid adverse effects to this species. If	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Woodlots have been avoided with all Project infrastructure, as shown in Figure 1 (Appendix A). No tree clearing will be necessary, therefore, no adverse effects to this species are anticipated.

Common Name	Scientific Name	Federal/State[1] Listing	Known to Occur in Allen or Auglaize County?[2]	Known Within 1-mile of Project Area?[3]	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW[4] Comments/Recommendations	Impact Assessment
					high humidity, and little to no air current (Brack et al. 2010).		seasonal tree clearing cannot be implemented, a summer presence/absence survey may be conducted for this species. **ODNR DOW:** The entire state lies within the range of the northern long-eared bat. Therefore, the DOW recommends tree 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 inches if possible.	
Eastern Tri-colored Bat	*Perimyotis subflavus*	SE	Allen / Auglaize	No	This species is found throughout Ohio and is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as night roosts between foraging (NatureServe 2020).	Yes	**ODNR DOW:** The entire state lies within the range of the eastern tri-colored bat. Therefore, the DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose shaggy bark and/or crevices, holes, or cavities as well as tress with dbh≥20 inches if possible.	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Woodlots have been avoided with all Project infrastructure, as shown in Figure 1 (Appendix A). No tree clearing will occur, therefore, no adverse effects to this species are anticipated.
Little Brown Bat	*Myotis lucifugus*	SE	Allen / Auglaize	No	This bat uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water, along the edges of lakes and stream or in woodlands near waterbodies (NatureServe 2020).	Yes	**ODNR DOW:** The Project is within the vicinity of records for the little brown bat. Because presence of the species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW.	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Woodlots have been avoided with all Project infrastructure, as shown in Figure 1 (Appendix A). No tree clearing will occur, therefore, no adverse effects to this species are anticipated.

[1]FE = federally listed endangered; FT = federally listed threatened; SE=state-listed endangered; ST=state-listed threatened
[2]According to Ohio Department of Natural Resources, State Listed Wildlife and Plant Species by County (ODNR DOW 2020a).
[3]According to Ohio Natural Heritage Program (Appendix C)
[4]DOW=Division of Wildlife

4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a desktop analysis and field surveys on August 3 – 6, September 3 – 4, and December 16 – 17, 2020. During the field surveys, cultivated crops, new field, and second growth deciduous forest were the dominant vegetation communities observed. Twomile Creek (Stream 9; categorized as a Group 1 stream in Auglaize County), Stream 5, and the Little Ottawa River (Stream 3), each have a drainage area of greater than 5 square miles. These streams represent potential state-listed mussel habitat, according to the Ohio Mussel Survey Protocol (ODNR DOW and USFWS 2020), however, they are not expected to contain federally listed mussel species.

An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate on September 8, 2020. The ODNR Office of Real Estate response letter dated September 30, 2020 (Appendix C), stated the Natural Heritage Database has a record of the greater redhorse occurring within a one-mile radius of the Project area.

The letter also indicated the Project is within the vicinity of records for the little brown bat. Because presence of this state endangered bat species has been established, summer tree cutting is not recommended. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with the ODNR DOW. In addition, DOW states the entire state of Ohio is within the range of the Indiana bat, northern long-eared bat, and the eastern tri-colored bat. The DOW recommends tree 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 inches if possible. The DOW also recommends that a desktop habitat assessment, followed by field assessment if needed, is conducted to determine if there are potential hibernaculum present within the Project area. The desktop assessment using ODNR interactive tools revealed no karst features within Allen or Auglaize counties and an active lime mine, which is also mentioned in the ODNR response, is located outside the Project area. No steep topography was evident using topographic maps and aerial imagery did not reveal any obvious exposed rock (Figure 1 and 2, Appendix A). During field surveys, Stantec did not observe winter hibernacula for Indiana bat, northern long-eared bat, little brown, or eastern tri-colored bats, however, the Project area does contain potentially suitable summer habitat, including foraging and roosting habitat for the Indiana bat, northern long-eared bat, little brown bat, and eastern tri-colored bats.

The ODNR response also states the Project is within the range of the clubshell, northern riffleshell, and the pondhorn freshwater mussel species. The DOW recommends if in-water work is planned in any Group 1, 2, 3, or 4 streams and unlisted streams with a watershed of 5 square miles or larger above the impact, Lightsource bp should provide information to indicate no impacts to mussels will occur. Stantec observed two streams, Twomile Creek and Little Ottawa River, that meet the above criteria.

The ODNR response indicates the Project is within the range of the pirate perch and the greater redhorse. As mentioned above, the Natural Heritage Database has records of the greater redhorse within a one-mile radius of the Project area. The DOW stated if no in-water work is proposed in a perennial stream, the proposed Project is not likely to impact these or other aquatic species.

The ODNR response also states the Project lies within the range of the lark sparrow. The DOW recommends if grassland habitats with scattered shrub layers, disturbed open areas, or patches of bare soil will be impacted, construction should be avoided in this habitat during the species nesting period of May 1 to June 30. Stantec observed small patches of potentially suitable habitat surrounded by active cultivated crop fields within the Project area.

The ODNR response indicates the Project is within the range of the upland sandpiper. The DOW recommends any construction within dry grasslands, including native grasslands, seeded grassland, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program, should be avoided during the species nesting period of April 15 to July 31. The DOW also states if this type of habitat will not be impacted, the Project is not likely to impact this species. No grassland habitat types suitable for the upland sandpiper were observed within the Project area.

No other state-listed species records were found within one mile of the Project in a Natural Heritage Database search and no other state-listed species were specifically discussed in the ODNR response letter. The ODNR response also provided the Ohio Solar Site Pollinator Habitat Planning and Assessment Form, which is included in Appendix C. The DOW recommends Lightsource bp use this form to assist in planting grasses, forbs, and legume species that benefit pollinators, such as the monarch butterfly and rusty patched bumblebee, and other wildlife, such as songbirds.

A technical assistance request letter was submitted to the USFWS on September 8, 2020. The USFWS response letter was received on September 15, 2020 (Appendix C). The response letter states that all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, presence of these species are assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Stantec did not observe winter habitat for the Indiana bat or northern long-eared bats, however, the Project area does contain potentially suitable summer habitat, including foraging and roosting habitat for the Indiana bat and northern long-eared bat. The USFWS response letter stated 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, USFWS recommends that a summer survey be conducted to determine presence or probable absence of Indiana bats at the Project site.

The USFWS response also indicates that due to the Project type, size, and location, the USFWS does not anticipate effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Further, the USFWS letter recommends that the Project avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands) and that best management practices should be utilized to minimize erosion, especially on slopes.

As noted in Table 2, Stantec observed potentially suitable habitat for state-listed and federally-listed threatened and endangered species within the Project area, including: lark sparrow, Indiana bat, northern long-eared bat, eastern tri-colored bat, little brown bat, pirate perch, greater redhorse, and pondhorn.

The proposed Project design has minimized the likelihood of impacts to the state-listed endangered lark sparrow. Project infrastructure avoids the majority of the potentially suitable habitat for this species observed within the Project area. In the limited areas where infrastructure is proposed to cross potentially suitable habitat, Lightsource bp will ensure clearing of the potenitally suitable breeding habitat for the species is done outside the nesting period of May 1 to June 30.

Potentially suitable habitat for the state-listed pirate perch, greater redhorse, and pondhorn is found within the Project area, including Twomile Creek and the Little Ottawa River. However, all infrastructure has been sited to avoid streams within the Project area. Therefore, impacts to these species will be avoided as no in-water work will be utilized.

Woodlots that could provide suitable summer habitat for the federally and state-listed Indiana and northern long-eared bat, and state-listed eastern tri-colored and little brown bat have been avoided when developing the site design, as shown in Figure 1 (Appendix A). As such, there will be no tree clearing necessary for construction or operation of the Project and no impacts to any of the federally and state-listed bat species.

5.0 REFERENCES

Anderson, D.M. 1982. Plant communities of Ohio: Preliminary classification and description. Ohio Department of Natural Resources Division of Natural Areas and Preserves.

Badra, P. J. 2001. Special animal abstract for *Pleurobema clava* (northern clubshell). Lansing, Michigan: Michigan Natural Features Inventory.

Brack, Virgil Jr., Dale W. Sparks, John O. Whitaker Jr., Brianne L. Walters, and Angela Boyer. 2010. Bats of Ohio. Indiana State University Center for North American Bat Research and Conservation.

Cowardin, L.M., V. Carter, F.C. Golet, E.T. La Roe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. Retrieved from: http://www.npwrc.usgs.gov/resources/1998/classwet/classwet.htm (Version 04DEC98).

NatureServe. 2020. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. U.S.A. Available at http://explorer.natureserve.org. Accessed November 2020.

Ohio Department of Natural Resources (ODNR). 2020a. Karst of Ohio. Available at https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/. Accessed November 2020.

ODNR. 2020b. Mines of Ohio. Available at https://gis.ohiodnr.gov/MapViewer/?config=OhioMines. Accessed November 2020.

ODNR Division of Wildlife (DOW). 2020a. State Listed Wildlife and Plant Species by County. Available at https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/wildlife/documents-publications/wildlife-plants-county. Accessed November 2020.

ODNR DOW. 2020b. Online species guide. Available at https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/wildlife/species-guide. Accessed February 2020.

ODNR DOW and United States Fish and Wildlife Service (USFWS). 2020. Ohio Mussel Survey Protocol. Available at https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf. Accessed November 2020.

Ohio Department of Transportation (ODOT) Office of Ecological Services. 2014. Ecological Manual, April 2014. Ohio Department of Transportation, Office of Environmental Services, Columbus, Ohio. 77 pp.

Ohio Division of Geological Survey (ODGS). 1998. Physiographic regions of Ohio: Ohio Department of Natural Resources, Division of Geological Survey, page-size map with text. 2 pp.

USFWS. 1994. Clubshell (*Pleurobema clava*) and Northern Riffleshell (*Epioblasma torulosa rangiana*) Recovery Plan. Prepared for the U.S. Fish and Wildlife Service, Hadley, Massachusetts. 68 pp.

USFWS. 2007. Indiana bat (*Myotis sodalis*) draft recovery plan: First revision. U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota. 258 pp.

USFWS. 2020a. Northern Long-eared Bat (*Myotis septentrionalis*). Available online at https://www.fws.gov/midwest/Endangered/mammals/nleb/nlebFactSheet.html.. Accessed October 2020.

USFWS. 2020b. 2020 Range-wide Indiana Bat Survey Guidelines, March 2020. Available at https://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/FINAL%20Range-wide%20IBat%20Survey%20Guidelines%203.23.20.pdf. Accessed November 2020.

USFWS. 2020c. Information for Planning and Consultation (IPaC). Available at: https://ecos.fws.gov/ipac/. Accessed November 2020.

Appendix A FIGURES

FIGURE 1 – PROJECT LOCATION AND TOPOGROPHY MAP

Figure No.

1

Title

Project Location and Topography

Client/Project 2028113238

Lightsource bp
Birch Solar Project

Project Location
Allen and Auglaize Counties, Ohio

Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

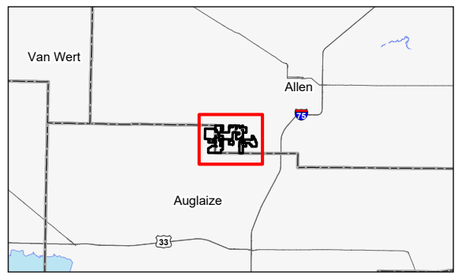
N

0 1,000 2,000 Feet

(At original document size of 11x17)
1:24,000

Legend

- Project Area
- Solar Array
- Inverter
- Substation
- Fence
- Access Road



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

FIGURE 2 – VEGETATION COMMUNITIES MAP

Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project

2028113238

Project Location
Marion County, Ohio

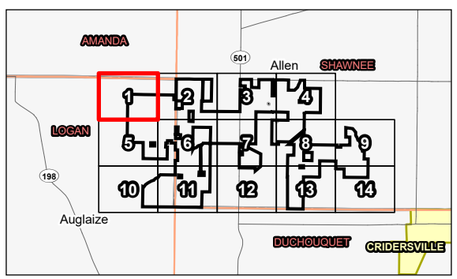
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project

2028113238

Project Location
Marion County, Ohio

Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

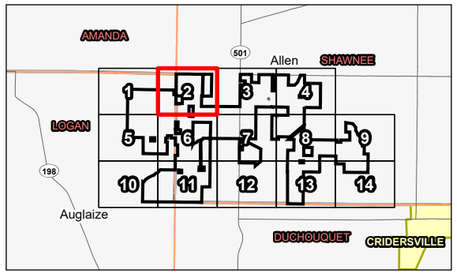
0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend

- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area

- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

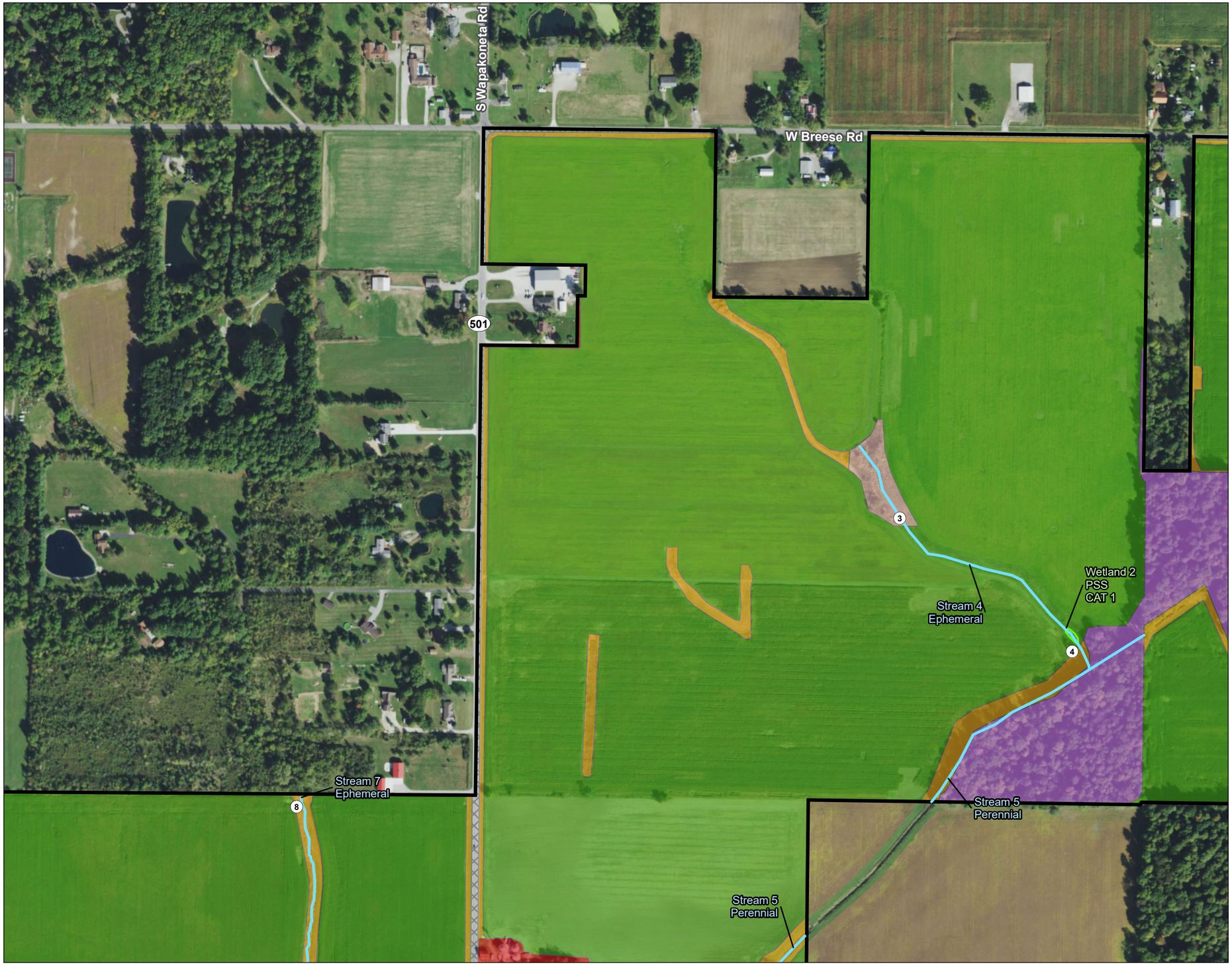


Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project

2028113238

Project Location
Marion County, Ohio

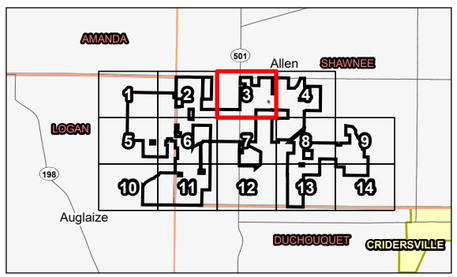
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

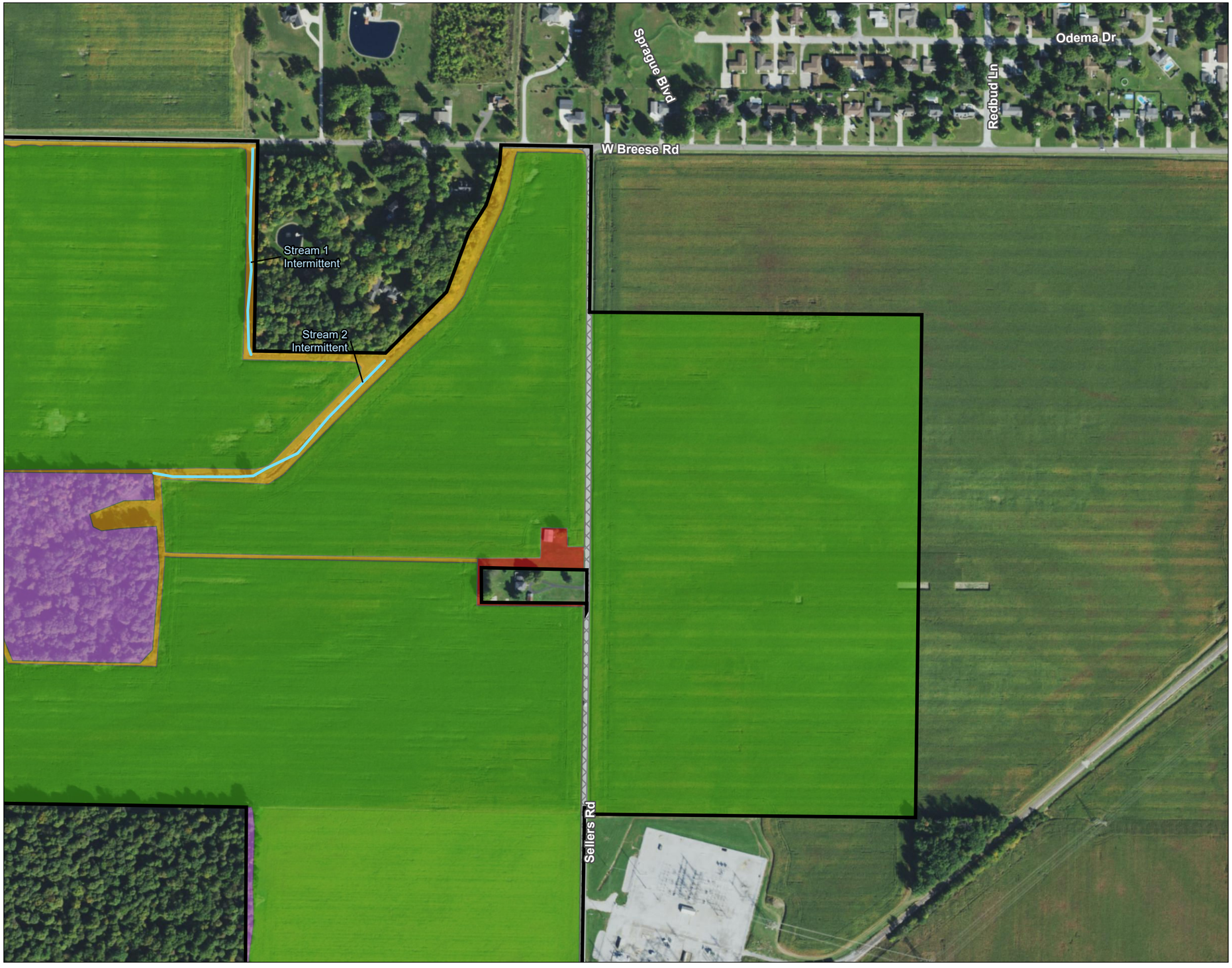


Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

Project Location
Marion County, Ohio

Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

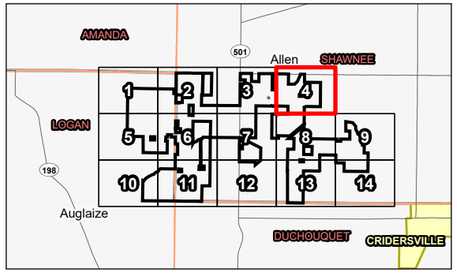
0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend

- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area

- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

Project Location
Marion County, Ohio

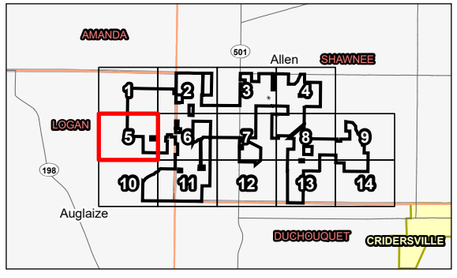
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project
2028113238

Project Location
Marion County, Ohio

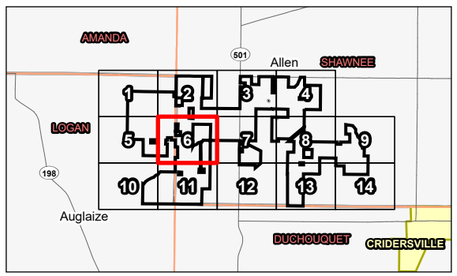
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

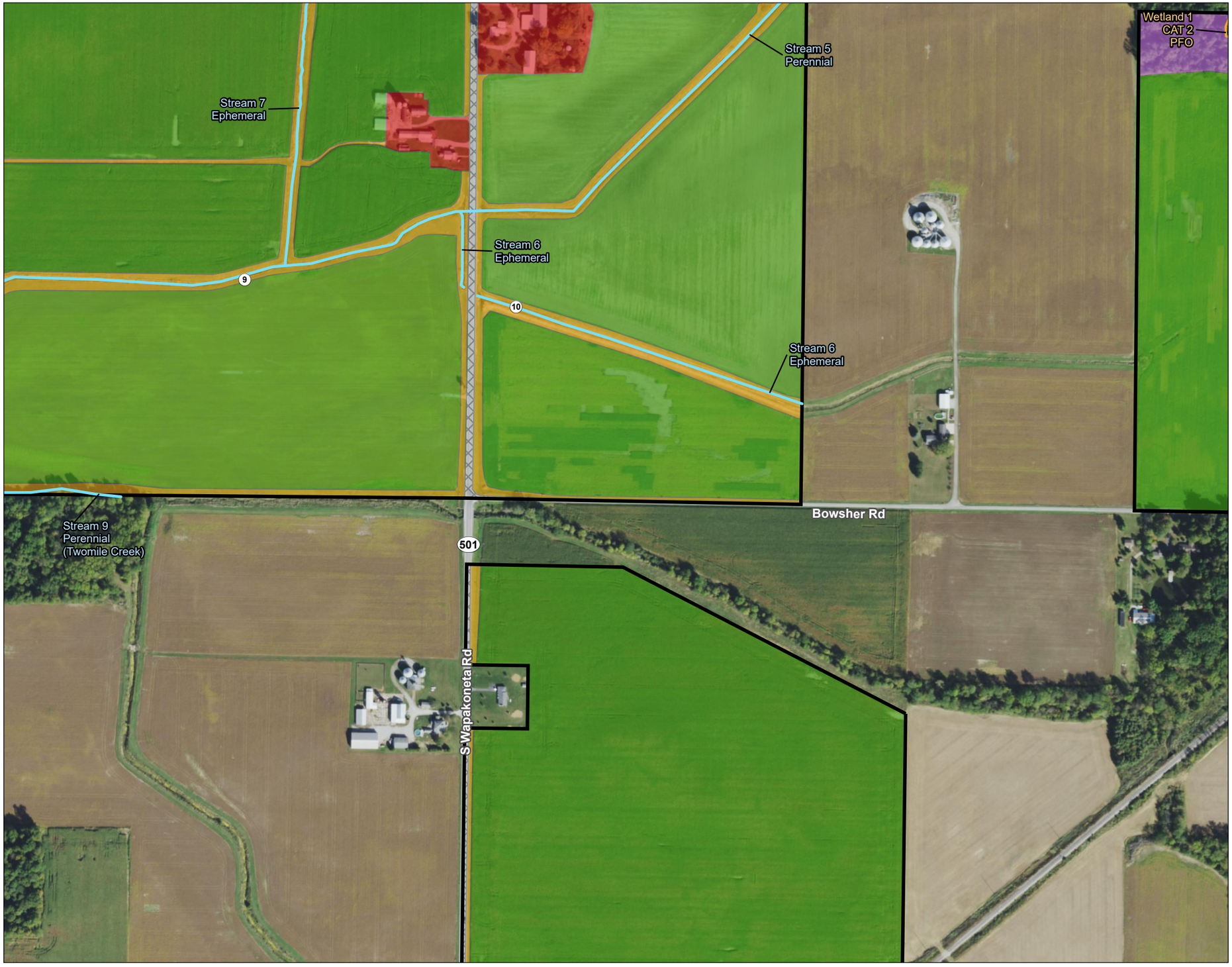


Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

Project Location
Marion County, Ohio

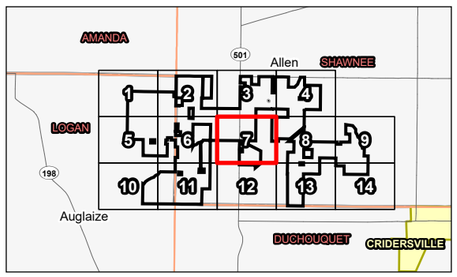
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project

2028113238

Project Location
Marion County, Ohio

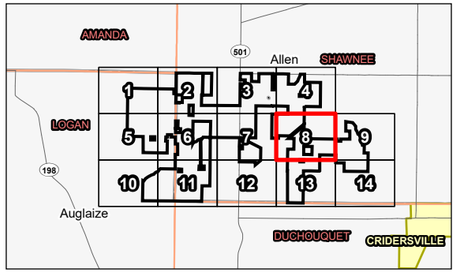
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

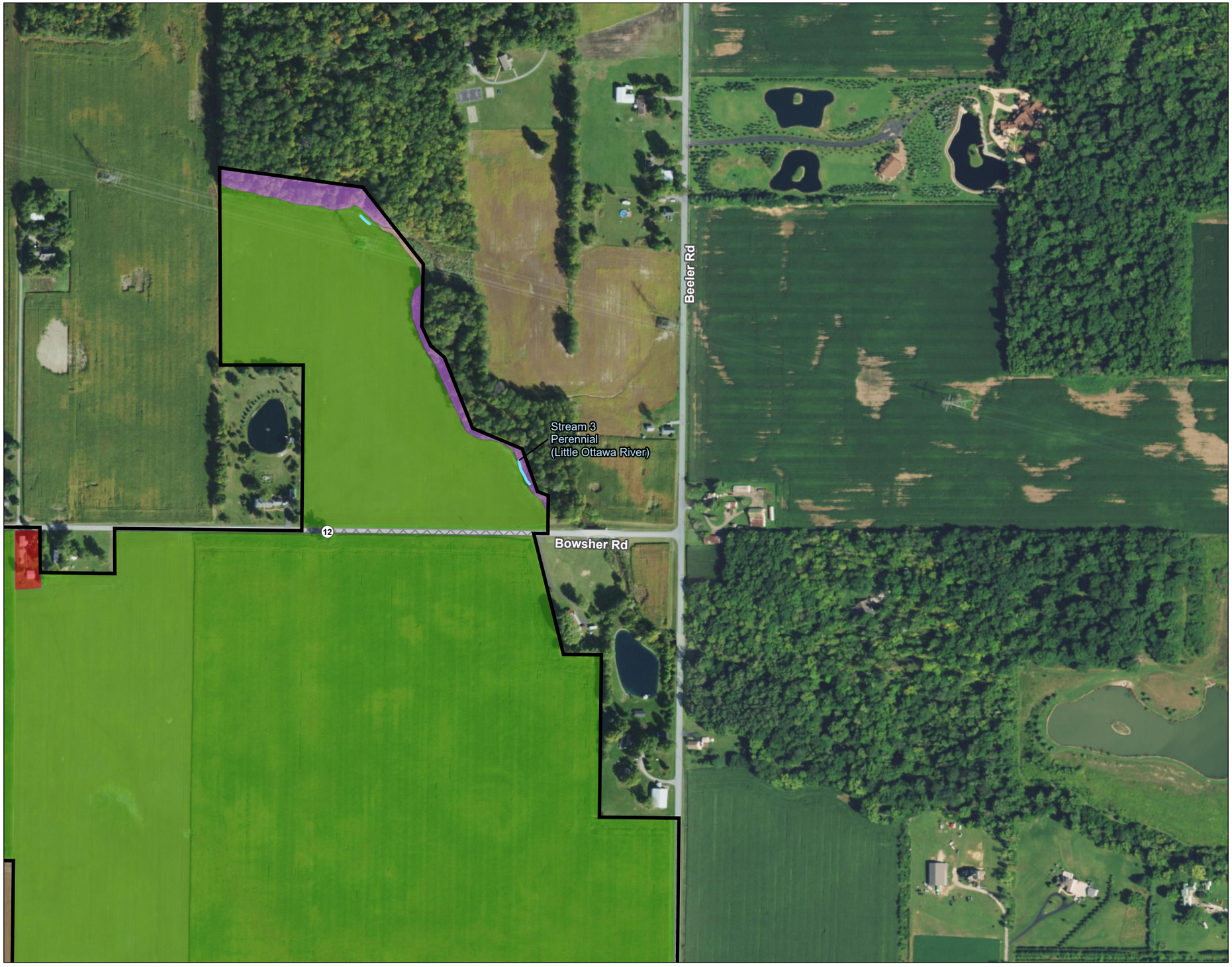


Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project
2028113238

Project Location
Marion County, Ohio

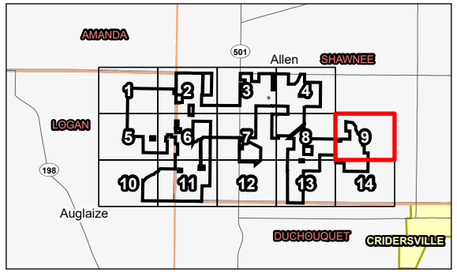
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project
Lightsource bp
Birch Solar Project
2028113238

Project Location
Marion County, Ohio

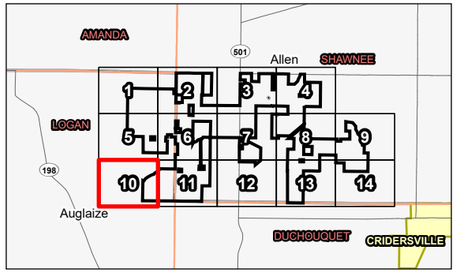
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

Project Location
Marion County, Ohio

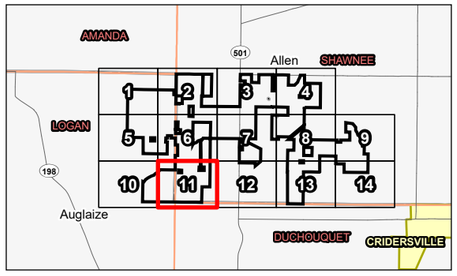
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

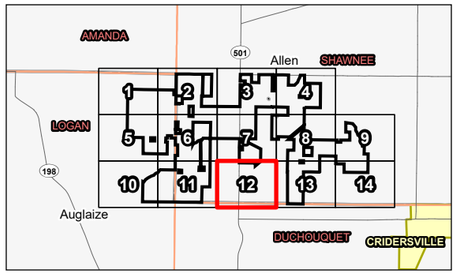
Project Location
Marion County, Ohio

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

Project Location
Marion County, Ohio

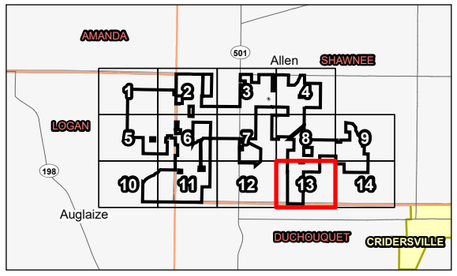
Prepared by JLH on 2021-1-22
TR by CA on 2021-1-22
IR by CD on 2021-1-22

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Vegetation Communities Map

Client/Project 2028113238
Lightsource bp
Birch Solar Project

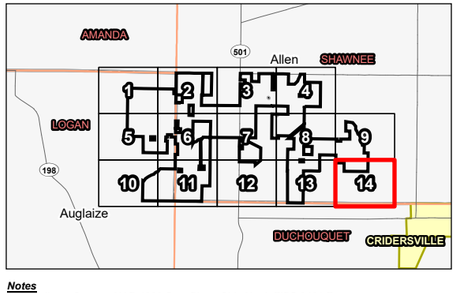
Project Location
Marion County, Ohio

N

0 200 400 Feet
(At original document size of 11x17)
1:4,800

Legend
- Project Area
- Photo Location
- Field Delineated Waterway
- Field Delineated Forested Wetland
- Field Delineated Scrub Shrub Wetland
- Field Delineated Open Water

Habitat Area
- Agricultural Field
- New Field
- Old Field
- Second Growth Deciduous Forest
- Developed/Residential
- Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, NADS
3. Orthophotography: 2019 NAIP

Stantec

Site Photographs
January 21, 2021

Appendix B SITE PHOTOGRAPHS

Photo Location 1. View of new field vegetation communities. Photograph taken facing southeast.

Photo Location 2. View of intermittent stream habitat (Stream 8). Photograph taken facing east.

Photo Location 3. View of old field vegetation community. Photograph taken facing northwest.

Photo Location 4. View of palustrine scrub/shrub wetland (PSS) (Wetland 2) vegetation community. Photograph taken facing south.

Photo Location 5. View of second growth deciduous forest vegetation community. Photograph taken facing east.

Photo Location 6. View of open water habitat (Open Water 1). Photograph taken facing north.

Photo Location 7. View of palustrine forested wetland (PFO) (Wetland 3) vegetation community. Photograph taken facing south.

Photo Location 8. View of new field vegetative community. Photograph taken facing south.

Photo Location 9. View of perennial stream habitat (Stream 5). Photograph taken facing east.

Photo Location 10. View of ephemeral stream habitat (Stream 6). Photograph taken facing east.

Photo Location 11. View of existing roadway (left) and cultivated crop (right) vegetation community. Photograph taken facing southeast.

Photo Location 12. View of cultivated crop vegetation community. Photograph taken facing north.

Photo Location 13. View of perennial stream (Stream 9, Twomile Creek) habitat. Photograph taken facing northeast.

Photo Location 14. View of cultivated crop vegetation community. Photograph taken facing northwest.

Appendix C AGENCY CORRESPONDENCE

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

September 30, 2020

Courtney Dohoney
Stantec Consulting Services, Inc.
3001 Washington Blvd. suite 500
Arlington, Virginia 22201

Re: 20-820; Birch Solar Project Environmental Review Request

Project: The proposed project involves the construction of a 300-megawatt (MW) utility-scale photovoltaic solar energy project on approximately 2,176 acres of private land.

Location: The proposed project is located in Allen and Auglaize Counties, 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.

Natural Heritage Database: The Natural Heritage Database has the following record at or within a one-mile radius of the project area:

Greater redhorse (*Moxostoma valenciennesi*), State threatened

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

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 Division of Wildlife is working closely with our partners at Ohio Pollinator Habitat Initiative (OPHI) to create and enhance pollinator habitat at solar power installations. Attached for your use is the Ohio Solar Site Pollinator Habitat Planning and Assessment Form. This form was developed by the OPHI Solar Pollinator Program Advisory Team. We recommend that the areas between and around the solar panels be planted with legumes and wildflowers (i.e. forbs) that are beneficial to pollinators and other wildlife and reduce use of non-native grass and gravel. The recommended legumes and forbs listed below are low-growing so as not to cast shadows on the solar panels and would only require one to two mowings a year for maintenance, which should minimize maintenance costs. For other areas of the installation where vegetation does not have to be low-growing, alternative pollinator mixes are available with a more diverse array of flowering plants. This perennial vegetation will provide beneficial foraging habitat to songbirds and pollinators while reducing storm water runoff, standing water, and erosion. Please contact the Ohio Pollinator Habitat Initiative http://www.ophi.info/, and specifically Mike Retterer mretterer@pheasantsforever.org for further information on solar power facility pollinator plantings.

Recommended low-growing grasses and forbs may include:

Little Bluestem	*Schizachyrium scoparium*
Sideoats Grama	*Bouteloua curtipendula*
Alfalfa	*Medicago spp.*
Alsike Clover	*Trifolium hybridum*
Brown-eyed Susan	*Rudbeckia triloba*
Butterfly Milkweed	*Asclepias tuberosa*
Lanceleaf Coreopsis	*Coreopsis lanceolata*
Partridge Pea	*Chamaecrista fasciculata*
Timothy	*Phleum pratense*
Orchardgrass	*Dactylis glomerata*
Crimson Clover	*Trifolium incarnatum*
Ladino or White Clover	*Trifolium repens*

The project is within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species. Because presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW (contact Sarah Stankavich, sarah.stankavich@dnr.state.oh.us).

In addition, 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 bat species 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. The DOW recommends tree 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 $\geq$ 20 if possible.

The DOW also recommends that a desktop habitat assessment, followed by a field assessment if needed, is conducted to determine if there are potential hibernaculum(a) present within the project area. Information about how to conduct habitat assessments can be found in the current USFWS "*Range-wide Indiana Bat Survey Guidelines*." If a habitat assessment finds that potential hibernacula are present within 0.25 miles of the project area, please send this information to Sarah Stankavich, sarah.stankavich@dnr.state.oh.us 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 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 clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, and the pondhorn (*Uniomerus tetralasmus*), a state threatened mussel. 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:
http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/licenses%20&%20permits/OH%20Mussel%20Survey%20Protocol.pdf

The project is within the range of the pirate perch (*Aphredoderus sayanus*), a state endangered fish, and the greater redhorse (*Moxostoma valenciennesi*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 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 lark sparrow (*Chondestes grammacus*), a state endangered bird. This sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to June 30. If this habitat will not be impacted, the project is not likely to impact 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 to July 31. If this type of habitat will not be impacted, this 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 U.S. Fish & Wildlife Service.

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

Physiographic Region
The proposed project area is in Amanda and Shawnee townships, Allen County; and Logan and Duchouquet townships, Auglaize County. This area is in the Central Ohio Clayey Till Plain physiographic region. This region is characterized by well-defined end moraines as well as flat-lying ground moraines. Intermorainal lake basins filled with silt, clay and till are present. There are few large streams and limited sand and gravel outwash. A high-lime Wisconsinan-age till covers Lower Paleozoic-age carbonate rocks and shales (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-aged glacial features. End moraine, lake-planed moraine and ground moraine features are all present within the project area. End moraine features make up the northern portion of the project area and consist of clayey till that occurs as hummocky ridges that are higher than the adjacent terrain. Lake-planed moraine features make up most of the project area and consist of very flat terrain which was planed by waves in glacial lakes. Small patches of sand, silt, or clay may be found on the surface in many areas. Flat to gently undulating ground moraine features make up the southern boundary of the project area (Pavey et al, 1999). Glacial drift throughout most of the study area is between 25 and 95 feet thick. Drift is thickest near the northern boundary of the project area and thinnest near alluvial areas (Powers and Swinford, 2004).

Bedrock Geology

The uppermost bedrock unit in the project area is the Salina Undifferentiated. This unit is Silurian-aged and consists of a gray to brown dolomite which contains argillaceous partings, brecciated intervals, algal laminations and anhydrite/gypsum zones. The Salina Undifferentiated covers a small portion of the project area near the northern boundary. Underlying the Salina Undifferentiated is the Silurian-aged Tymochtee Dolomite. This unit is characterized by an olive gray to yellowish brown dolomite. It frequently contains brownish-black to gray shale laminae. This unit makes up most of the project area. Underlying the Tymochtee Dolomite is the Silurian-aged Lockport Dolomite. This unit is characterized by bluish gray to gray dolomite with minor interbedding of limestone, chert and shale. Fossils and planar to irregular bedding are common. This unit does not make up the uppermost bedrock unit anywhere in the project area but is relevant due to the unit's use as a groundwater aquifer in the area. It should be noted that bedrock is not exposed at the surface within the boundaries of the project area due to significant glacial drift (Slucher et al, 2006).

Oil, Gas and Mining

ODNR has record of 271 oil and gas wells within one mile of the proposed project area. Most of these wells are listed as plugged and abandoned or as historical production wells. This site is partially located within the mapped boundary of the Lima Consolidated Oil Field (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 the Buckland Site mine operated by The National Lime and Stone Company. This mine is a quarry and is located approximately 2.9 miles from the site boundary (Ohio Department of Natural Resources, Division of Mineral Resources, *Mines of Ohio*).

Seismic Activity

Several small earthquakes have historically been recorded near the site. 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
August 15, 2006	2.5	3.8 miles	Allen	Shawnee
September 19, 1884	4.8	4.1 miles	Allen	Perry
May 12, 2006	2.8	6.2 miles	Allen	Bath

Karst

Karst features usually form in areas that are covered by thin or no glacial drift and the bedrock is limestone or dolomite. There are no known surface karst features near the project area, however the Salina Undifferentiated, Tymochtee Dolomite and Lockport Dolomite are all carbonate units that can develop karst features under the right conditions and may include solution features that are not apparent on the surface. The nearest mapped karst features are approximately 26 miles east of the project area (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 glacial till, outwash and alluvium. Blount, Pewamo, Westland, Glynwood, Thackery, Sarnac and Gallman are the most common soil series found within the boundaries of the project area. Together, these soils make up over 90% of the project area (USDA Web Soil Survey).

There is a low to moderate risk of shrink-swell potential in these soils. Other limiting factors include seasonal saturation and poor drainage in some soils. Slope remains relatively flat, with slope seldom exceeding a 12% grade (USDA Web Soil Survey).

Groundwater

Groundwater resources are plentiful throughout the project area. Wells developed in bedrock are likely to yield between 5 and 100 gallons per minute, sometimes yielding up to 500 gallons per minute. Wells developed in the Tymochtee Dolomite typically yield between 5 and 25 gallons per minute but yields of up to 100 gallons per minute can be expected from wells located towards the northern boundary of the project area where the bedrock unit is thicker. Wells developed in the underlying Lockport Dolomite are known to yield over 100 gallons per minute. Yields of over 300 gallons per minute are known to exist in areas of the Lockport Dolomite where solution cavities are present (Kostelnick, 1981; Kostelnick, 1983; Ohio Department of Natural Resources, Division of Water, *Bedrock Aquifer Map*, 2000). Wells developed in glacial material are likely to yield 5 to 25 gallons per minute. Unconsolidated aquifers in the project area include the Lima End Moraine Aquifer in the northern portion of the project area and the Lima Ground Moraine Aquifer in the southern portion of the project area. Higher groundwater yields typically reflect

larger diameter, properly developed and screened wells (Ohio Department of Natural Resources, Division of Water, *Statewide Unconsolidated Aquifer Map*, 2000).

ODNR has record of 370 water wells drilled within one mile of the project area. These wells range in depth from 22 to 284 feet deep, with an average depth of 88.5 feet. The most common aquifers listed are limestone and gravel. Other common aquifers include shale, sand and gravel, and sand. Overall, there are 180 wells that are fully developed in unconsolidated glacial material and 190 wells that were drilled to bedrock. A sustainable yield of 3 to 300 gallons per minute is expected from wells drilled in this area based on well log records. The average sustainable yield from these records within one mile was 19.2 gallons per minute. This is based on records from 98 wells within one mile of the project area that contain sustainable yield data (Ohio Department of Natural Resources, Division of Water, *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 Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

References

Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Earthquake Epicenters,* online interactive map, https://gis.ohiodnr.gov/MapViewer/?config=earthquakes

Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Karst,* online interactive map, https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/

Ohio Department of Natural Resources, Division of Geological Survey, (1998). *Physiographic Regions of Ohio.* Ohio Department of Natural Resources, Ohio Department of Natural Resources, Division of Geological Survey, map with text, 2 p., scale 1:2,100,000.

Ohio Department of Natural Resources, Division of Geological Survey, (In progress). *Statewide Surficial Geology Map.* GIS coverage.

Ohio Department of Natural Resources, Division of Water, *Ohio Water Wells,* online interactive map, https://gis.ohiodnr.gov/MapViewer/?config=waterwells.

Ohio Department of Natural Resources, Division of Water, (2000). *Statewide Bedrock Aquifer Map,* GIS coverage.

Ohio Department of Natural Resources, Division of Water, (2000). *Statewide Unconsolidated Aquifer Map*, GIS coverage.

Slucher, E., Swinford, E., Larsen, G., Schumacher, G., Shrake, D., Rice, C., Caudill, M., Rea, R. and Powers, D. (2006). *Bedrock Geologic Map of Ohio,* Ohio Department of Natural Resources, Division of Geological Survey, map, scale 1:500,000.

USDA Web Soil Survey, (Last modified 2019). *Web Soil Survey Interactive Map,* United States Department of Agriculture, National Resources Conservation Service, online interactive map, https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

Schmidt, J. (1991). *Groundwater Resources Map of Greene County,* Ohio Department of Natural Resources, Division of Geological Survey, map.

From:	Ohio, FW3
To:	Dohoney, Courtney
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate
Date:	Tuesday, September 15, 2020 2:41:01 PM
Attachments:	pastedImagebase640.png pastedImagebase641.png 2020 USFWS Federally Listed Bat Permitees - Ohio.pdf

TAILS# 03E15000-2020-TA-2452

Dear Ms. Dohoney,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the 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. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed 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 travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) 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 and abandoned mines.

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 probable absence of Indiana bats at the project site.** The summer survey must be designed and conducted in coordination with the Endangered Species Coordinator for this 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 be designed and conducted in coordination with the Endangered Species Coordinator for this office.

Survey results should be coordinated with this office prior to initiation of any work. Based on the results of the survey(s), we will evaluate potential impacts to the Indiana bat from the proposed project. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied (see http://www.fws.gov/midwest/endangered/mammals/nleb/index.html).

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), 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 that 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.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, 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, consultation with the Service should be initiated to assess any potential impacts.

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 ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the 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 M. Ashfield
Field Office Supervisor

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

Summary: Application - 23 of 31 (Exhibit Q - Threatened and Endangered Species Habitat Survey Report) electronically filed by Christine M.T. Pirik on behalf of Birch Solar 1, LLC