

**Natural Resources Assessment for:
500 kW Photovoltaic Electric Generation Facility
Randolph Davis Solar Project**

Randolph, Vermont

*Prepared by:
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I. Summary Findings

Arrowwood Environmental, LLC (AE) conducted a natural resources assessment for the proposed Randolph Davis Solar Project (“Project”) located at 0 Davis Road in Randolph, Vermont. The field assessments were conducted in the summer of 2021. The Project site is a combination of woods and cleared land. AE assessed natural resources criteria incorporated by the Public Utility Commission into the review of solar projects, including streams and headwaters, floodways, outstanding resource waters, shorelines, wetlands, rare and irreplaceable natural areas, necessary wildlife habitat, and rare, threatened, and endangered species.

There are no streams, floodways, outstanding resource waters, shorelines, wetlands, rare and irreplaceable natural areas, or rare, threatened or endangered species within the Project site.

The Project is located in a headwater. The Project will obtain an Agency of Natural Resources, Department of Environmental Conservation construction stormwater permit prior to commencement of installation and be performed in accordance with the Vermont Standards & Specifications for Erosion and Prevention and Sediment Control, 2020. The Project site, including space between the solar panels, will remain vegetated and maintained. 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. In addition, the Project will use GMP pole-mounted transformers that will utilize mineral oil. The proposed Project will not result in a reduction of the quality of ground or surface waters in the area.

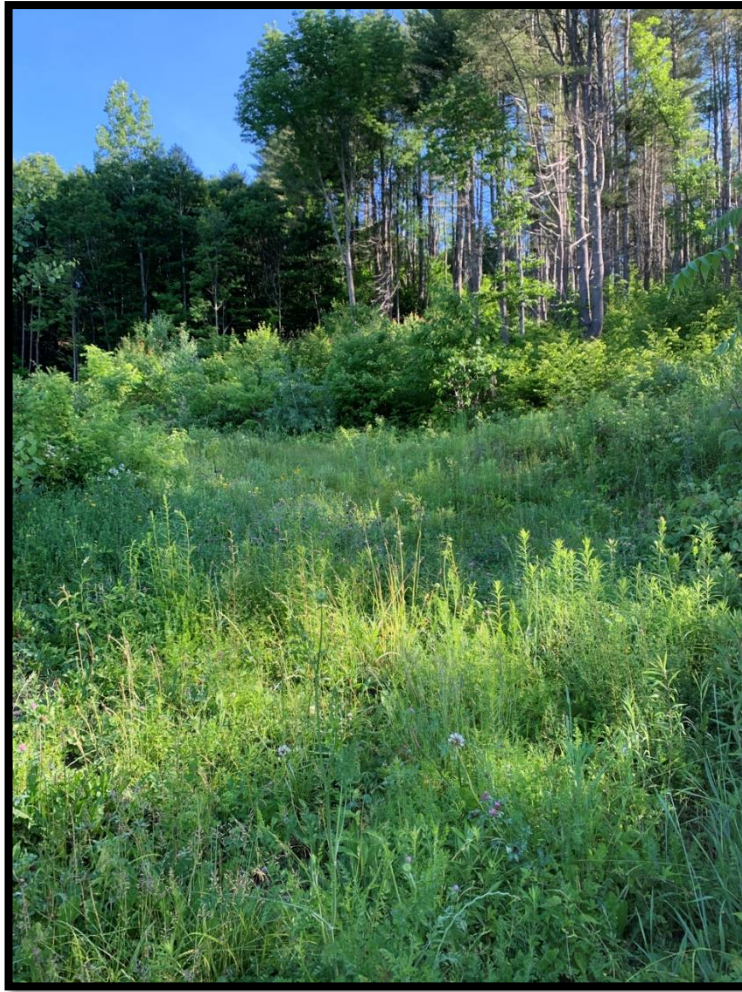
The Project site is mapped as deer wintering area (DWA). Mr. Noel Dodge from the Department of Fish and Wildlife conducted a site visit on July 29, 2021. At this site visit it was determined that the Project site does not provide deer wintering habitat. To protect the mature hemlock forest to the north of the subject parcel, the Project has agreed to certain conditions for site preparation, construction, maintenance and decommissioning on site activities during the deer wintering period from December 15 to April 15.

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

Arrowwood Environmental, LLC (AE) performed a natural resources assessment for a proposed 500 kW photovoltaic electric generation facility located at 0 Davis Road in Randolph, Vermont (“Project”). The Project site is a combination of woods and cleared land.

Access to the Project will be off Davis Road. The electric power will travel to the inverters, an AC combiner panel and AC disconnect to interconnect to Green Mountain Power Corporations (“GMP”) distribution circuit nearby via a GMP line extension at new GMP pole-mounted transformers near the array, typical of transformers used throughout GMP’s distribution system.



Project Area (6/24/2021)

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 June and July 2021.

III. Site Characterization

Ecologically the site is within the Southern Vermont Piedmont biophysical region of the state (Thompson, Sorenson and Zaino, 2019). The Project is located at approximately 850 feet above mean sea level according to U.S. Geologic Survey (“USGS”) topographic data and is generally

sloped to the southeast. The mapped bedrock that is underlying the site is of the metasedimentary/metavolcanic rock class with schist and quartzite rock types from the Gile Mountain Formation. (Ratcliffe et al. 2011). The soils are generally mapped as Colrain very stony fine sandy loam with 8 to 25% in the Project area (NRCS Soil Survey).

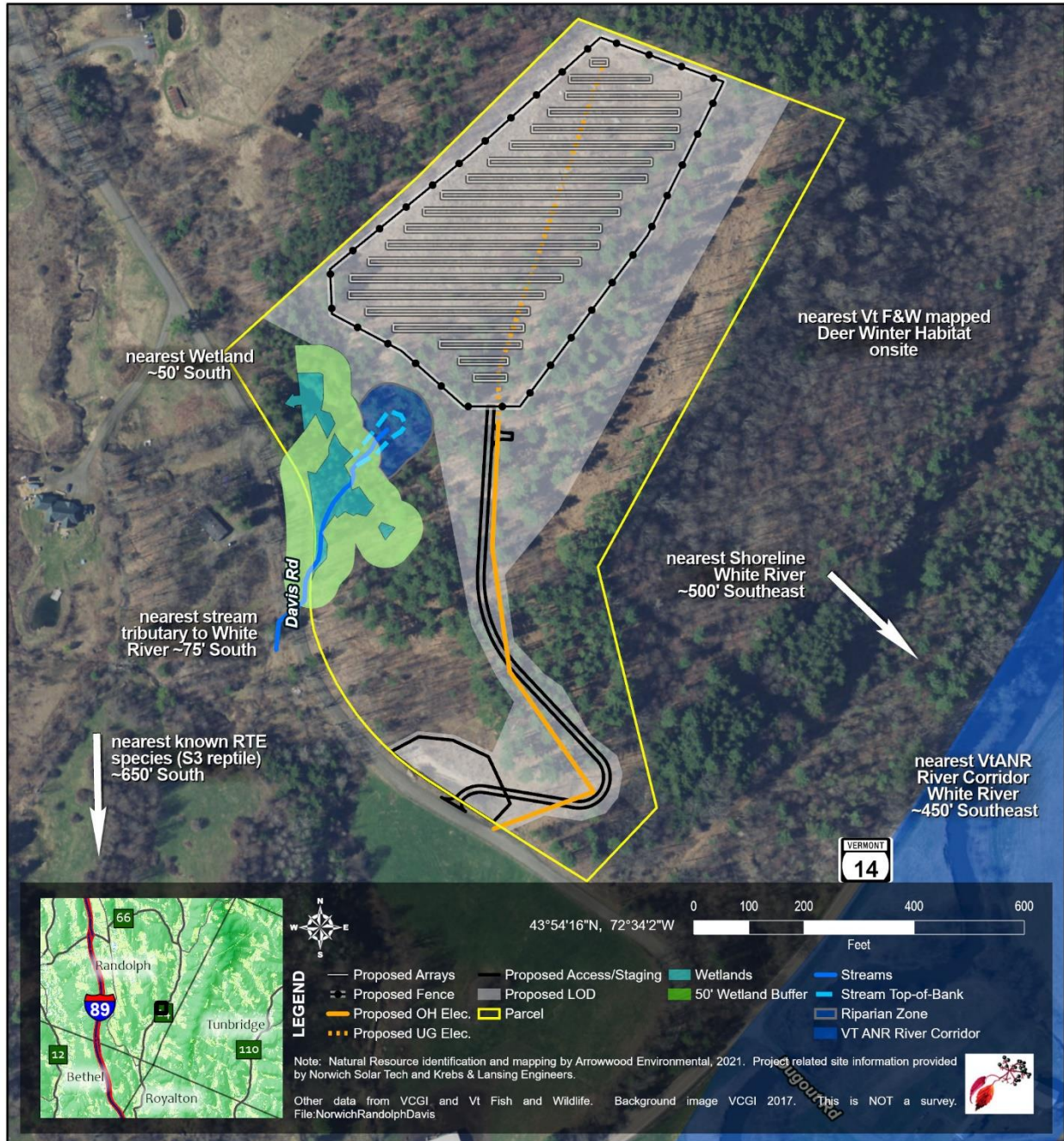


Figure 1. Project Site and Nearby Natural Resources.

IV. Criterion 1(A) Headwaters

The headwaters assessment involved both a remote review of the USGS topographic map, Vermont Hydrography Dataset (streams, rivers, and waterbodies), NRCS Soil Survey, ANR Atlas, and field investigation in June 2021. The Project is located in a headwater as it is located within a watershed with a drainage area less than 20 square miles and is characterized by steep slopes.

The Project will be constructed in accordance with the Vermont Standards & Specifications for Erosion and Prevention and Sediment Control, 2020. The Project will apply for coverage under the Agency of Natural Resources Department of Environmental Conservation Construction General Permit. The Project site, including space between the solar panels, will remain vegetated and maintained. The Project has no onsite sanitary wastewater systems, and therefore no associated injection of sanitary wastewater into the ground. The Project will use GMP pole-mounted transformers that utilize mineral oil. 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. 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. The closest mapped floodway and river corridor is for the White River approximately 450' to the southeast of the Project. 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.

VI. 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 investigation in June 2021.

There are no surface waters within the Project area. The closest stream is an unnamed tributary located ~ 75' southwest of the Project. The Project will not result in any clearing of forest vegetation within the riparian buffer zones (as measured 50' from top of bank/top of slope/ and edge of wetland) of stream resources. For these reasons, we conclude that the Project will have no 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 or are near the Project that have been designated as an ORW. Therefore, the Project will not result in any impact to ORWs.

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 closest shoreline to the Project is that of the White River ~500' to the southeast of the Project area. The Project area is not along the river and therefore will not result in any clearing of forest vegetation along the shores of the White 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 June 24, 2021. 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 presumed Class 2 wetlands to the southwest of the Project area. Per the wetland survey protocol, AE flagged wetland boundaries in the field and subsequently located with a GPS unit capable of sub-meter accuracy.

The Project array and access have been designed to avoid the presumed Class 2 wetlands and 50' wetland buffer zone. 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. AE reviewed digital orthophotography, the NRCS Soil Survey, the 2011 Bedrock Geologic Map of Vermont, and the Wildlife Natural Heritage Inventory (NHI) of Rare, Threatened and Endangered Species digital database.

Most of the Project area is characterized as an early successional forest. These areas are currently characterized as dense areas of brambles (*Rubus spp.*) and young hardwoods of various species. The eastern portion of the Project area is characterized as Red Oak Northern Hardwood Forest with dominant canopy species of red oak, sugar maple, and white pine and hay scented fern in the understory. Given the impacted condition of this common community, this site does 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 not Rare and Irreplaceable Natural Areas 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 June and July 2021 to assess wildlife, wildlife habitats, and threatened and endangered animal species.

A. Necessary Wildlife Habitats

1. White-tailed Deer Wintering Habitats

The VT Fish and Wildlife Department (VFWD) has mapped the Project area as white-tailed deer (*Odocoileus virginianus*) winter area (DWA). Mr. Noel Dodge from the Vermont Fish and Wildlife Department conducted a site visit on July 29, 2021. At this site visit it was determined that the Project site does not provide deer wintering habitat.

In order to mitigate potential Project impacts to the overall DWA, the Project has agreed to certain conditions for site preparation, construction, maintenance and decommissioning activity within the DWA or 300 feet of the DWA during the deer wintering period from December 15 to April 15, unless given specific prior written authorization by the 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 Applicant shall notify VFWD within 24 hours of the visit. Where perimeter fencing is installed for the Project, the Applicant shall install a minimum 8-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, we conclude that the 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. 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 Vermont Fish and Wildlife Department 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 22 acres with a core breeding/nesting area of ~11 acres) of native grasses with little or no woody vegetation. The Project site area is located within a forest landscape and does not provide suitable habitat for grassland bird species. The Project will have no adverse impact on grassland bird habitat.

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.

1. RTE Animal Species

The Northern Long Eared Bat (LEB) became a federally listed endangered species in May of 2015. Vermont Fish and Wildlife Department 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 tree clearing area for the Project is less than 1% of the total forested area within 1 square mile of the Project. The proposed clearing does not trigger additional conservation measures.

The Project is not in an area that potentially provides summer roosting habitat for Indiana bats, there are no old or abandoned buildings potentially providing roosting habitat for little brown bats proposed for demolition, and there are no known bat hibernacula or maternity roosts within 1 mile of the Project site. 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. An RTE plant survey was conducted throughout the Project area on July 23, 2021, by Michael Lew-Smith. No rare,

threatened or endangered plant species were identified during the site survey. The Project will have no adverse impact on RTE plant species.

XI. References

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Natural Resources Board. Vermont Wetland Rules. Effective January 21, 2020.

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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.

Vermont Fish and Wildlife Department. Guidance for Conducting Rare, Threatened, and Endangered Plant Inventories in Connection with Section 248 Projects, 2016.

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