

**Natural Resources Assessment  
4.999 MW Photovoltaic  
Electric Generation Facility  
Northland Solar Project**

**Lowell, Vermont**

*Prepared by:*

*Arrowwood Environmental, LLC*

*October 1, 2025*



**ARROWWOOD ENVIRONMENTAL**

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4.999 MW Photovoltaic Electric Generation Facility  
Northland Solar Project**

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## **I. Summary Findings**

Arrowwood Environmental, LLC (“AE”) conducted a natural resources assessment for the Northland Solar Project (“Project”) proposed by Northland Solar LLC (“Petitioner”) located off Route 100 in Lowell, Vermont. The field assessment was conducted in May 2024. The Project limits of disturbance for the solar array, temporary staging, and shade management are ~32.97 acres of a ~43.90 acre parcel. The Project site is located within existing agricultural hay field. Approximately 0.03 acres of vegetative management is proposed for the Project related to the interconnection route. AE assessed natural resources criteria under 30 V.S.A. § 248(b)(5) incorporated by the Public Utility Commission into the review of solar projects, including streams and headwaters, outstanding resource waters, shorelines, floodways, wetlands, rare and irreplaceable natural areas, necessary wildlife habitat, and rare, threatened and endangered species. AE’s assessment included both the full Project parcel and the interconnection route area.

There are no outstanding resource waters, floodways, shorelines, rare and irreplaceable natural areas or rare, threatened, and endangered animal or plant species at the Project site or along the interconnection route. AE concludes that the Project has been sited and designed to avoid undue adverse to these resources.

The Project site is located in a headwater. However, the Project will obtain necessary stormwater permits, the site will be vegetated around Project infrastructure, and the Project will not involve the disposal of wastes and will not involve the injection of waste

materials or any harmful toxic substances into groundwater or wells. The proposed Project will not result in a reduction in the quality of ground or surface waters in the area.

The Project's proposed pervious access road to the northern portion of the Project involves an intermittent stream crossing. The crossing has been designed to minimize impacts to the stream and to the associated riparian buffer. The crossing will result in minor impacts of 2,510 sf in the riparian buffer of the small stream. The crossing will maintain aquatic organism passage and the area of riparian buffer impact is within the agricultural field and will result in no additional tree clearing.

There is a mapped deer wintering area ("DWA") directly to the east of the northern Project area. The Project has incorporated the following best management practices to minimize impacts on the DWA habitat.

- No Project site preparation, construction, or decommissioning activity will occur within the DWA or its 100-foot buffer during the deer wintering period from December 15 to April 15, unless given specific prior written authorization by the Vermont Fish and Wildlife Department ("VFWD").
- During the deer wintering period from December 15 to April 15, access will be limited to once per month for maintenance or upgrades. When emergency circumstances or essential non-routine repairs require additional access during this time, the CPG Holder shall notify VFWD within 24 hours of the visit.
- The perimeter fencing for the facility will be 7-feet high, with mesh size no smaller than 6 inches by 6 inches extending from the ground level up to three feet or higher.

The Project area contains grassland bird habitat. The Petitioner has agreed to mitigate the Project impacts to grassland bird habitat at the compensation ratio of 2:1. The Petitioner will work with VFWD to finalize the details of the mitigation requirements, including the calculation of the total area subject to mitigation.

In summary, AE concludes that the Project has been sited and designed to avoid undue adverse impacts to natural resources including streams and headwaters, floodways, outstanding resource waters, shorelines, wetlands, rare and irreplaceable natural areas, necessary wildlife habitat, and rare, threatened, and endangered species.

## **II. Introduction and Project Description**

AE performed a natural resources assessment for a proposed 4.999 MW photovoltaic electric generation facility located off Route 100 in Lowell, Vermont (“Project”). The Project will result in a Limit of Disturbance of ~32.97 acres. The array area will occupy ~26.97 acres and be enclosed by a fence. The Project area is generally characterized by agricultural hay field.

The Project will be accessed off from Route 100 via an existing driveway and curb cut off of Route 100 that will be extended into the middle of the Project site. A further pervious or temporary construction extension to this drive will be added to facilitate construction of the northeastern sections of the Project. A new 3-phase overhead power line on the site will connect the Project to an existing pole at a substation along Route 100, which will be the point of interconnection with the Vermont Electric Cooperative distribution system.



**Project Area (6/19/24)**

This report outlines AE’s findings related to natural resources criteria incorporated by the Public Utility Commission into the review of solar projects, including streams and headwaters, outstanding resource waters, shorelines, wetlands, rare and irreplaceable natural areas, necessary wildlife habitat, and rare, threatened, and endangered species. The natural resources assessment involved both a remote review of available digital databases as well as field investigations at the Project site in May 2024.

### **III. Site Characterization**

Ecologically the site is within the Northern Green Mountains biophysical region of the state (Thompson and Sorenson, 2019). The Project is located at approximately 1000 feet above mean sea level according to U.S. Geologic Survey (“USGS”) topographic data. The mapped bedrock that is underlying the site is metadiabase and phyllite from the Stowe

Formation (Ratcliffe et al. 2011). The soils consist of Adams loamy fine sand in the Project areas (NRCS Soil Survey). Slopes vary from 3-25% across the Project area. The Project site is located within existing agricultural hay fields.

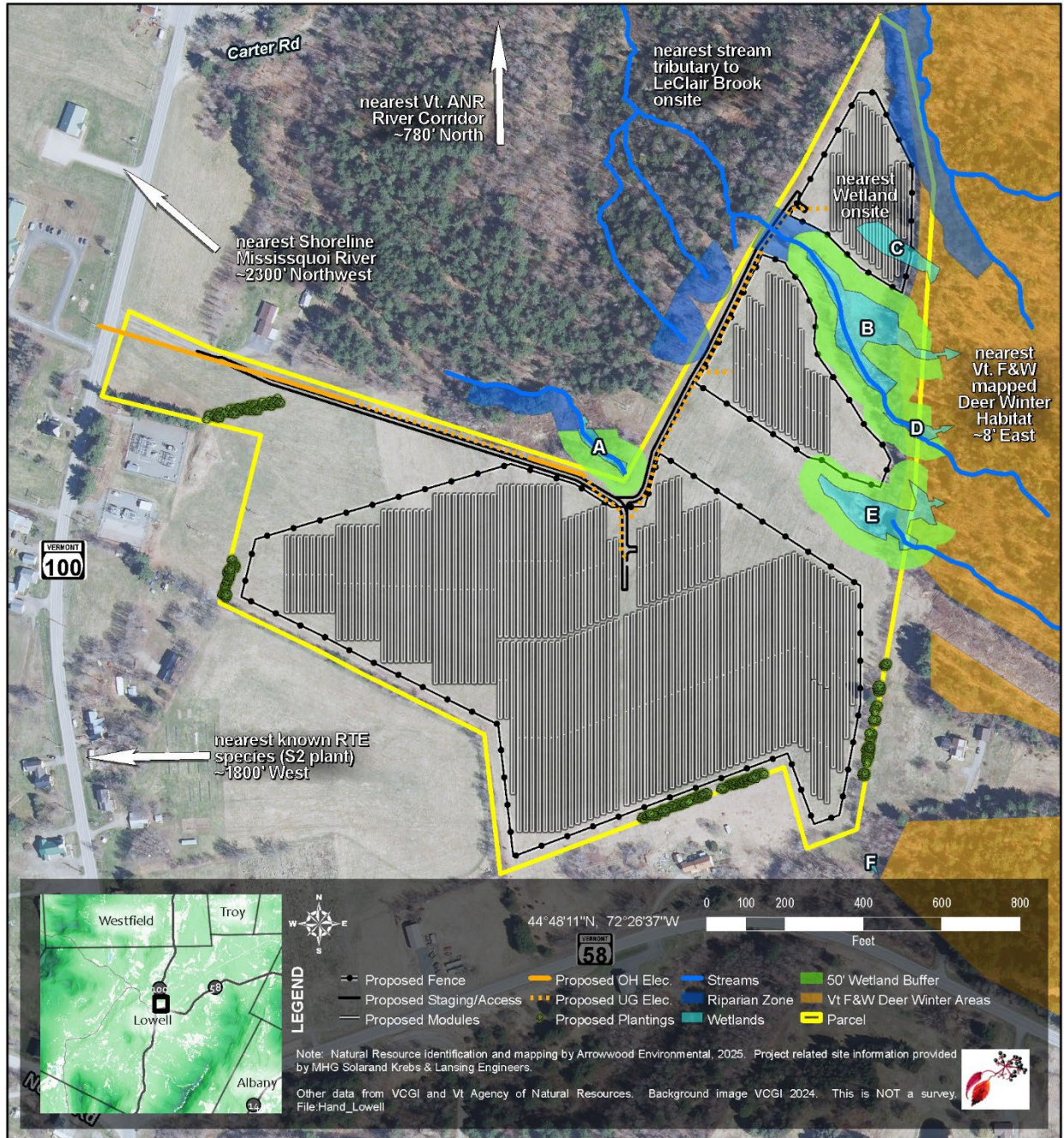


Figure 1. Project Site and Nearby Natural Resources.

## IV. Criterion 1(A) Headwaters

A site is considered to be a Headwater if it meets any of the following criteria: it is characterized by steep slopes and shallow soils; it is above 1,500 feet in elevation; it has a drainage area of less than 20 square miles; it is within the watershed of public water supplies; or if it provides significant recharge to aquifers. The headwaters assessment involved both a remote review of the USGS topographic map and Vermont Hydrography Dataset (streams, rivers, and waterbodies) and field investigations. The Project site is within a watershed of public water supplies and has a drainage area of less than 20 square miles, and therefore meets the criteria for a headwater.

A small portion of the proposed access drive extension for the Project is located within the groundwater source protection areas of the Lowell Grade School Water System ID: VT0006650; Well ID: WL001. The water system is a Non-Transient Non-Community water system.

The Project will comply with applicable health and environmental regulations. The Project will follow best management practices to reduce the risk to the public drinking water source. The Project will be constructed in accordance with the Vermont Standards & Specifications for Erosion and Prevention and Sediment Control, 2019. The Project will apply for coverage under the Agency of Natural Resources (“ANR”) Department of Environmental Conservation Construction General Permit. The Project site, including space between the solar panels, will remain vegetated and maintained during the life of the Project. The Project has no onsite sanitary wastewater systems, and therefore no associated injection of sanitary wastewater into the ground. The Project will use pad mounted transformers that will be installed on concrete pads, each with secondary oil containment system capable of holding 110% of the transformer fluid volume plus 5 inches of freeboard. The transformers will utilize mineral oil or Env.FR3 (a bio-based dielectric fluid that does not contain petroleum. With these steps,

the proposed Project will not result in a reduction of the quality of ground or surface waters in the area. For these reasons, we conclude that the Project will have no adverse impact on headwater areas.

## **V. Criteria 1(E) Streams and Section 248(b)(8) Outstanding Resource Waters**

The stream assessment involved both a remote review of the USGS topographic map, Vermont Hydrography Dataset (streams, rivers, and waterbodies), LiDAR derived topography, and field investigations in May 2024. Field work identified two streams on the Project parcel. One stream is an unnamed stream associated with a wetland on the northern end of the parcel and is outside of the Project LOD. Another stream is an unnamed tributary of LeClair Brook which runs through the northwestern corner of the Project site.

The Project includes a 12' wide pervious access road running from the middle of the Project area to the northwestern corner of the site. This road necessarily involves an intermittent stream crossing over the unnamed tributary to the LeClair Brook. The crossing is necessary to access the northernmost portion of the arrays. The stream flows the width of the parcel, and therefore it is not possible to avoid the crossing. The crossing has been designed to minimize impacts to the stream and to the associated riparian buffer (as measured 50' from top of bank/top of slope/ and edge of wetland). The crossing is perpendicular to the stream channel with a new HDPE 36" culvert to be embedded 6" below the stream bed in order to maintain aquatic organism passage. The crossing will result in minor impacts of 2,510 sf in the riparian buffer of the small stream. The area of riparian buffer impact is within the agricultural field and will result in no additional tree clearing. Since this is an intermittent stream, no stream alteration permit is required.

For these reasons, we conclude that the Project will have no undue adverse impact on streams.

The Agency of Natural Resources has listed four waterways as Outstanding Resource Waters (“ORW”): Batten Kill River in towns of East Dorset and Arlington; Pike’s Falls/Ball Mountain in the town of Jamaica; Poultney River in the towns of Poultney and Fair Haven; and Great Falls, Ompompanoosuc in the town of Thetford. There are no waters which intersect the Project that have been designated as an ORW. Therefore, the Project will not result in any impact to ORWs.

## **VI. Criterion 1(D) Floodways**

AE reviewed the FEMA DFIRM (Digital Flood Insurance Rate Map Database) and the VT ANR’s Flood Ready Atlas to identify floodways or flood fringes. AE also reviewed ANR’s river corridor data layer on the VT ANR’s Flood Ready Atlas.

The Project is not located within a 100-year Zone Area and will not restrict or divert the flow of floodwaters or significantly increase the peak discharge of a river or stream within or downstream from the area of development. The Project is not located within a river corridor. Therefore, the Project will not have any undue, adverse impacts on floodways or river corridors, nor will they endanger the health, safety and welfare of the public or riparian owners as it relates to flood events or fluvial erosion.

## **VII. Criterion 1(F) Shorelines**

AE reviewed USGS topographic maps, the Vermont Hydrography Dataset (streams, rivers, and waterbodies), and digital orthophotography. The site of the proposed Project is not located on a shoreline of a river, lake, pond, or reservoir. The site of the proposed Project is not located on a shoreline of a river, lake, pond, or reservoir. The closest shoreline to the Project is that of the Missisquoi River approximately 2300’ to the northwest of the Project. The Project will not result in any clearing of forest vegetation along the shores of the River. The proposed Project will result in no adverse impact to shorelines.

## VIII. Criterion 1(G) Wetlands

The wetland assessment involved both a remote review of available maps (including Vermont Significant Wetland Inventory Maps and the NRCS Soil Survey) and a field inventory component conducted on May 23, 2024. The protocols put forth in the USACE's *Corp of Engineers Wetlands Delineation Manual* (2009 Regional Supplement for the Northcentral and Northeast Region) were employed for delineating wetlands as is the standard practice in Vermont.

AE field review confirmed the presence of Class II wetlands adjacent to the Project area and a Class III wetland within the Project area. Per the wetland survey protocol, AE flagged wetland boundaries in the field and mapped the boundary with a GPS unit capable of sub-meter accuracy. Representatives from the Vermont Wetlands Program visited the site on July August 7, 2024 to review and approve wetland delineations and classifications. The approved wetland delineation is shown on the Project site plans and in Figure 1.

The Project has been sited to avoid impacts to the Class II wetlands and 50' wetland buffers.

The Class III wetland within the Project site is an isolated depression that lacks any significant wetland functions and values. The proposed wetland impacts to this Class III wetland are 21 sq ft of solar foundations posts and fence posts and fall within the non-reporting category for the U.S. Army Corps of Engineers (USACOE). No USACOE permit is therefore required.

For these reasons, we conclude that the proposed Project will have no undue adverse impact on wetland resources.

## **IX. Criterion 8 Rare and Irreplaceable Natural Areas**

The Rare and Irreplaceable Natural Areas assessment involved both a remote review of available digital maps for the Project area and a field review in May 2024. AE reviewed digital orthophotography, the NRCS Soil Survey, the 2011 Bedrock Geologic Map of Vermont, and the Wildlife Natural Heritage Inventory (NHI) Rare, Threatened and Endangered Species digital database.

The Project area is characterized as agricultural hay field and does not involve any significant proposed tree clearing with the exception of 1,480 sq ft (0.03 ac) of vegetative management for the interconnection line. The areas of proposed vegetative management do not constitute a significant natural community or a Rare and Irreplaceable Natural Area (“RINA”). No RINAs are present within the Project area. Since there are no RRINAs in the Project area, there will be no adverse impacts on any Rare and Irreplaceable Natural Areas.

## **X. Criterion 8(A) Necessary Wildlife Habitat and Rare, Threatened and Endangered Species**

The wildlife habitat assessment involved both a remote review of available digital maps for the Project area and a field inventory component. A remote review of available digital databases was conducted to identify and map necessary wildlife habitat (including State of Vermont Deeryard data layer, USGS Topographic map, “VT HYDRODEM” elevation data, and State of Vermont Bear Habitat data layers) in the Project area. The field inventory component involved characterizing vegetation natural communities and recording observations of wildlife signs or sightings during field surveys.

Site assessments were conducted in May 2024 to assess wildlife, wildlife habitats, and threatened and endangered animal species.

## A. Necessary Wildlife Habitats

### 1. **White-tailed Deer Wintering Habitats**

There are no mapped VFWD white-tailed deer (*Odocoileus virginianus*) winter habitats within the Project area. AE confirmed the absence of historic or recent deer wintering activity as well as lack of forested areas containing significant enough softwood canopy closure to be considered DWA habitat within the Project area.

There is a mapped DWA adjacent to the east of the northern Project area boundary. The Project has incorporated the following best management practices to minimize impacts on the DWA habitat.

- No Project site preparation, construction, or decommissioning activity shall occur within the deer wintering area or its 100-foot buffer during the deer wintering period from December 15 to April 15, unless given specific prior written authorization by the Vermont Fish and Wildlife Department (“VFWD”).
- During the deer wintering period from December 15 to April 15, access shall be limited to once per month for maintenance or upgrades. When emergency circumstances or essential non-routine repairs require additional access during this time, the CPG Holder shall notify VFWD within 24 hours of the visit.
- The perimeter fencing for the facility will be 7-foot high fence, with mesh size no smaller than 6 inches by 6 inches extending from the ground level up to three feet or higher.

For these reasons, the proposed Project will have no undue adverse impact on DWA resources.

### 2. **Black Bear Habitat**

There is no bear habitat identified by the Vermont Fish and Wildlife Department within the Project area and no observations of bear use or feeding (including bear claw

scarring, bear dens, scat) were made during the field inventories of the forests and wetland within the Project area. The woodlands within and adjacent to the Project area do not contain beech or oak stands. No potential black bear spring feeding wetlands were identified. The Project will therefore have no adverse impact on black bear habitat.

### **3. Grassland Bird Habitat**

The VFWD considers grassland bird habitat to be easily identifiable, concentrated and essential for the reproductive success and survival of a suite of birds. Grasslands used by many species of grassland birds consist of large expanses (minimum of 20 acres) of native grasses with little or no woody vegetation. The Project site area meets the 20-acre threshold for critical habitat for grassland bird species established by Vermont Fish and Wildlife. AE conducted a grassland bird habitat assessment in June 2024, which is provided in the Appendix Based on observations of presence of grassland bird species, AE concluded that while the mowing schedule observed in the agricultural fields likely impacts the current success of these species on the site, appropriate habitat is present. A Grassland Bird Survey memo, including an assessment of the acreage of habitat for grassland birds on the Project site was also conducted and is included in the Appendix. As shown in the Appendix, there are 38.3 acres of available grassland bird habitat located at the Project site.

The Petitioner has agreed to mitigate for the impacts of the Project on grassland bird habitat. VFWD has determined that the appropriate compensation ratio is 2:1. Given the 2:1 ratio and the 38.3 acres of available grassland bird habitat, Petitioner will need to mitigate for impacts to 76.6 acres of habitat. For these reasons, the Project will have no undue adverse impact on grassland bird habitat.

### **4. Amphibian Breeding Habitat/Vernal Pools**

The Vermont Department of Fish and Wildlife considers intact well-functioning breeding pools that are interconnected to intact upland forest necessary wildlife habitat for pool-breeding amphibians. Field assessments conducted in May 2024 did not

identify any functioning or potentially functioning vernal pools in the project area. The Project will have no undue adverse impact on vernal pools.

## **B. Rare, Threatened and Endangered (RTE) Species**

The RTE species review involved both a remote review of available digital maps for the Project area as well as a field survey. AE reviewed digital orthophotography, the NRCS Soil Survey, the 2011 Bedrock Geologic Map of Vermont and the Wildlife Natural Heritage Inventory (NHI) Rare, Threatened and Endangered Species digital database.

In reviewing the NHI digital database, there are no records or occurrences of RTE plant or animal species in or directly adjacent to the Project site.

### **1. RTE Animal Species**

The Project area is within predicted summer ranges for both Northern long-eared bat (State and Federally listed) and Tricolored bat (State listed). The VFWD has issued guidance that project clearing constituting greater than 1% of the total forested area within a 1 square mile radius of a project triggers review for habitat loss of this endangered species. The Project site is almost entirely hayfield and will result in only vegetative management activities on 0.03 acres near the proposed utility poles along the Project access drive and the interconnection route. According to VT Fish and Wildlife Department guidance, the proposed clearing is minimal in nature and does not trigger additional conservation measures.

The Project is not in an area that potentially provides summer roosting habitat for Indiana bat, there are no old or abandoned buildings potentially providing roosting habitat for little brown bat proposed for demolition, and there are no known bat hibernacula or maternity roosts within 1 mile of the Project site. As a result, the Project will have no adverse impact on RTE animal species.

## 2. RTE Plant Species

There are no known records or occurrences of RTE plant species at the site. Due to the nature of the site as a managed hay field, a rare plant inventory was deemed unnecessary by ANR botanist Grace Glynn (email communication of 7/9/2024). Given the nature of the vegetation on the site, the Project does not present a risk of an undue adverse impact on RTE plant species, and it is AE's conclusion that the Project will have no adverse impact on RTE plant species.

## XI. References

- Argentine, Cindy Corlett. Vermont Act 250 Handbook. Putney Press. 2008.
- Natural Resources Board. Vermont Wetland Rules. Effective February 10, 2023.
- Natural Resources Conservation Service. Soil Survey Maps.
- Ratcliffe, N.M., Stanley, R.S., Gale, M.H., Thompson, P.J., and Walsh, G.J., 2011, Bedrock geologic map of the Vermont: U. S. Geological Survey Scientific Investigations Map 3184, scale 1:100,000.
- Thompson, Elizabeth H. and Eric R. Sorenson, and Robert J. Zaino. Wetland, Woodland, and Wildland: A Guide to the Natural Communities of Vermont. The Nature Conservancy of Vermont, 2019.
- Vermont Center for Geographic Information (VCGI). EcologicHabitat\_DEERWN GIS data layer. Provided by Vt. Dept. of Fish and Wildlife, release date April 1, 2011.
- Vermont Fish and Wildlife Department Regulatory Review Guidance for Protecting Northern Long-eared Bats and Their Habitats. February 2017.

# **Appendix 1**

Grassland Bird Survey Memo



ARROWWOOD ENVIRONMENTAL  
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## MEMORANDUM

To: MHG Solar: Lowell Solar

Date: June 25, 2024

From: Aaron Worthley, Arrowwood Environmental

Re: Grassland Bird Survey- ~ 2301 VT Route 100, Lowell, VT

Arrowwood Environmental (AE) was retained to conduct a grassland bird habitat assessment and avian presence monitoring at the site of the proposed Lowell Solar Project in Lowell, Vermont. AE ecologists also conducted wetland delineations and other natural resource assessments on the subject parcel.

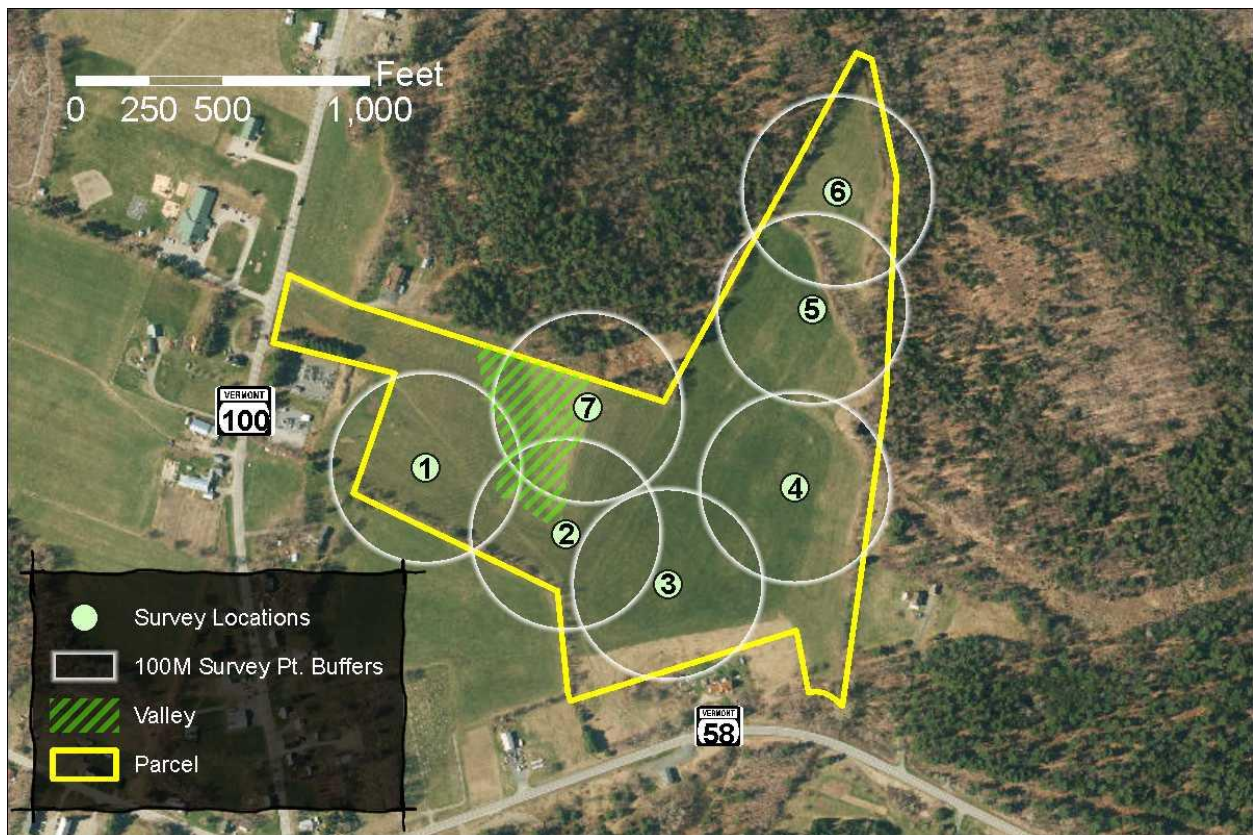


Figure 1. Map of the site and grassland bird survey locations.

The Project site consists of an ~44-acre parcel located east of Vt. Route 100 and north of Vt. Route 58 in Lowell Village, Vermont. The Project site is predominantly an open, managed, agricultural hay field. The site is situated within a matrix of mixed residential, agricultural and forested land-uses, but is one of the largest agricultural fields in the general vicinity. A smaller hay field is located adjacent to the site to the south, separated by a hedgerow along the property line. To the west, there are a few smaller fields intermixed with residential development and the Lowell Elementary School facilities. The subject field is actively managed



for hay, and the entire field was cut prior to the second survey. Residential development associated with the village of Lowell is located west of the parcel, and the property is bordered by busy Routes 100 and 58, scattered development, and large forests. Larger agricultural fields become more common approximately a mile to the north of the site within the Missisquoi River valley bottom.

AE visited the site on two occasions to survey for the presence of grassland bird species. The first survey was conducted on May 31, 2024, with a follow-up conducted 20 days later on June 19, 2024.

General site observations: The parcel is almost entirely active agricultural field, with only some small forest margins along the eastern edge and a hedgerow separating the main meadow area from a smaller (~3.2 acres) meadow at the northern end of the parcel. The property is generally flat, rising slightly to the east. The one exception is a roughly 35' deep cirque-like valley located along the northwestern boundary of the property and extending offsite to the north. The valley is entirely vegetated in hay, but notable for its topographic change from the rest of the property. There is no stream or other water feature located within the valley bottom on the subject parcel. The field shape can be described as having 2 "wings" spreading out from a central north-south line. A utility corridor crosses the field entering about mid-way along the eastern edge of the east "wing", crossing in a northwesterly direction to a point offsite before turning and crossing the western "wing" in a southwesterly direction, then terminating at the large electrical substation adjacent to the site. At the northern end of the eastern "wing" is a small meadow separated from the main field by a treed hedgerow with a couple of small (~40-50') breaks. Routes 100 and 58 experience a significant amount of truck traffic, and as such, the road noise throughout the field is significant. At the early survey hours, traffic was not particularly heavy, but the road noise still periodically interfered with audible bird identification. Other anthropomorphic noise was noted in the area, including farm equipment in nearby fields and vehicles and voices associated with the Lowell Village School.

The field is dominated by graminoids, and it is actively managed as a hay crop. The surrounding forests are almost entirely off-property and appear



Figure 2. Looking west from survey pt #3- electrical substation and Rte. 100 in mid-distance.



to be primarily northern hardwood forest communities, including an active sugarbush north of the property in the V between the field “wings”.

At the first visit, the herbaceous vegetation height was moderate (~12-16”) with some slight variability. At the second visit, the field had been freshly mowed- apparently within a day or two, and grass was much shorter at ~3-4” throughout most of the field. The western 130’ or so of the field had been mowed but not yet baled, with cut hay still on the ground. Much of the valley area, the small northern meadow, and a couple small fingers along the north end of the western edge that had been flagged by wetland delineators had not been mowed.

Survey protocols followed those laid out by Vermont Department of Fish and Wildlife in their guidance document- *VFWD Guidelines for Grassland Bird Surveys in Regulated Projects, 2022*. Surveying was predominantly passive, with one eastern meadowlark playback conducted at the second visit. Seven survey points were selected on-site for best visibility and to cover within ~100 meters of the entire field area. Survey points were visited in a counter-clockwise progression around the field. Passive observation was conducted at each point for approximately 10 minutes or more before moving on. In addition to those observed at survey point locations birds observed while traveling along meandering transects through the site were documented, including those seen or heard off-site. Each survey visit is summarized in the tables below:

<b>Date</b>	May 31, 2024		
<b>Weather</b>	Clear skies, sunny, cool- 40’s (F), calm wind		
<b>Start/End Time</b>	6:30 AM – 8:30 AM		
<b>Comments</b>	Notable road noise, vegetation wet from dew, ATV/vehicle tracks observed throughout field.		
<b>Grassland Species Documented</b>	Bobolink (2 M, 1 F)	Savannah Sparrow (est. 6)	
<b>Birds Documented</b>	American robin	Common grackle	Song sparrow
Red-eyed vireo	Chestnut-sided warbler	Dark-eyed Junco	American crow
Common yellowthroat	Black-capped chickadee	Red-winged blackbird	Ovenbird
Blue jay	Black-throated green warbler	Great-crested flycatcher (prob)	Domestic rooster
European starling	Tree swallow		



<b>Date</b>	June 19, 2024		
<b>Weather</b>	Mostly sunny, humid, 70's (F), calm wind		
<b>Start/End Time</b>	5:45 AM – 7:20 AM		
<b>Comments</b>	Notable road noise, striped skunk observed, freshly mowed		
<b>Grassland Species Documented</b>	Bobolink (2M, 1F)	Savannah sparrow (1)	American kestrel (1)
<b>Birds Documented</b>	Red-eyed vireo	American robin	Chipping sparrow
Chestnut-sided warbler	American crow	Domestic rooster	Blue jay
Common yellowthroat	American wild turkey	House wren	Yellow warbler
Indigo bunting	Ovenbird	Broad-winged hawk	White-throated sparrow
Black-capped chickadee	Mourning dove		

At both surveys, the vast majority of bird species observed are associated with edge, forest, and developed habitat conditions surrounding the property. Three grassland associated species were observed during the surveys- including bobolinks at both site visits.

Several bobolinks, both male and female, were observed along the southern third of the property, mostly along the hedgerow at the southern property boundary. At the first visit, at least two males were observed singing from the tops of the hedgerow trees and flying over the field. At least one female was observed flying over the field and in and out of the grass. During the second visit, while much of the field had been cut short, males were still present singing, and both a male and female were observed flying from the uncut grass in the valley area toward the southern hedgerow.

Savannah sparrow were noted throughout the field during the first survey. Fewer were observed during the second visit after the mowing, but individuals were still present in both the northern and southern ends of the field.



Figure 3. View across the unmowed valley area during the second survey.



A single kestrel was observed during the second survey flying in from the west and perching for some time on the power line crossing the western “wing” before departing toward the north.

During the second survey a playback recording of eastern meadowlark was broadcast for approximately one minute at survey point 7, with no response.

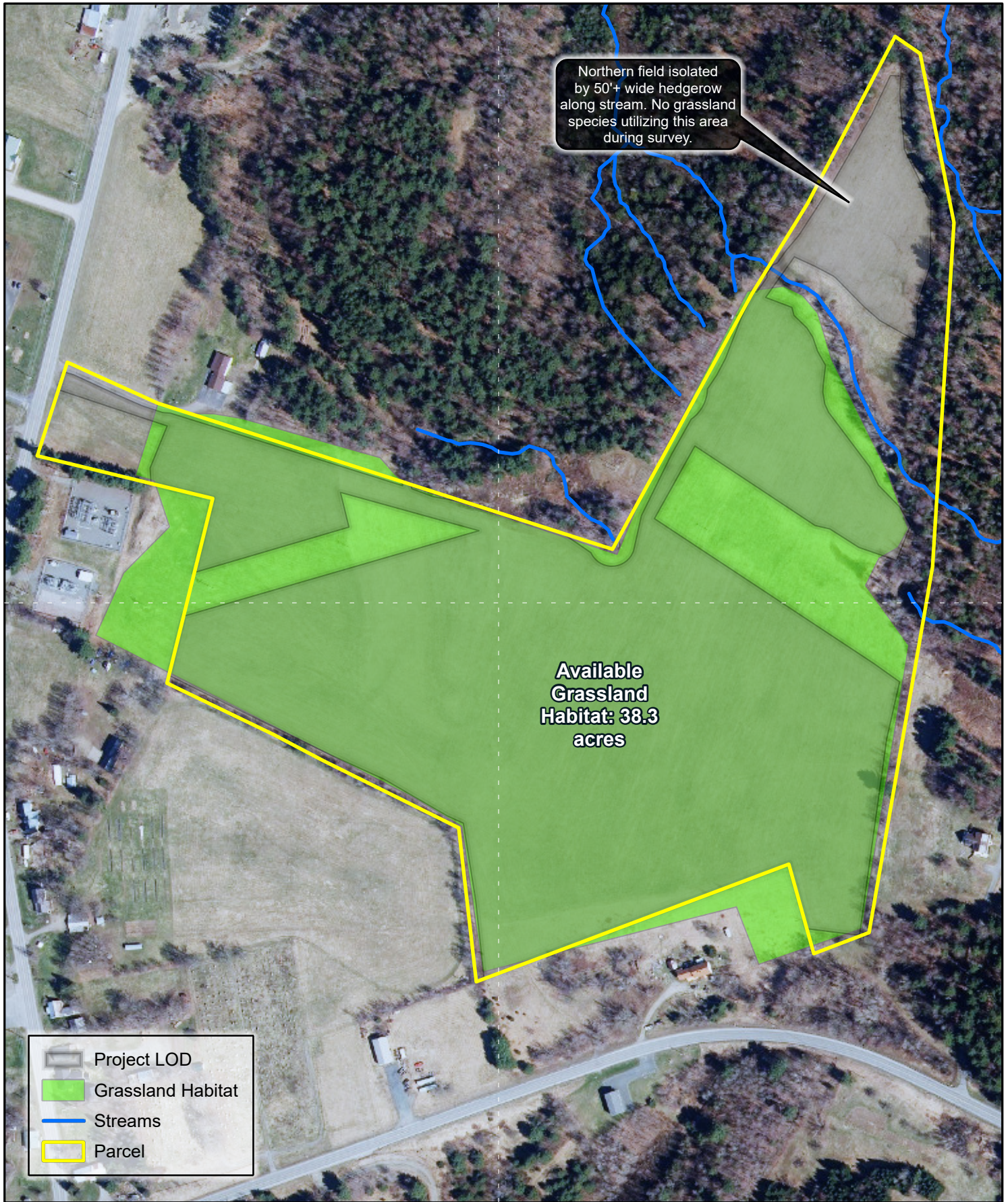
No other grassland-associated species were observed either visually or audibly, during either survey.

Savannah sparrow are a common and unprotected grassland obligate species and are known to utilize smaller open areas with smaller average breeding territories than other less common or rare grassland associated species. Bobolink, a priority species, were clearly present along the southern portion of the subject field as well as in the field off-property to the south during both visits.



*Figure 4. Bobolinks singing from hedgerow along southern property line.*

While the mowing schedule observed this year likely impacts nesting success of grassland birds, limited but appropriate habitat is present as defined by the Vt. Department of Fish and Wildlife. Habitat parameters including field area greater than 20 acres, sufficient perimeter to area ratio, and topographic openness are present and bobolink were documented using the field in both surveys. As a result, proposed impacts that would result in the direct and/or indirect loss of habitat at this site will likely require mitigatory considerations.



44.80336°N

72.44371°W



### Hand: Northland Solar, Lowell- Available Grassland Habitat

Wednesday, September 24, 2025 File: Hand\_Lowell:8.5x11 Grassland Habitat  
 Prepared By: A Worthley NAD 1983 StatePlane Vermont FIPS 4400 Feet

