



October 28, 2020

VIA ELECTRONIC DELIVERY

Attorney Melanie Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Petition 1412 – LSE Phoenix LLC (“Lodestar”) for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need is Required for the Construction, Operation and Maintenance of Solar Photovoltaic Facility in North Canaan, Connecticut

Dear Attorney Bachman:

In connection with the above-captioned petition, please find attached updated specification sheets for solar panels, revised site plans and the final species/habitat report.

1. As noted in Lodestar’s approval, condition #1, Lodestar is submitting these revised plans for Council staff approval of minor changes in site layout, attached hereto as Exhibit 1. In addition, please find the specifications for the solar panel PV panels attached hereto as Exhibit 2. The original petition indicated that Lodestar would be utilizing Hanwa QCell panels. Due to availability, Lodestar will be utilizing JA 395w panels. Due to the panel model change, the total panel count for the Project will be reduced from the originally-proposed 7,560 to 7,488 panels. The revised site plans show a slight reduction in the development envelope as a result of the panel change and, in addition, Lodestar has agreed to locate a portion of the northern-most row of panels to the southwestern corner as a result of requests expressed to Lodestar from the neighboring properties to the north. Since these minor changes do not impact the limits of disturbance from the approved plans, Lodestar respectfully requests that these minor changes be approved.
2. As required by condition #3 of Lodestar’s approval, please find attached the final species report from Davison Environmental and Quinn Ecological attached hereto as Exhibit 3. As shown from those reports, there are no additional habitat or species impacts that will occur in connection with development of the Project. The reports included herein have been submitted to the Natural Diversity Database and, upon receipt, Lodestar will forward NDDB’s final sign-off to the Council. Please note that,

in order to ensure that the Project would have no potential impacts to the smooth green snake despite the fact that the species surveys did not identify the species at the Site, Lodestar adhered to Quinn Ecological's recommendations and installed exclusionary fencing in July, 2019 under the supervision of Quinn Ecological. As a result, Quinn Ecological has confirmed that no construction timing limitations are required to address any potential habitat impacts to the smooth green snake.

Lodestar requests that these minor changes, be approved via staff review pursuant to condition #1 of Lodestar's approval. Please contact me directly if you have any questions.

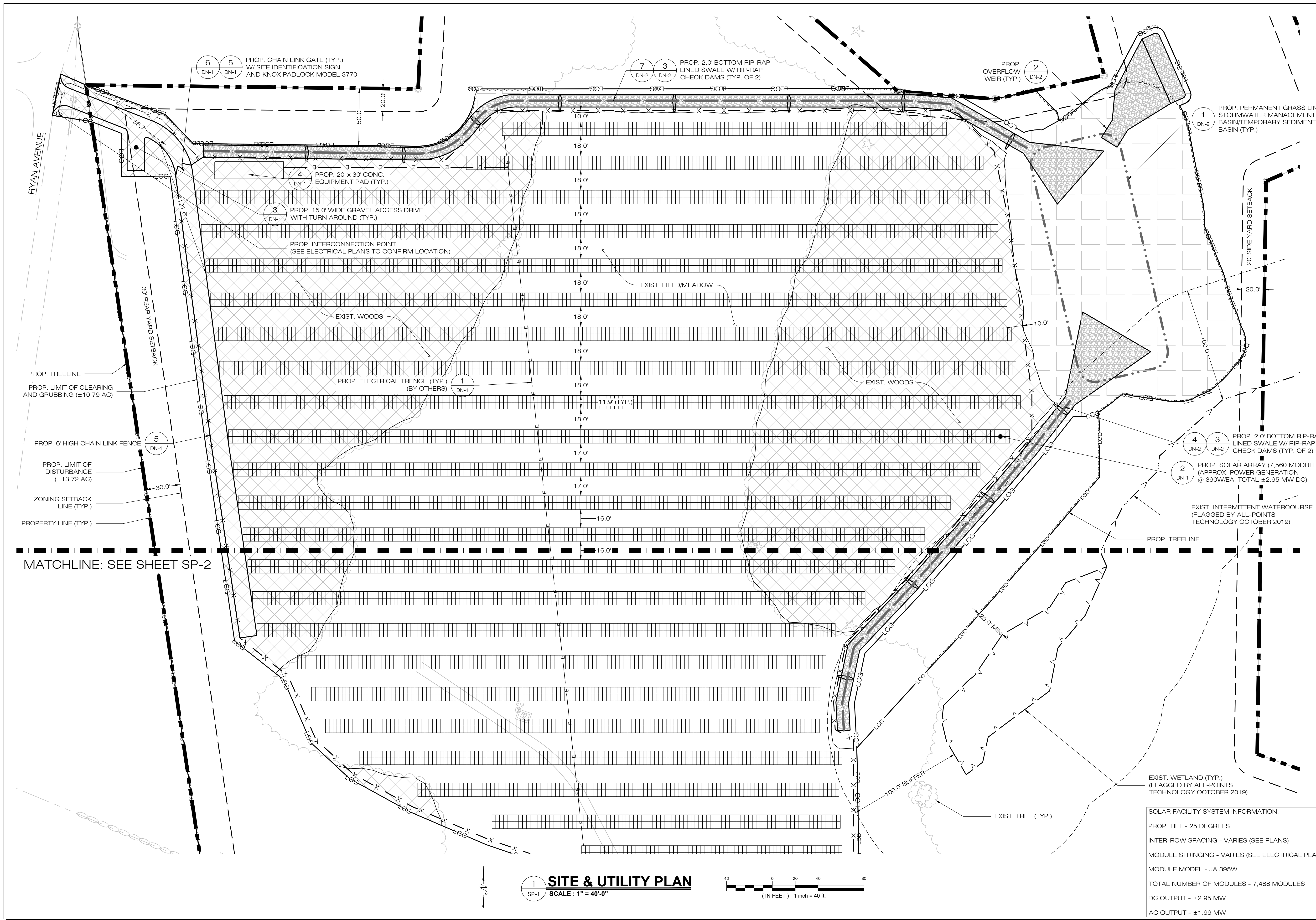
Sincerely,

Carrie Larson Ortolano

Carrie L. Ortolano

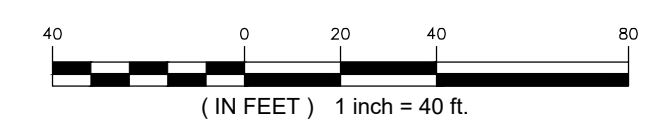
Enclosures

EXHIBIT 1



MATCHLINE: SEE SHEET SP-2

1 SITE & UTILITY PLAN
 SCALE: 1" = 40'-0"



SOLAR FACILITY SYSTEM INFORMATION:
 PROP. TILT - 25 DEGREES
 INTER-ROW SPACING - VARIES (SEE PLANS)
 MODULE STRINGING - VARIES (SEE ELECTRICAL PLANS)
 MODULE MODEL - JA 395W
 TOTAL NUMBER OF MODULES - 7,488 MODULES
 DC OUTPUT - ±2.95 MW
 AC OUTPUT - ±1.99 MW

LSE PHOENIX LLC
 40 TOWER LANE, SUITE 201
 AVON, CT 06001

ALL-POINTS TECHNOLOGY CORPORATION
 567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-663-1697
 WWW.ALLPOINTS TECH.COM FAX: (860)-663-0935

PERMIT SET

NO	DATE	REVISION
0	02/28/20	FOR REVIEW: BJP
1	06/09/20	FOR CSC: BJP
2	09/03/20	FOR SWPCP: BJP
3	10/19/20	LAYOUT REVISION: BJP
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: JOHN DOUGLAS & CECELIA S. BATES
 ADDRESS: 276 HOUSATONIC ROVER ROAD FALLS VILLAGE, CT 06031

NORTH CANAAN SOLAR

SITE: 100 SAND ROAD
ADDRESS: NORTH CANAAN, CT 06018
APT FILING NUMBER: CT606110

DATE: 02/28/20 DRAWN BY: JT
 CHECKED BY: BJP

SHEET TITLE:
SITE & UTILITY PLAN

SHEET NUMBER:
SP-1

LSE PHOENIX LLC
 40 TOWER LANE, SUITE 201
 AVON, CT 06001



567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-863-1697
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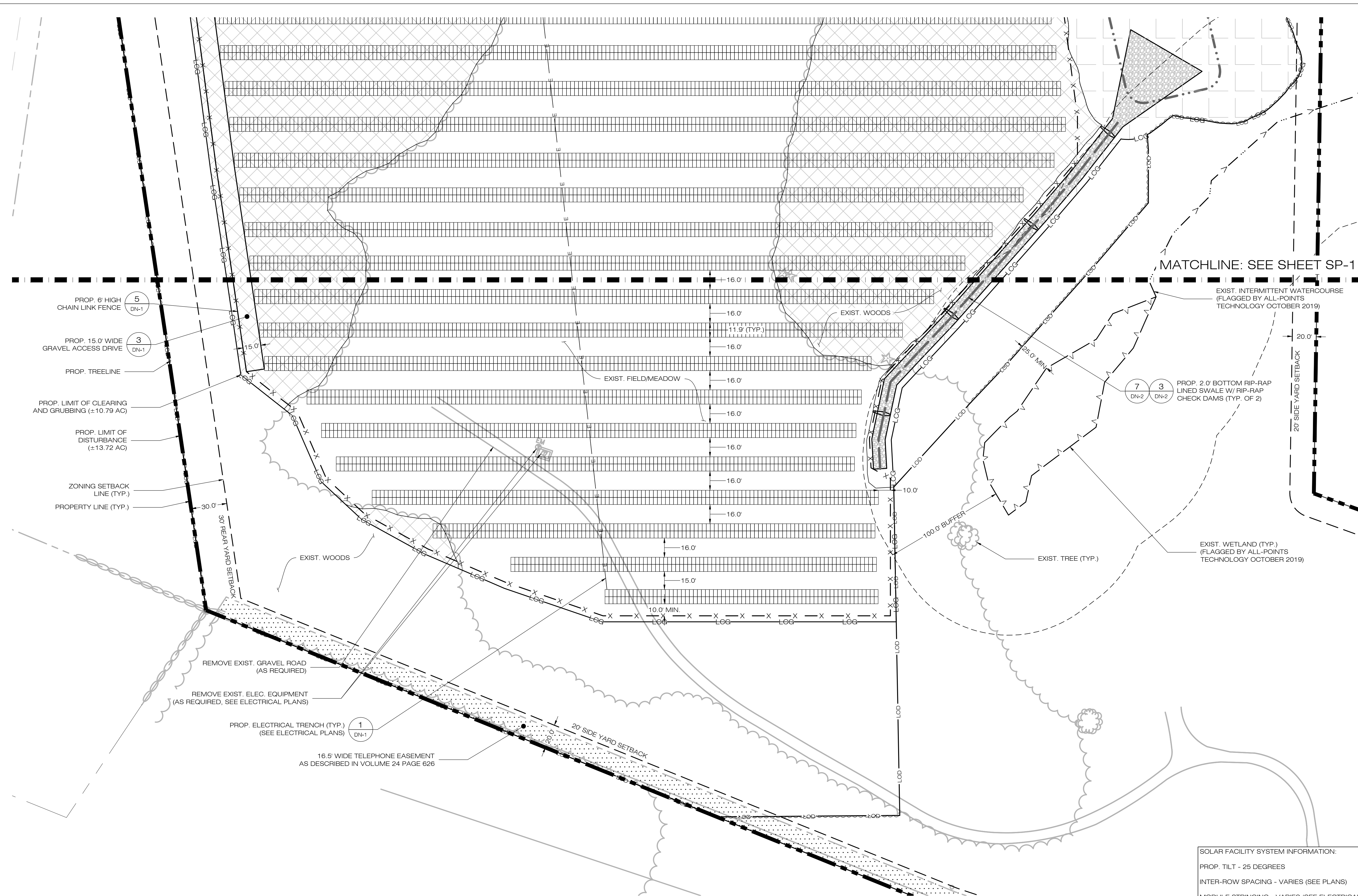
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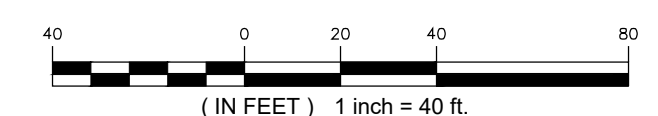


EXHIBIT 2

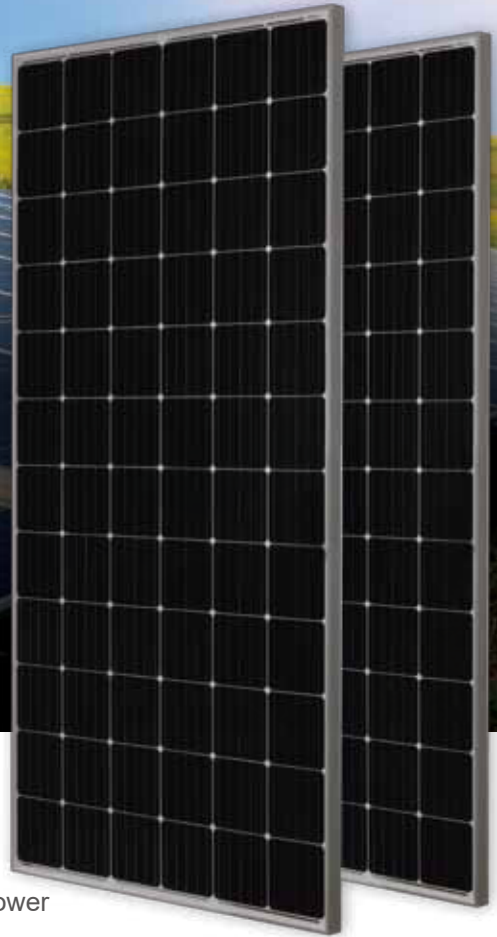


395W PERC Module

JAM72S09 375-395/PR Series

Introduction

Powered by high-efficiency PERCIUM cells, this series of high-performance modules provides the most cost-effective solution for lowering the LCOE of any PV systems large or small.



5 busbar solar cell design



Higher output power



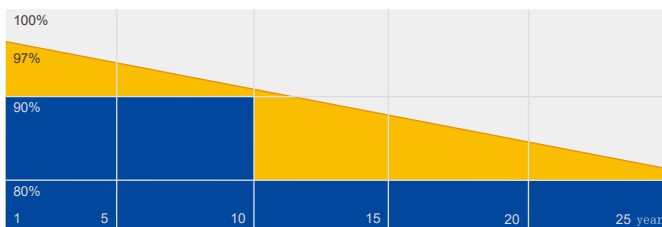
Excellent low-light performance



Lower temperature coefficient

Superior Warranty

- 12-year product warranty
- 25-year linear power output warranty



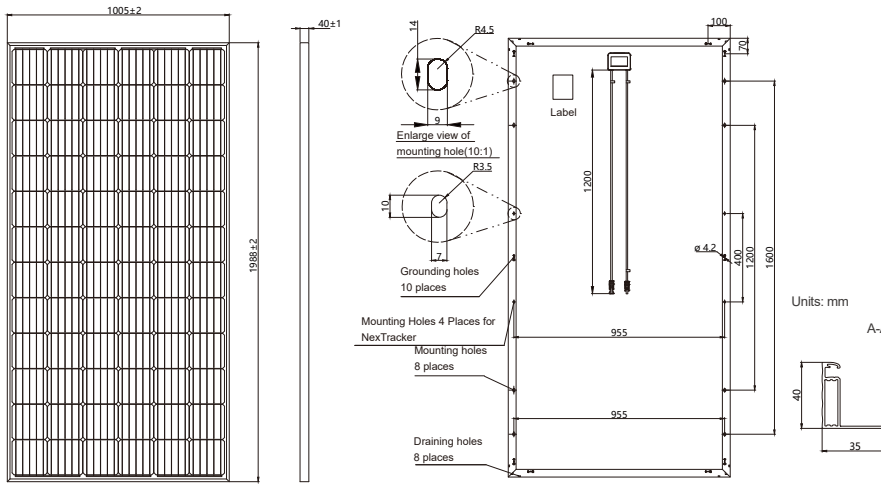
■ JA Linear Power Warranty ■ Industry Warranty

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 1703
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval



MECHANICAL DIAGRAMS



SPECIFICATIONS

Cell	Mono
Weight	22.6kg±3%
Dimensions	1988±2mm×1005±2mm×40±1mm
Cable Cross Section Size	4mm ² (12AWG)
No. of cells	72(6x12)
Junction Box	IP67, 3 diodes
Connector	QC 4.10 (1000V) QC 4.10-35 (1500V)
Packaging Configuration	27 Per Pallet

Remark: customized frame color and cable length available upon request

ELECTRICAL PARAMETERS AT STC

TYPE	JAM72S09 -375/PR	JAM72S09 -380/PR	JAM72S09 -385/PR	JAM72S09 -390/PR	JAM72S09 -395/PR
Rated Maximum Power(Pmax) [W]	375	380	385	390	395
Open Circuit Voltage(Voc) [V]	48.47	48.75	49.04	49.35	49.64
Maximum Power Voltage(Vmp) [V]	39.27	39.59	39.90	40.21	40.48
Short Circuit Current(Isc) [A]	10.06	10.12	10.17	10.22	10.27
Maximum Power Current(Imp) [A]	9.55	9.60	9.65	9.70	9.76
Module Efficiency [%]	18.8	19.0	19.3	19.5	19.8
Power Tolerance	0~+5W				
Temperature Coefficient of Isc(α _{Isc})	+0.060%/°C				
Temperature Coefficient of Voc(β _{Voc})	-0.300%/°C				
Temperature Coefficient of Pmax(γ _{Pmp})	-0.370%/°C				
STC	Irradiance 1000W/m ² , cell temperature 25°C, AM1.5G				

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.
*For NexTracker installations static loading performance: front load measures 2400Pa, while back load measures 2400Pa.

ELECTRICAL PARAMETERS AT NOCT

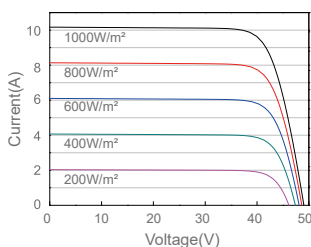
TYPE	JAM72S09 -375/PR	JAM72S09 -380/PR	JAM72S09 -385/PR	JAM72S09 -390/PR	JAM72S09 -395/PR
Rated Max Power(Pmax) [W]	278	281	285	289	292
Open Circuit Voltage(Voc) [V]	45.86	46.15	46.47	46.78	47.09
Max Power Voltage(Vmp) [V]	37.05	37.34	37.64	37.92	38.21
Short Circuit Current(Isc) [A]	7.95	7.99	8.03	8.07	8.11
Max Power Current(Imp) [A]	7.49	7.53	7.57	7.61	7.65
NOCT	Irradiance 800W/m ² , ambient temperature 20°C, wind speed 1m/s, AM1.5G				

OPERATING CONDITIONS

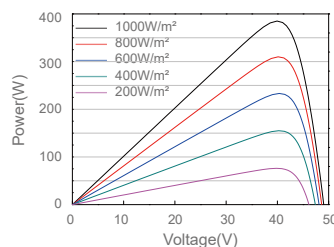
Maximum System Voltage	1000V/1500V DC(UL)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	20A
Maximum Static Load,Front*	5400Pa(112 lb/ft ²)
Maximum Static Load,Back*	2400Pa(50 lb/ft ²)
NOCT	45±2°C
Fire Performance	Type 1

CHARACTERISTICS

Current-Voltage Curve JAM72S09-385/PR



Power-Voltage Curve JAM72S09-385/PR



Current-Voltage Curve JAM72S09-385/PR

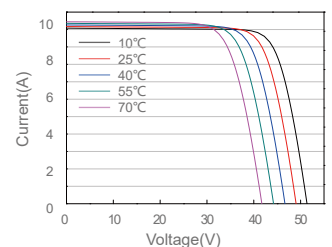


EXHIBIT 3



State-Listed Species Survey Results

Proposed Solar Energy Facility
100 Sand Road, North Canaan

October 12, 2020

Contents

Executive Summary	1
Introduction	1
Site Characteristics	1
General Site Characteristics	1
Habitat Types	2
Mixed Hardwood/Coniferous Forest.....	2
Hayfield	3
Wetland.....	3
Botanical Surveys	4
Botanical Survey Protocol.....	4
Botanical Survey Results.....	5
Alder Flycatcher (<i>Empidonax alnorum</i>) Survey	8
Amphibians and Reptiles.....	11
Attachments	

Executive Summary

<u>Project:</u>	Development of a solar energy facility
<u>Location:</u>	100 Sand Road, North Canaan, Connecticut
<u>Survey Target:</u>	One bird species, the alder flycatcher (<i>Empidonax alnorum</i>) and numerous plant species and natural communities (NDDDB Preliminary Assessment No.: 201913244, letter dated February 26, 2020)
<u>Project Area:</u>	23 acres site west of Sand Road
<u>Survey Period:</u>	May through August 2020
<u>Survey Results:</u>	No target species or communities were observed. Roundleaf Ragwort (<i>Packera obovata</i>) host plant for Northern Metalmark observed outside of the Project area.

Introduction

This report documents the results of surveys conducted for 21 State-listed plant species, one bird, the alder flycatcher, and five species of amphibians and reptiles. This work was conducted in reference to NDDDB Preliminary Assessment No.: 201913244, letter dated February 26, 2020 (see Attachment A).

Site Characteristics

General Site Characteristics

The Project Area (inclusive of all solar panel arrays, equipment, access roads and associated clearing and grading areas) would cover approximately 10.79 acres on property located west of Sand Road and East of Ryan Avenue in North Canaan. The survey area for all State-listed species consisted of the entire Site, with a focused concentration on the proposed Project Area. The Site and Project Area are illustrated on Attachment B, *Overview Map*.

The topography is a broad moderately steep northeast facing hillside, with a small wetland area as well as areas of moderately well drained (mesic) habitats.

The site lies atop Dutcher Hill, a pronounced glacial till ridge that borders the west side of Sand Road. The bedrock geology is Stockbridge Marble (a.k.a. limestone). Soil types present on the Site include the Nellis series and Farmington-rock outcrop series – soil types derived from limestone bedrock.

Habitat Types

Three habitat types occur on the Site as illustrated on Attachment C, *Habitat Map*: (1) mixed hardwood/coniferous forest; (2) hayfield and (3) wetland. The characteristics of these habitat types are described below.

Mixed Hardwood/Coniferous Forest

The dominant habitat type present on the Site is mixed hardwood/coniferous forest. The tree canopy is characterized by Black Birch (*Betula lenta*), White Pine (*Pinus strobus*), Paper Birch (*Betula papyrifera*), Black Cherry (*Prunus serotina*), Quaking Aspen (*Populus tremuloides*), Basswood (*Tilia americana*), Chestnut Oak (*Quercus prinus*), hickory (*Carya sp.*), Red Maple (*Acer rubrum*), Sugar Maple (*Acer saccharum*), Hophornbeam (*Ostrya virginiana*), green ash (*Fraxinus pensylvanica*) and Eastern Hemlock (*Tsuga canadensis*).

The shrub layer consists of Autumn Olive* (*Elaeagnus umbellata*), Spicebush (*Lindera benzoin*), locally dense Japanese Barberry* Multiflora Rose¹ (*Rosa multiflora*), privet* (*Ligustrum sp.*), Wineberry* (*Rubus phoenicolasius*), Black Raspberry (*Rubus occidentalis*), Morrow's Honeysuckle* (*Lonicera morrowii*), The vine layer includes Poison Ivy (*Toxicodendron radicans*), Virginia Creeper (*Parthenocissus quinquefolia*), and Asiatic Bittersweet* (*Celastrus orbiculatus*).

The ground layer is predominantly Garlic Mustard* (*Alliaria petiolata*), Coltsfoot* (*Tussilago farfara*), Spotted Wintwergreen (*Chimaphila maculata*), Canada Mayflower (*Maianthemum canadense*), Northern Dewberry (*Rubus flagellaris*), Christmas Fern (*Polytricum acrostichoides*), Lady Fern (*Athyrium filix-femina*), New York Fern (*Thelyteris noveboracensis*), Jewelweed (*Impatiens capensis*), White Wood Aster (*Eurybia divaricata*), Poison Ivy (*Toxicodendron radicans*), Enchanter's Nightshade (*Circaea lutetiana*), Spotted Cranebill (*Geranium maculatum*), Short Huskgrass (*Brachyelytrum erectum*), Hay-scented Fern (*Dennstaedtia punctiloba*), Japanese Stiltgrass* (*Microstegium vimineum*), Path Rush (*Juncus tenuis*), and Pennsylvania Sedges (*Carex pensylvanica*).

*Denotes invasive, non-native plant species

The eastern slope is a limestone rock outcrop complex, with rich woods plant species including Herb Robert (*Geranium robertianum*), Christmas Fern (*Polytricum acrostichoides*), Marginal Woodfern (*Dryopteris marginalis*), Maidenhair Fern (*Adiantum pedatum*), Maidenhair Spleenwort (*Asplenium trichomanes*), Ebony Spleenwort (*Asplenium platyneuron*), Walking Fern (*Asplenium rhizophyllum*), Fragile Fern (*Cystopteris fragilis*), Common Polypody (*Polypodium virginianum*), Broad Beech Fern (*Phegopteris hexagonoptera*), Early Meadow Rue (*Thalictrum diocum*), Rue Anemone (*Thalictrum thalictroides*), Round-lobed Hepatica (*Anemone americana*), Red Columbine (*Aquilegia canadensis*), Narrowleaf Bittercress* (*Cardamine impatiens*), Starflower (*Trientalis borealis*), Early Saxifrage (*Micranthes virginensis*), Wood Anemone (*Anemone quinquefolia*), Bottlebrush Grass (*Elymus hystrix*) and Prickly Currant (*Ribes lacustre*).

A small population of Roundleaf Ragwort (*Packera obovata*), a host plant for Northern Metalmark, was observed within the mixed hardwood forest near the northeast Site boundary in an area of limestone outcroppings. The only orchid found on the Site was in this area as well, the common introduced Broad-leaved Helleborine (*Epipactis helleborine*). This area is not located within the Project Area.

Hayfield

The central portion of the Site, occupying the upper elevations and northern midslope, is a ± 7-acre grassland/ former hayfield, vegetated primarily by introduced grasses and other herbaceous species. The dominant plant species include invasive species along with Eurasian cool-season feed grasses (a.k.a. hayfield grasses). The herb layer is mostly Common Mugwort* (*Artemisia vulgaris*), Orchard Grass (*Dactylis glomerata*), Timothy (*Phleum pratense*), Reed Canarygrass* (*Phalaris aeundinacea*), Sweet Vernal Grass (*Anthoxanthm odoratum*), Meadow Fescue (*Festuca pratensis*), Red Clover (*Trifolium pratense*), White Clover (*Trifolium repens*), English Plantain (*Plantago lanceolata*), locally dense Canada Thistle* (*Cirsium arvense*), bedstraw (*Gallium mollugo*), Queen Anne's lace (*Daucus carota*), Rufus Bulrush (*Scirpus pendulus*), Common Reed* (*Phragmites australis*), Deertongue (*Dicanthelium clandestinum*), Common Milkweed (*Asclepias syriaca*), Wild Bergamot (*Monarda fistulosa*), Grass-leaved Goldenrod (*Euthamia graminifolia*) Canada Goldenrod (*Solidago canadensis*), Late Goldenrod (*Solidago altissima*), Bird's Foot Trefoil (*Lotus corniculatus*) and Crownvetch* (*Coronilla varia*).

Wetland

A single wetland occurs on the Site. The wetland is a groundwater slope wetland with a saturated hydrology. This wetland includes palustrine forested and palustrine scrub-shrub cover types. The wetland

is vegetated primarily with Yellow Sedge (*Carex flava*), Awlfruit Sedge (*Carex stipata*), Fox Sedge (*Carex vulpinoidea*), Graceful Sedge (*Carex gracillima*), Soft Rush (*Juncus effusus*), Sensitive Fern (*Onoclea sensibilis*), Common Cat-tail (*Typha latifolia*), Marsh Fern (*Thelypteris palustris*). Hollow Joepyeweed (*Eutrochium fistulosum*), Multiflora Rose* and Japanese Barberry* (*Berberis thunbergii*).

Botanical Surveys

Botanical Survey Protocol

Target species were determined by the information provided in Connecticut Department of Energy and Environmental Protection (CT DEEP) Natural Diversity Databased (NDDDB) Preliminary Assessment Letter #201913244 dated February 26, 2020. Plant species surveyed for are listed below:

- Short-awned meadow foxtail (*Alopecurus aequalis*)
- Mountain spleenwort (*Asplenium montanum*)
- Wallrue spleenwort (*Asplenium ruta-muraria*)
- Purple cress (*Cardamine douglassii*)
- Foxtail sedge (*Carex alopecoidea*)
- Water sedge (*Carex aquatilis* ssp. *altior*)
- Back's sedge (*Carex backii*)
- Chestnut-colored sedge (*Carex castanea*)
- Clustered sedge (*Carex cumulata*)
- Eastern few-fruit sedge (*Carex oligocarpa*)
- Long-bracted green orchid (*Coeloglossum viride*)
- Large-bracted tick-trefoil (*Desmodium cuspidatum*)
- Goldie's fern (*Dryopteris goldiana*)
- Three-leaved false solomon's seal (*Maianthemum trifolium*)
- Sweet coltsfoot (*Petasites frigidus* var. *palmatum*)
- Red pine (*Pinus resinosa*)
- Purple oat (*Schizachne purpurascens*)
- Three-toothed cinquefoil (*Sibbaldiopsis tridentata*)
- Northern white cedar (*Thuja occidentalis*)
- Narrow false oats (*Trisetum spicatum*)
- Large-flowered bellwort (*Uvularia grandiflora*)

In addition to the above-noted species, four critical habitats/natural communities were reference, including:

- Circumneutral maple/ash basin
- Circumneutral northern white cedar basin swamp
- Rich fen
- Floodplain forest

Prior to field surveys, identification and representative photographs of target species were reviewed. Field surveys were conducted by slowly walking and methodically visually searching the Site. Botanists utilized field keys, a 10X hand lens, with photographs and/or specimens collected as needed. Technical keys and a microscope were used in the office as needed to confirm field identifications. Please see Attachment D, *Site Photographs*.

Field surveys for target species were conducted by James Cowen on May 12, June 8, July 14, July 29, August 11 and, August 18, 2020 (assisted by Aubree Keurajian). Surveys were timed to capture flowering and fruiting periods of the target species. Survey efforts are listed in Table 1 below.

Table 1: Survey dates, weather, and effort

Date	Surveyors	Weather	Total Person Hours	Survey Area
May 12	James Cowen	Partly sunny	5	Entire site
June 8	James Cowen	Sunny	3	Entire site
July 14	James Cowen	Sunny	4	Entire site
July 29	James Cowen	Sunny	3	Northeast slope
August 11	James Cowen	Sunny	4	Entire site
August 18	James Cowen, Aubree Keurajian	Sunny	8	Entire site

Botanical Survey Results

None of the target species were observed. The primary reason for the lack of observed target species is that many of these species are associated with calcareous wetlands and lowlands and known to occur in nearby Robbins Swamp [such as Purple cress (*Cardamine douglassii*), Foxtail sedge (*Carex alopecoidea*), Water sedge (*Carex aquatilis ssp. altior*), Chestnut-colored sedge (*Carex castanea*)]. While this Site is located immediately west of Robbins Swamp, it occurs in a starkly different biogeography – an upland till ridge as opposed to a large glacial outwash riparian corridor. Additionally, for those species in which suitable habitat does exist, land-uses such as hayfield with associated non-native cool-season forage grasses, and a prevalence of invasive woodland shrub and herbaceous species, represent significant competition for the target species. In addition, Sand Road and adjacent residences form a barrier between the project Site and Robbins Swamp. For some target species there was no suitable habitat on Site such as granitic outcrops for Mountain spleenwort (*Asplenium montanum*) and dry, rocky and sandy areas necessary to support three-toothed cinquefoil (*Sibbaldiopsis tridentata*).

Congeners of target species were a focus of the survey effort, as they would indicate that the field work was timed appropriately. It was important to identify congeners, some of which mature at the same time, occupy the same habitat, and/or are morphologically similar—some of which can only be differentiated under magnification. Table 2 presents a list of all congeners to State-listed species identified within the Project Area.

Table 2: Congeners of target species observed

Common Name	Scientific Name
Ebony Spleenwort	<i>Asplenium platyneuron</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Spinulose woodfern	<i>Dryopteris carthusiana</i>
Intermediate woodfern	<i>Dryopteris intermedia</i>
Marginal woodfern	<i>Dryopteris marginalis</i>
Narrowleaf Bittercress	<i>Cardamine impatiens</i>
Panicled-leaf Ticktrefoil	<i>Desmodium paniculatum</i>
Allegheny Blackberry	<i>Rubus allegheniensis</i>
Northern Dewberry	<i>Rubus flagellaris</i>
Black Raspberry	<i>Rubus occidentalis</i>
Wineberry	<i>Rubus phoenicolasius</i>
White bear sedge	<i>Carex albursina</i>
Plains oval sedge	<i>Carex brevior</i>
Yellow sedge	<i>Carex flava</i>
Fox sedge	<i>Carex vulpinoidea</i>
Reflexed sedge	<i>Carex retroflexa</i>
Eastern star sedge	<i>Carex radiata</i>
Pennsylvania sedge	<i>Carex pensylvanica</i>
Broom sedge	<i>Carex scoparia</i>
Limestone-meadow sedge	<i>Carex granularis</i>
Graceful sedge	<i>Carex gracillima</i>
Greater straw sedge	<i>Carex normalis</i>
Canada Mayflower	<i>Maianthemum canadense</i>
Twoleaf Miterwort	<i>Mitella diphylla</i>

Botanist James Cowen conducted a preliminary botanical survey on May 12, 2020. The NDDB letter noted the potential for four “critical habitats/natural communities”. Three of the four communities were immediately ruled out as not present on the Site, these include: (1) *Circumneutral Maple/Ash Basin Swamp*; (2) *Circumneutral Northern White Cedar Basin Swamp*; and (3) *Floodplain Forest*. With respect

to the fourth noted plant community, *Rich Fen*² – this fen type is also not present. However, the single wetland on the Site consists of a hillside groundwater slope wetland with some early-successional cover and calcareous soils. Therefore, there was the potential for rare plant species associated with another fen type, the *circumneutral spring fen*. Follow-up surveys confirmed that this wetland does not meet the criteria for a spring fen, as characteristic plant species such as shrubby cinquefoil (*Dasiphora fruticosa*), among others, were not present.

The NDDDB Preliminary Assessment Letter listed 21 State-listed plant species, mostly herbaceous species including a number of grasses and sedges, along with two tree species. Suitable habitat was found for several of the noted State-listed species. The eastern slope consists of rich woods with rock outcrops which represents suitable habitat for the mountain spleenwort, wallrue spleenwort and goldie's fern. Congeners to these species representing both genera (*Asplenium* and *Dryopteris*) were present in these areas, but the target species themselves were not observed.

Six of the noted State-listed species are in the genus *Carex*. During the initial site assessment in May, we noted 11 *Carex* species present across the Site. These included wetland and upland species, but the target State-listed species were not observed. Three species in the *Section Cyperoideae* were observed: *Carex scoparia*, *Carex brevior*, and *Carex normalis*; but not *Carex cumulata* whose perigynia are widest above the middle. Four species of woodland sedges were observed: (*Carex albursina*, *Carex radiata*, *Carex retroflexa* and *Carex pensylvanica*); but not *Carex oligocarpa*. *Carex vulpinoidea* is widespread in the wetland and hayfield. Numerous sheaths were examined and determined to be wrinkled, which distinguishes it from the target species *Carex alopecoidea* which has smooth sheaths. The other target *Carex* species are distinctive and if present would have been recognizable.

Several of the noted species include woodland grasses [Purple oat (*Schizachne purpurascens*) and Narrow false oats (*Trisetum spicatum*)]. During the initial survey in May, we noted several early season woodland grasses present. Additional surveys later in the summer revealed that these were the more common species, and the State-listed species were not observed. Woodland and forest edge grasses

² According to the CT ECO Critical Habitat Resource Guide, this habitat type is defined as "Natural peatlands occupying topographically defined basins; influenced by base-rich waters; on deep, poorly decomposed peats; restricted to the western marble valleys. Subtypes include sedge, shrub thicket, dwarf shrub, woodland, phragmites, and other/unique."

observed were Hard Fescue (*Festuca trachyphylla*), Bottlebrush Grass (*Elymus hystrix*), Short Huskgrass (*Brachyelytrum erectum*), Japanese Stiltgrass* (*Microstegium vimineum*) and Path Rush (*Juncus tenuis*).

Sweet coltsfoot (*Petasites frigidus*) has a similar flower to the common invasive coltsfoot (*Tussilago farfara*) which is extensive on the Site. They are distinguished by the leaf which emerges later in the season, after flowering has completed. Follow-up surveys during the summer confirmed that these plants were not *P. frigidus* but *T. farfara*.

Alder Flycatcher (*Empidonax alnorum*) Survey

The alder flycatcher is a bird of wet thickets. The species inhabits shrubby wetlands near forested areas. Most commonly it nests within early-successional habitats with 3-8 years growth after clearing. Studies conducted in Michigan showed that the species is found in brush and shrubby wetlands, at the edges of woods, and in damp thickets of alder-buckthorn; as well as within hardwood [(sugar (*Acer saccharum*) and red (*A. rubrum*) maple, paper (*Betula papyrifera*) and yellow (*B. allegheniensis*) birch] forests, when shrub stem density and shrub foliage cover peak. Studies in Ontario showed that the species prefers damp fields and meadows, usually fairly open but sometimes overgrown with willow (*Salix* spp.) and alder, dogwood (*Cornus* spp.), cedar (*Juniperus* spp.), tamarack (*Larix laricina*), spruce (*Picea* spp.), poplar (*Populus* spp.), birch (*Betula* spp.), hawthorn (*Crataegus* spp.), elm (*Ulmus* spp.), hazelnut (*Corylus* spp.), and maple (*Acer* spp.)³.

Nesting habitat as described in the Atlas of Breeding Birds of Connecticut (1994) consists of low shrub and tree vegetation in the vicinity of streams and other open water. The nest is placed less than three feet off the ground in thickets of hawthorn, spirea, buttonbush or alder. The primary breeding area is the northwest corner of the State.

Because this species is associated with wetlands, the focus of the assessment was the single wetland located on the Site, although all habitat types were included in the avian survey. The Site wetland is predominately forested but does include a small area of early-successional scrub-shrub cover. The hydrology does not fit the characteristics of a wetland suitable for this species, i.e., a low-lying wooded and/or scrub-shrub swamp with standing or flowing water. Rather, the subject wetland consists of a hillside groundwater slope wetland that, due to the sloping topography, has a saturated hydrology with

³ Lowther, P. E. (2020). Alder Flycatcher (*Empidonax alnorum*), version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.aldfly.01>

no standing or flowing water (other than seasonal groundwater seepage). These conditions clearly represent sub-optimal breeding habitat for the Alder Flycatcher, at best.

The Connecticut Bird Atlas⁴ safe dates for the Alder Flycatcher are 6/5 to 8/1. The purpose of the safe dates data in the atlas is to aid in determining the appropriate time to conduct breeding season surveys. Safe dates give the period when most migrants will have left, and those birds that remain at a given site are likely nesters.

Bird surveys were conducted on May 14, June 3, June 8, and June 17, 2020. Surveys were conducted between the hours of 6:00am and 9:00am. Surveys were conducted under partly cloudy to sunny skies, with no wind or light winds (Beaufort Wind Scale 0-2). All birds observed via sight or sound were recorded. Birds were sighted visually via the naked eye or using 8x42 binoculars or a 400mm telephoto lens.

A habitat-based line transect survey method (Sutherland et al.)⁵ was employed utilizing the existing access road which traverses several of the habitat types. From the road, a second habitat transect was conducted through the lower (northwest) field, running through the northeast forest, and past the west side of the wetland. A second observation point was established within a small stockpile yard bordering the east side of the wetland. This survey method allowed us to search the target habitats during each Site visit, and for the line transects to traverse within approximately 300 feet of all portions of the Project Area so that birds could be detected and recorded between line transects. All bird species observed during the field visit were recorded as noted in Table 3. No alder flycatcher were observed.

Table 3: Bird species observed

Common Name	Scientific Name
American goldfinch	<i>Carduelis tristis</i>
American redstart	<i>Setophaga ruticilla</i>
American robin	<i>Turdus migratorius</i>
Black and white warbler	<i>Mniotilta varia</i>
Black capped chickadee	<i>Parus atricapillus</i>
Blue jay	<i>Cyanocitta cristata</i>
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Cardinal	<i>Cardinalis cardinalis</i>
Common yellowthroat	<i>Geothlypis trichas</i>

⁴Connecticut Bird Atlas: <http://www.ctbirdatlas.org/>

⁵ Sutherland, W. J., I. Newton, and R. E. Green. 2004. Bird Ecology and Conservation. A Handbook of Techniques. Oxford University Press, New York.

Eastern towhee	<i>Pipilo erythrophthalmus</i>
Eastern wood-pewee	<i>Contopus virens</i>
Field sparrow	<i>Spizella pusilla</i>
Gray catbird	<i>Dumetella carolinensis</i>
Great-blue heron (OH)	<i>Ardea herodias</i>
Hairy woodpecker	<i>Picoides villosus</i>
Indigo bunting	<i>Passerina cyanea</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Red-eyed vireo	<i>Vireo olivaceus</i>
<i>Table 3 continued...</i>	
Common Name	Scientific Name
Ruby-throated hummingbird	<i>Archilochus colubris</i>
Song sparrow	<i>Melospiza Melodia</i>
Tufted titmouse	<i>Parus bicolor</i>
Veery	<i>Catharus fuscescens</i>
White-breasted nuthatch	<i>Sitta carolinensis</i>
Wood thrush	<i>Hylocichla mustelina</i>
Yellow warbler	<i>Dendroica petechia</i>
<i>OH – species observed flying overhead</i>	

No alder flycatcher were observed on the Site during the survey. The Site’s only wetland represented sub-optimal breeding habitat for the alder flycatcher, at best. Surveys were timed appropriately, as an alder flycatcher was confirmed at a nearby location on Sand Road on June 17, 2020 by Eric Davison (for which an NDDDB Special Animal Survey Form was submitted).

Species observed included: forest-dwelling songbirds, such as the veery, wood thrush and red-eyed vireo; early-successional habitat specialists such as the indigo bunting and field sparrow; and forest/field edge species and generalists such as the song sparrow, yellow warbler and gray catbird. A number of species observed are classified as species of *Greatest Conservation Need* (i.e., GCN species) according to the the CT DEEP’s *2015 Wildlife Action Plan*.

In order to minimize impacts to breeding birds, conducting construction activities (including tree clearing) from October 1st to March 1st would likely avoid incidental mortality of birds, as during this period most migratory species would not be present and resident species would not be in the midst of nesting activities.

Amphibians and Reptiles

Dennis Quinn of Quinn Ecological was retained to address the amphibian and reptile species. On April 28th 2020, Dennis Quinn of Quinn Ecological performed a habitat assessment for the state listed special concern blue-spotted salamander Complex (*Ambystoma laterale x jeffersonianum*), northern leopard frog (*Rana pipiens*), smooth green snake (*Opheodrys vernalis*) and state listed endangered timber rattlesnake (*Crotalus horridus*).

Although the subject property occurs within proximity to known blue-spotted salamander, northern leopard frog and timber rattlesnake populations, no suitable habitats for these species occurs on the subject property.

The subject property does contain suitable habitat for the smooth greensnake. A total of 43 hours (60 person hours) was spent surveying for greensnakes July 29th and October 4th, 2020. In addition to natural cover objects, 30 artificial cover boards measuring 2.5 x 4 feet in length were placed around the Project Area to increase the probability of detecting greensnakes. The Site was surveyed during the early evening hours, when greensnakes would most likely use cover for night-time refuge. Although the additional survey efforts did document several other snakes, including eastern garter snakes (*Thamnophis sirtalis*) and eastern milk snakes (*Lampropeltis t. triangulum*), no greensnakes were documented. Regardless, construction protection measures are recommended to reduce potential impacts to this species

Mr. Quinn's methodologies, findings and proposed protective measures are detailed in Appendix E, *Habitat Assessment and Species Surveys Report: Blue-spotted Salamander, Northern Leopard Frog, Smooth Greensnake and Timber Rattlesnake*.

Attachments

ATTACHMENT A: NDDB Preliminary Assessment Letter



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

February 26, 2020

Mr. Dean Gustafson
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419
dgustafson@allpointstech.com

Project: Preliminary Assessment for Lodestar Energy, LLC North Canaan Solar Facility Located at 100 Sand Road in North Canaan, Connecticut
NDDDB Preliminary Assessment No.: 201913244

Dear Dean Gustafson,

I have reviewed Natural Diversity Database maps and files regarding the area delineated on the map provided for Lodestar Energy, LLC North Canaan Solar Facility Located at 100 Sand Road in North Canaan, Connecticut.

According to our records there are known extant populations of State Listed Species that occur within or close to the boundaries of this property. I have attached a list of species known from this area. Please be advised that this is a preliminary review and not a final determination. A more detailed review will be necessary to move forward with any environmental permit applications submitted to DEEP for the proposed project. **This preliminary assessment letter cannot be used or submitted with permit applications at DEEP.** This letter is valid for one year.

To prevent impacts to State-listed species, field surveys of the site should be performed by a qualified biologist with the appropriate scientific collecting permits at a time when these target species are identifiable. A report summarizing the results of such surveys should include:

1. Survey date(s) and duration.
2. Site descriptions and photographs.
3. List of component vascular plant and animal species within the survey area (including scientific binomials).
4. Data regarding population numbers and/or area occupied by State-listed species. Include special plant and/or animal forms found at:
https://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&deepNav_GID=1628
5. Detailed maps of the area surveyed including the survey route and locations of State listed species.
6. Conservation strategies or protection plans that indicate how impacts may be avoided for all state listed species present on the site.
7. Statement/résumé indicating the biologist's qualifications. Please be sure when you hire a consulting qualified biologist to help conduct this site survey that they have the proper experience with target taxon and have a CT scientific collectors permit to work with state listed species for this specific project.

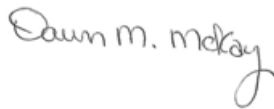
The site surveys report should be sent to our CT DEEP-NDDDB Program (deep.nddbrequest@ct.gov) for further review by our program biologists **along with an updated request** for another NDDDB review. Incomplete reports may not be accepted.

If you do not intend to do site surveys to determine the presence or absence of state-listed species, then you should presume species are present and let us know how you will protect the state-listed species from being impacted by this project. You may submit these best management practices or protection plans with your new request for an NDDDB review. After reviewing your new NDDDB request form and the documents describing how you will protect this species from project impacts we will make a final determination and provide you with a letter from our program to use with DEEP-Permits.

Natural Diversity Database information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey, cooperating units of DEEP, landowners, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the NDDDB should not be substitutes for onsite surveys necessary for a thorough environmental impact assessment. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or deep.nddbrequest@ct.gov
Thank you for consulting the Natural Diversity Data Base.

Sincerely,

A handwritten signature in cursive script that reads "Dawn M. McKay".

Dawn M. McKay
Environmental Analyst 3

Species List for NDDB Request

Scientific Name	Common Name	State Status
Freshwater Community - Other Classification		
Circumneutral maple/ash basin swamp		
Circumneutral northern white cedar basin swamp		
Rich fen		
Invertebrate Animal		
Bombus terricola	Yellow-banded bumble bee	T
Hemaris gracilis	Slender clearwing	T
Sympistis dentata	Toothed apharetra moth	T
Terrestrial Community - Other Classification		
Floodplain forest		
Vascular Plant		
Alopecurus aequalis	Short-awned meadow foxtail	T
Asplenium montanum	Mountain spleenwort	SC
Asplenium ruta-muraria	Wallrue spleenwort	T
Cardamine douglassii	Purple cress	SC
Carex alopecoidea	Foxtail sedge	T
Carex aquatilis ssp. altior	Water sedge	SC
Carex backii	Back's sedge	E
Carex castanea	Chestnut-colored sedge	E
Carex cumulata	Clustered sedge	T
Carex oligocarpa	Eastern few-fruit sedge	SC
Coeloglossum viride	Long-bracted green orchid	E
Desmodium cuspidatum	Large-bracted tick-trefoil	E
Dryopteris goldiana	Goldie's fern	SC
Maianthemum trifolium	Three-leaved false Solomon's-seal	T

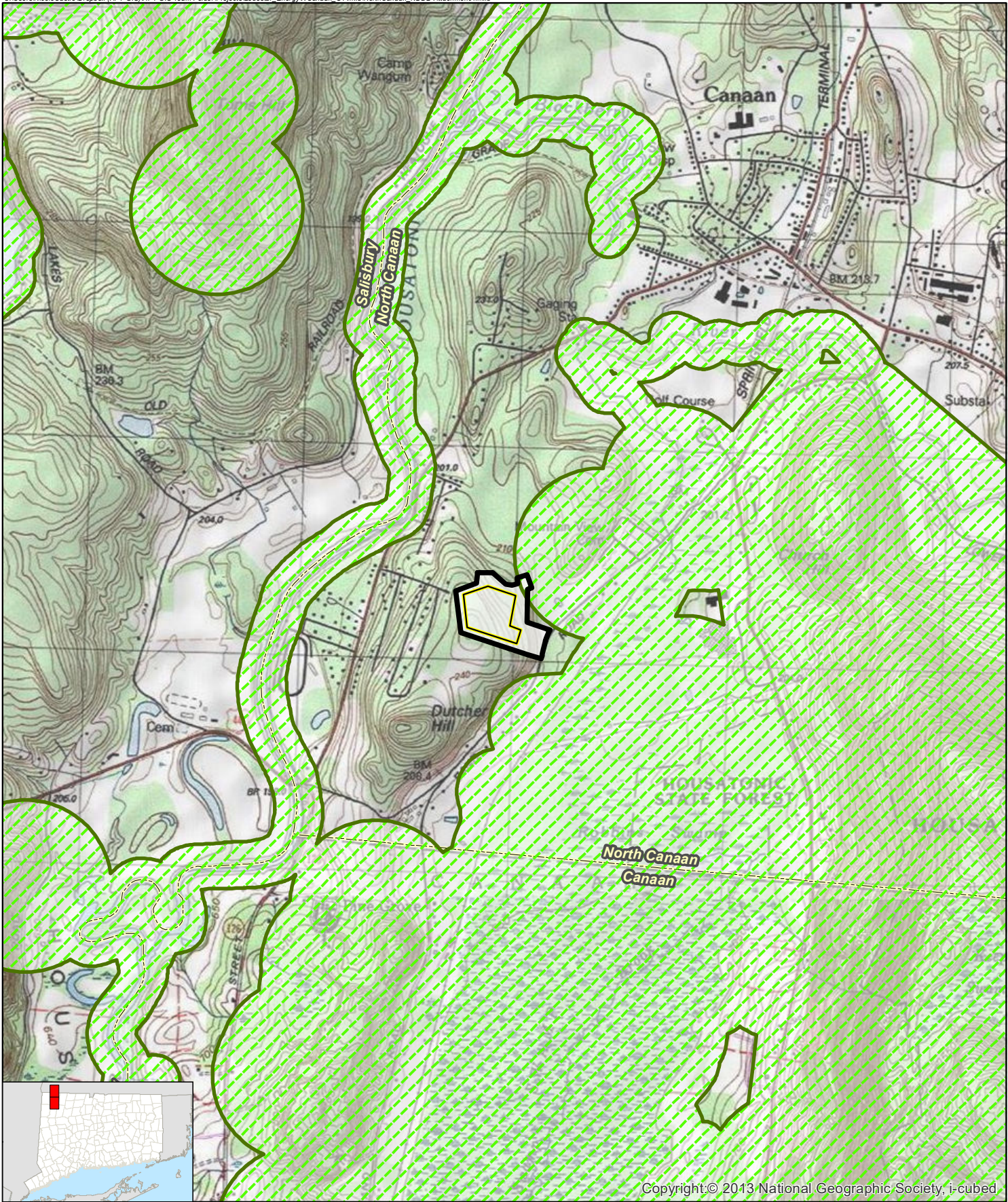
E = Endangered, T = Threatened, SC = Special Concern, * Extirpated

Scientific Name	Common Name	State Status
<i>Petasites frigidus</i> var. <i>palmaris</i>	Sweet coltsfoot	T
<i>Pinus resinosa</i>	Red pine	E
<i>Schizachne purpurascens</i>	Purple oat	SC
<i>Sibbaldiopsis tridentata</i>	Three-toothed cinquefoil	T
<i>Thuja occidentalis</i>	Northern white cedar	T
<i>Trisetum spicatum</i>	Narrow false oats	E
<i>Uvularia grandiflora</i>	Large-flowered bellwort	E

Vertebrate Animal





<i>Ambystoma laterale</i>	Blue-spotted salamander	E/SC
<i>Crotalus horridus</i>	Timber rattlesnake	E
<i>Empidonax alnorum</i>	Alder flycatcher	SC
<i>Opheodrys vernalis</i>	Smooth green snake	SC
<i>Rana pipiens</i>	Northern leopard frog	SC

ATTACHMENT B: Overview Map

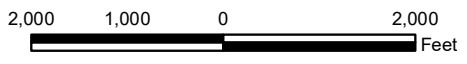


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Legend

-  Site
-  Project Area
-  Municipal Boundary
-  Natural Diversity Database Area (June 2019)

Map Notes:
 Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps:
 Ashley Falls (1975), CT & South Canaan (1969), CT
 Map Scale: 1:24,000
 Map Date: October 2019

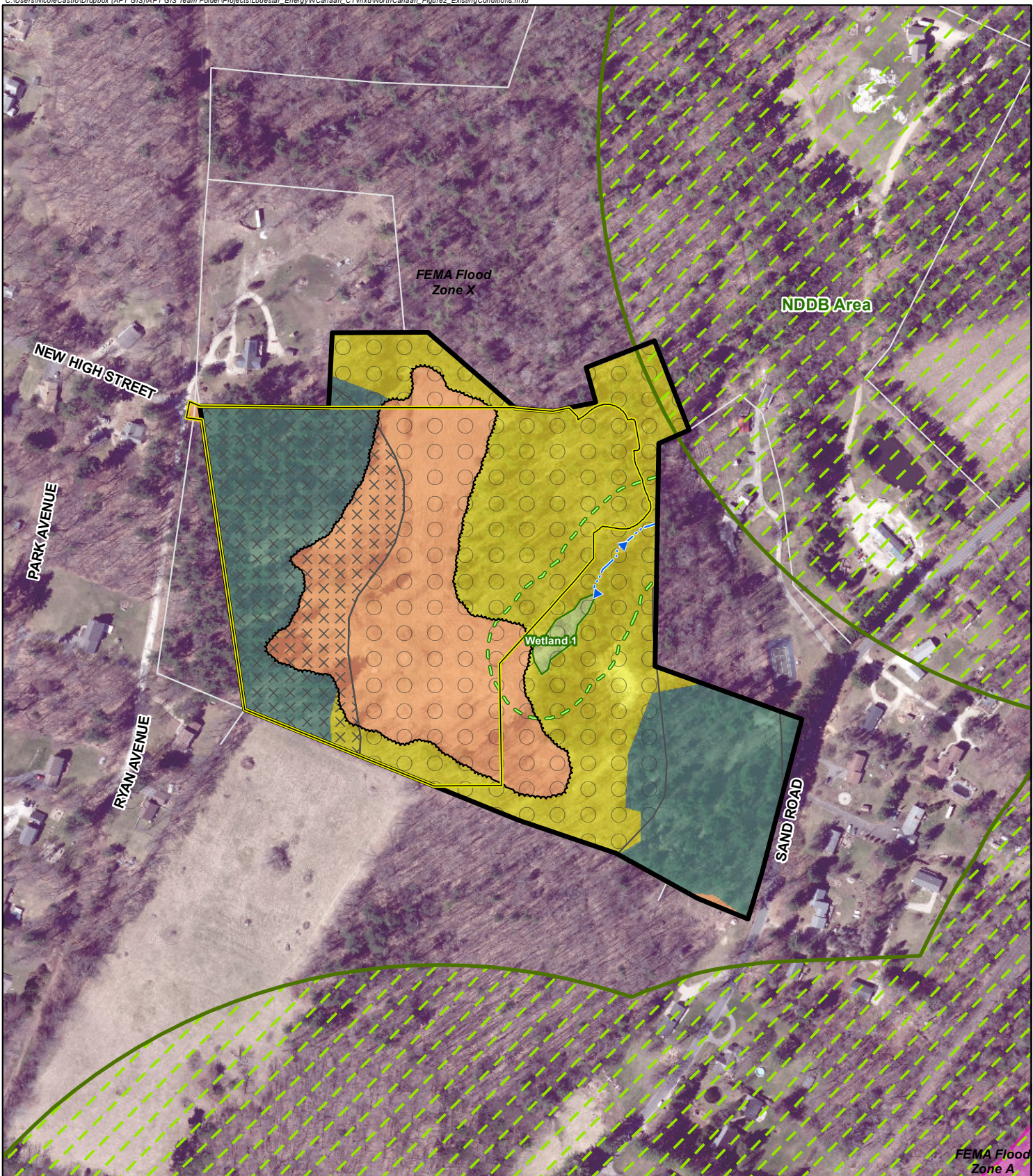


**Attachment B
Overview Map**

Solar Energy Facility
 100 Sand Road
 Parcel ID 07/111-0
 North Canaan, CT



ATTACHMENT C: Habitat Map



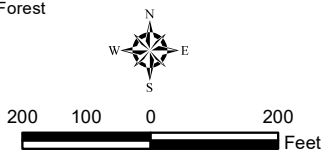
Legend

- Site
- Project Area
- Existing Tree Line
- Delineated Intermittent Watercourse (IWC)
- Delineated Wetland Boundary
- 100' Upland Review Area
- Wetland Area
- Natural Diversity Database Area (12/2019)
- Prime Farmland Soils
- Statewide Important Farmland Soils
- ExistingHabitat**
 - Coniferous Forest
 - Mixed Hardwood Forest
 - Open Field
- FEMA Flood Zones (FEMA NFHL)**
 - 100-Year Flood Zone
 - Floodway*
 - Abutting Property Line

**Attachment C
Habitat Map**

Solar Energy Facility
100 Sand Road
North Canaan, CT

Map Notes:
 *Item Not Located Within Mapped Area
 Base Map Source: 2019 Aerial Photograph (CTECO)
 Map Scale: 1 inch = 300 feet
 Map Date: February 2020



ATTACHMENT D: Site Photographs

*Attachment D: Site Photographs
(taken May through July 2020)*



Photo 1: access road leading to material stockpile area surrounded by forest.



Photo 2: View of hayfield looking southwest at bordering forest.

Attachment D: Site Photographs
(taken May through July 2020)



Photo 3: View of hayfield looking north.



Photo 4: walking fern (*Asplenium rhizophyllum*) growing on limestone bedrock outcropping.

Attachment D: Site Photographs
(taken May through July 2020)



Photo 5: Maidenhair spleenwort (*Asplenium trichomanes*) on limestone bedrock outcropping.



Photo 6: View of transitional forest area with dense invasive understory.

*Attachment D: Site Photographs
(taken May through July 2020)*



Photo 7: View of transitional forest area with dense invasive understory.



Photo 8: View of mixed hardwood forest northeast of hayfield

*Attachment D: Site Photographs
(taken May through July 2020)*



Photo 9: View of wetland where it transitions into the hayfield (looking northeast).



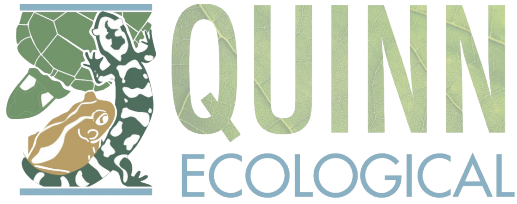
Photo 10: View of forested portion of wetland, looking upslope to the south.

Attachment D: Site Photographs
(taken May through July 2020)



Photo 11: Broad-leaved Helleborine (*Epipactis helleborine*)

ATTACHMENT E: Report by Quinn Ecological



**Habitat Assessment and Species Surveys Report:
Blue-spotted Salamander, Northern Leopard Frog, Smooth Greensnake and Timber
Rattlesnake**

Lodestar Energy, LLC
North Canaan Solar Facility
100 Sand Road, North Canaan, Connecticut
NDDB Preliminary Assessment No.: 201913244

Prepared by Dennis P. Quinn
Quinn Ecological, LLC
October 2020

On April 28th 2020, Dennis Quinn of Quinn Ecological performed a habitat assessment for the state listed special concern blue-spotted salamander Complex (*Ambystoma laterale x jeffersonianum*), northern leopard frog (*Rana pipiens*), smooth green snake (*Opheodrys vernalis*) and state listed endangered timber rattlesnake (*Crotalus horridus*) at 100 Sand Road, North Canaan, Connecticut. This assessment was conducted as part of the environmental review process requested in the NDDB Preliminary Assessment No.: 201913244 for the proposed North Canaan Solar Facility.

Blue-spotted Salamander complex (*Ambystoma laterale x jeffersonianum*)

The blue-spotted salamander complex occurs primarily in the western half of the state, but also extends east of the Connecticut River, principally within the Scantic River drainage basin. There are only three known locations for the blue-spotted salamander complex, all in extreme western Connecticut (Ridgefield, Danbury/New Fairfield, and Salisbury) in large swamp systems atop glacial till.

Blue-spotted complex salamanders occur in riparian wetland systems, where they can be found in a wide variety of wetland habitats including emergent and scrub-shrub, but occur primarily forested wetlands (i.e., red maple swamps). Their wetland hydrology varies from seasonally flooded vernal pools to semi-permanently flooded riparian wetlands.

Where they occur in the same area (i.e., sympatrically) with Jefferson salamanders, the blue-spotted complex salamander is found in the lower-lying forested wetlands, with the Jefferson salamanders inhabiting the adjacent higher elevation forests. Unlike the Jefferson salamander, the blue-spotted salamander exhibits a greater tolerance for disturbed habitats because its life cycle is largely confined to riparian wetlands, including seasonally inundated forests, that receive greater regulatory protection than upland forests.

All Connecticut populations of blue-spotted salamanders (except the pure-diploid populations in the Quinebaug Valley and possibly the Durham Meadows population) exhibit some genetic contribution from the closely allied Jefferson salamander. The blue-spotted salamander complex is listed as special concern and designated as Very Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need.

Northern Leopard Frog (*Rana pipiens*)

The northern leopard frog is found in low elevation, open, grassy wetlands, and floodplain forests primarily adjacent to riparian systems within the Connecticut and Housatonic river drainage basins. Populations also occur within extensive wetland habitats associated with large, naturally occurring lakes in the highlands of Litchfield County.

Northern leopard frogs typically breed in seasonally flooded early-successional wetlands including marshes and shrub swamps. These agile frogs are well-known for moving across the landscape, and during the summer months they are frequently observed in fields, lawns, and other grassland habitats as well as floodplain forests adjacent to breeding wetlands. The northern leopard frog is listed as special concern and designated as Very Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need.

Smooth Greensnake (*Opheodrys vernalis*)

The smooth greensnake is found statewide in widely scattered populations, although records from western Connecticut are scarce. Smooth greensnakes are inhabitants of early-successional habitats ranging from old fields and grasslands to mountaintop glades, and they are often found along the edges of early-successional wetlands. Due to their cryptic coloration and secretive nature, smooth greensnakes may be more widely distributed than records indicate.

Along with other "grassland dependent" species, as reforestation and development have replaced agricultural land in Connecticut and throughout the northeast, smooth greensnake populations are likely under-going a regional decline. As insectivores, smooth green snakes are also highly susceptible to pesticide applications which may have historically impacted their populations. The smooth greensnake is listed as special concern and designated as Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need.

Timber Rattlesnake (*Crotalus horridus*)

The current distribution and strong hold of the timber rattlesnake in the state is restricted to a small number of populations located in northwestern Connecticut and the uplands east of the Connecticut River in central Connecticut. A small number of geographically isolated sites, often represented by records for only one or two individuals, are widely scattered throughout the State. Timber rattlesnakes favor remote mountainous terrain characterized by steep ledges and associated rockslides. Deciduous and mixed deciduous forest dominate rattlesnake habitat. While gravid, females congregate in sparsely

vegetated open canopy ledges strewn with large rock slabs. Over-wintering occurs at communal den sites, typically located in steep forested ledges.

As a long-lived reptile with delayed sexual maturity and low fecundity, the timber rattlesnake is highly vulnerable to long-term population declines resulting from adult mortality, both from collection at den sites, and through road mortality, as males of this species move several miles from den sites. The timber rattlesnake is listed as endangered and designated as Most Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need.

Habitat Assessment Results

Although the subject property occurs within proximity to known blue-spotted salamander, northern leopard frog and timber rattlesnake populations, no suitable habitats for these species occurs on the subject property. No impacts to these species or their known extant populations are anticipated. No further surveys or protection measures are recommended for these species.

The subject property does contain suitable habitat for the smooth greensnake (Figure 1). Follow-up species surveys to document the presence of smooth greensnake were conducted between July 29th and October 4th, 2020. Surveys consisted of visual encounter and cover object methods. A total of 43 hours (60 person hours) was spent surveying for greensnakes. In addition to natural cover objects, 30 artificial cover boards measuring 2.5 x 4 feet in length were placed around the project area, to increase the probability of detecting greensnakes. These cover objects, along with the natural cover occurring on site were surveyed during the early evening hours, when greensnakes would most likely use them for night-time refuge. Although the additional survey efforts did document 37 eastern gartersnakes (*Thamnophis sirtalis*) and two eastern milksnakes (*Lampropeltis t. triangulum*), no greensnakes were documented.

Although no greensnakes were encountered, due to the cryptic coloration and secretive nature of the smooth greensnake, the following protection measures are recommended to reduce potential impacts to this species during construction.

Species Protection Plan

Pre-construction Protection Measures

1. Install a heavy-duty silt fence exclusionary barrier at the limits of disturbance. The fencing should consist of non-reinforced conventional erosion control woven fabric, installed approximately six inches below surface grade and staked at seven to ten-foot intervals using four-foot oak stakes or an approved equivalent. All stakes must be installed on the inside edge of the erosion control fabric, to prevent snakes crawling up the stakes and into the construction area. In areas where the silt fence cannot be buried, the fencing should be placed with the unburied flap facing away from the construction area and covered with six inches of crushed stone.



Figure 1. Site photos showing suitable early successional habitat and anthropogenic rock walls and log piles which likely provide protective cover for smooth greensnakes.

Construction Protection Measures

1. Isolation Measures (exclusionary fencing installed for pre-construction monitoring) & Erosion and Sedimentation Controls.

a. Plastic netting used in a variety of erosion control products (i.e., erosion control blankets, fiber rolls [wattles], reinforced silt fence) has been found to entangle wildlife, including reptiles, amphibians, birds, and small mammals. These products or reinforced silt fence should not be used on the project site. Temporary erosion control products such as erosion control blankets, fiber rolls composed of processed fibers mechanically bound together to form a continuous matrix (net less) and/or netting composed of planar woven natural biodegradable fiber should be used to avoid/minimize wildlife entanglement

b. Installation of exclusionary fencing (i.e., construction grade silt fencing), should be installed as a barrier to migrating/dispersing herpetofauna.

c. The intent of the barrier is to isolate the majority of the work zone from foraging/migrating/dispersing herpetofauna. Oftentimes complete isolation of a work zone is not feasible due to accessibility needs. In this circumstance all openings in the isolation barrier, used during

the workday for accessibility, should be closed with temporary silt fencing backed with hay bales at the completion of each day.

d. The fencing should consist of non-reinforced conventional erosion control woven fabric, installed approximately six inches below surface grade and staked at seven to ten-foot intervals using four-foot oak stakes or an approved equivalent. In areas where the silt fence cannot be buried, the fencing should be placed with the unburied flap facing away from the construction area and covered with six inches of crushed stone. The Contractor is responsible for daily inspections of the fencing for tears or breaches in the fabric and accumulation levels of sediment, particularly following storm events of 0.25 inch or greater. All compromised areas of silt fence must be immediately repaired. The herpetologist will conduct random inspections to ensure the exclusionary barrier is appropriately maintained. The extent of the barrier fencing should be as shown on the site plans. The Contractor should have available additional barrier fencing should field conditions warrant extending the fencing as directed by the environmental monitor.

e. No equipment, vehicles or construction materials should be stored outside of the exclusionary barrier fencing.

f. All silt fencing shall be removed within 30 days of completion of work and permanent stabilization of site soils.

2. Contractor Education

a. Prior to work on site, the Contractor shall attend an educational session at the preconstruction meeting with a qualified herpetologist. This orientation and educational session will consist of an introductory meeting providing photos of herpetofauna that may be encountered during construction activities, including the sooth greensnake.

b. The education session will also focus on means to discriminate between the species of concern and other native species to avoid unnecessary "false alarms". Encounters with all species will be documented.

c. The Contractor will be provided with cell phone and email contacts for the Environmental Monitor to immediately report any encounters with listed species, or other herpetofauna species. Educational poster materials will be provided and must be displayed on the job site to maintain worker awareness as the project progresses.

4. Reporting

a. Following completion of the construction project, a summary report to the CTDEEP documenting the monitoring and maintenance of the exclusionary fence and erosion control measures will be completed.

b. Any observations of state listed species will be reported to CTDEEP by the Environmental Monitor with photo-documentation (if possible) and with specific information on the location and disposition of the animal. Any data collected by construction personnel should be immediately sent to the Environmental Monitor for reporting purposes.

ATTACHMENT F: Summary of Qualifications

Davison Environmental, LLC provides consulting services in the areas of biological, wetland, and soil sciences. In addition to identification, description, and classification of natural resources, the firm also provides functional evaluation of wetlands and other biological systems, guidelines for mitigation of potential adverse impacts, and permit support through expert testimony and public representation. Services provided revolve around the impact of human activities on terrestrial, wetland, aquatic, and marine resources. The firm specializes in biological and wetland surveys, impact assessment, and mitigation planning.

James Cowen

James Cowen has over 20 years of experience conducting botanical surveys in Connecticut. He is a Registered Soil Scientist, Certified Professional Wetland Scientist, and has previously served on the Board of Directors for the Connecticut Botanical Society. Mr. Cowen maintains a Connecticut Department of Energy and Environmental Protection Scientific Collector's Permit for the collection of plants. He holds a bachelor's degree in Biology and master's degree in Landscape Design.

Eric Davison

Eric Davison holds a bachelor's Degree in wildlife conservation from the University of Massachusetts. He is certified as both a Professional Wetland Scientist and Soil Scientist. Mr. Davison has experience conducting avian, amphibian and reptile surveys, evaluating and inventorying wetlands and conducting soil surveys in Connecticut. He has also experience conducted both Phase 1 and Phase 2 bog turtle assessments in Connecticut.

Aubree Keurajian

Aubree Keurajian has a bachelor's degree in the Science of Natural and Environmental Systems from Cornell University. She has worked as a Forest Ecology Field Technician at Duke and Indiana Universities, as well as a Seed Collection and Arid Land Restoration Technician at the Southern Nevada District Office of the Bureau of Land Management. Ms. Keurajian's experience includes botanical and faunal surveys and forest censuses, as well as insect identification and databasing from her time as a Collections Assistant at the Cornell University Insect Collection.