



August 20, 2020

***VIA Hand Delivery***

Machias Planning Board  
PO Box 418  
7 Court Street, Suite 1  
Machias, ME 04654

Dear Machias Planning Board:

Loki Solar is a Maine based small business focused on developing and operating three solar power projects in down east Maine. Our company is owned and run by me, Mike Parker and a good friend of mine Ryan Higgins. This application is for a solar project we would like to build in Machias off Route 1. The project will include an improved access road, a cleared area of approximately 15 acres, approximately 12 acres of fenced in solar array, and the electrical equipment required including inverters, power panels, and a transformer. We are planning to begin construction in December 2020 and complete construction and begin generating electricity in June 2021.

**Application Commentary**

We have submitted the building permit application and have the following additional commentary on our responses:

1. and 10. We request a waiver for the 100-foot frontage requirement. The lot has 32 feet of frontage on Route 1. During the operation of the project the traffic in and out of the site will be a vehicle every other week or so with the most frequent visits during snowstorms for plowing. During construction there will be more traffic but we do not see that having an undue impact on neighboring lots. A back lot is a good site for a solar array as the array is effectively screened from view which helps eliminate the visual impact of the solar panels.

3. We do not plan to have water service to the array as it will not be regularly occupied.

4 and 5. We do not plan to have sewer service to the array as it will not be regularly occupied, and the construction crew will use portable toilets during the construction period.

8. and 18. We are applying for a Maine DEP stormwater permit by rule as requested by DEP staff during discussions about the proposed project.

9. We plan to have motion detecting lights around the fence but the offset of 75 feet from the nearest property should reduce light impacts significantly.

16. and 18. We have applied to DOT for the entrance permit for a change of use from forestry operations on 8/20/2020.

### **Attachments**

We have prepared and attached an information package to communicate the project details. We would appreciate that if this application is posted publicly only the first two attachments are included as the rest contain project details we would prefer not to be shared publicly. The attached information includes:

1. Tax map with lot identified
2. Lot plan with project components sketched in with an approximate scale and orientation

----- Please do not share online -----

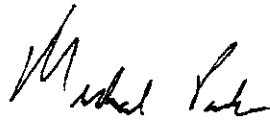
3. Wetland Survey Report by Atlantic Environmental including site plan with wetland delineations
4. Engineer stamped single line drawing showing the electrical design of the solar project
5. Detailed project layout design drawing
6. Details of the rack system we plan to mount the solar panels on (made in USA)
7. Details of the solar panels we plan to use (made in USA)

8. Details of the inverter we plan to use
9. Purchase and sale agreement showing we have a contracted option to purchase the property

If you have any questions or need additional information please feel free to call or email me at 207-944-2189 and [Mike@lokisolar.com](mailto:Mike@lokisolar.com). We look forward to meeting you all and discussing the projects further at the September 2 Planning Board Meeting.

Sincerely,

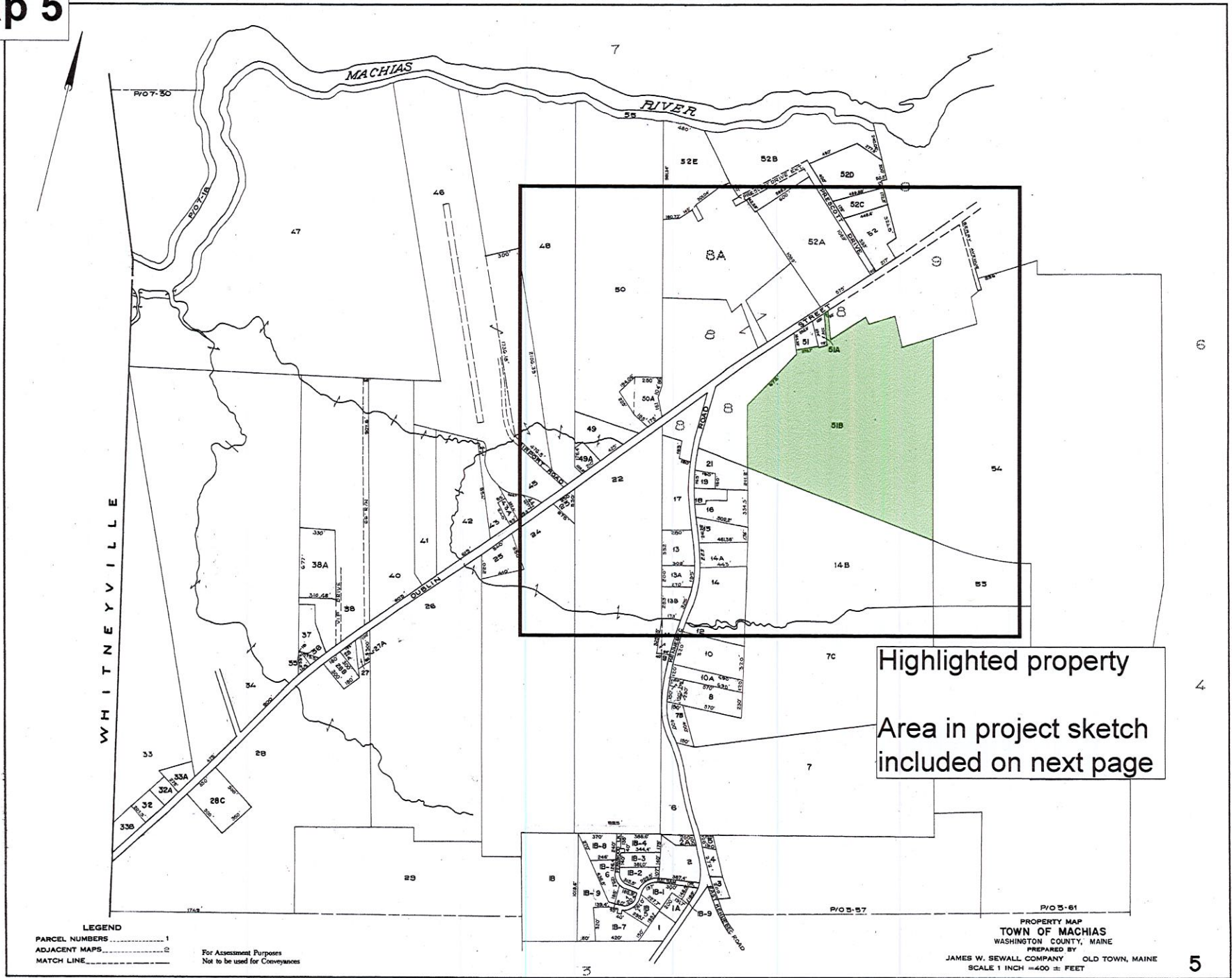
**LOKI SOLAR**



Mike Parker  
Owner



# Tax Map 5



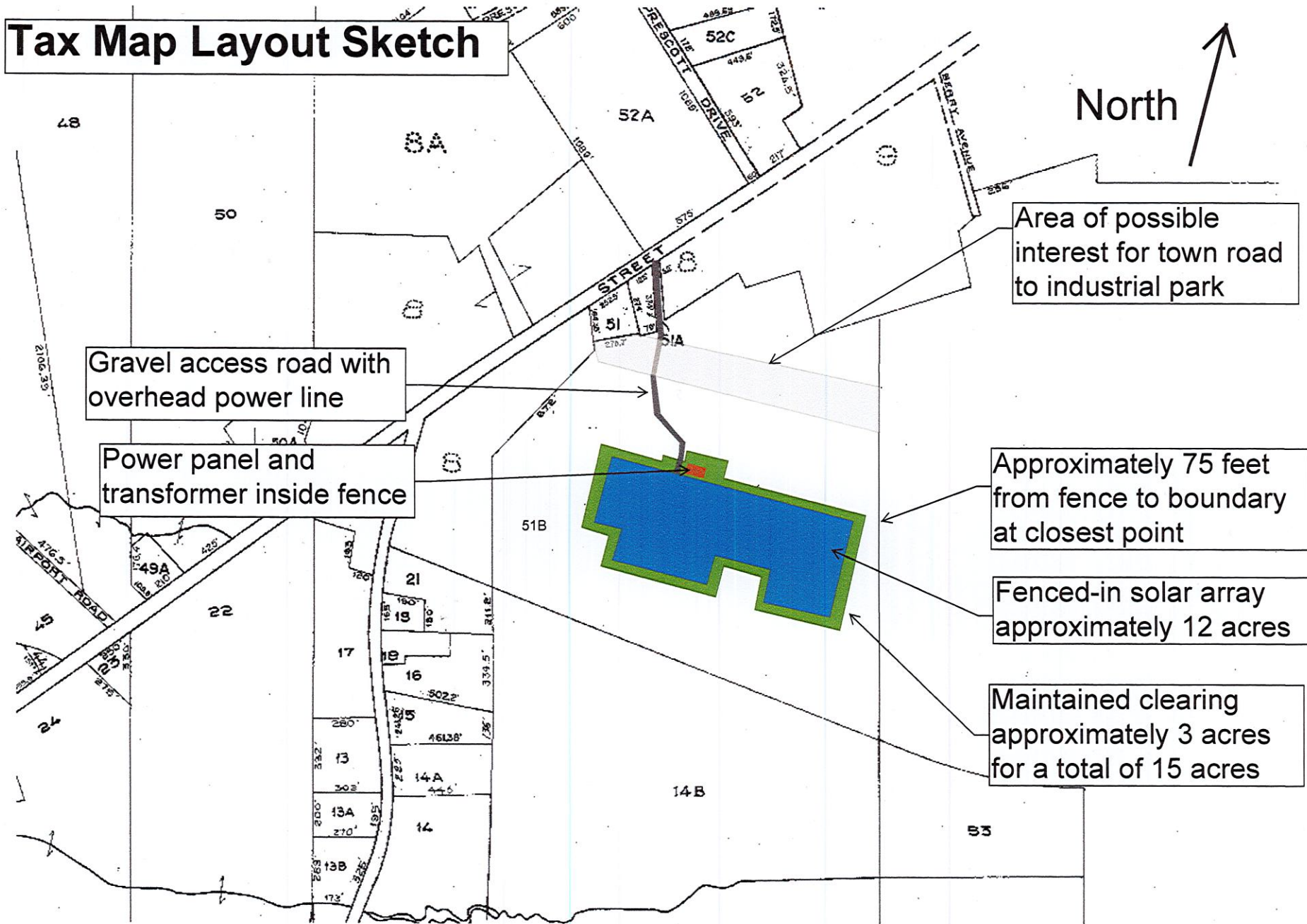
**LEGEND**  
 PARCEL NUMBERS ..... 1  
 ADJACENT MAPS ..... 2  
 MATCH LINE ..... 3

For Assessment Purposes  
 Not to be used for Conveyances

Highlighted property  
 Area in project sketch  
 included on next page

P/O 5-57  
 P/O 5-61  
**PROPERTY MAP**  
**TOWN OF MACHIAS**  
 WASHINGTON COUNTY, MAINE  
 PREPARED BY  
 JAMES W. SEWALL COMPANY OLD TOWN, MAINE  
 SCALE 1 INCH = 400 ± FEET

# Tax Map Layout Sketch



Gravel access road with overhead power line

Power panel and transformer inside fence

Area of possible interest for town road to industrial park

Approximately 75 feet from fence to boundary at closest point

Fenced-in solar array approximately 12 acres

Maintained clearing approximately 3 acres for a total of 15 acres





135 River Road • Woolwich, ME 04579  
207-837-2199 • tim@atlanticenviromaine.com  
www.atlanticenviromaine.com

June 15, 2020

Mr. Michael Parker  
Loki Solar  
42 Woods Circle Road  
Yarmouth, ME 04096

**Re: Natural Resources Analysis for Dublin Street in Machias, Maine.**

Dear Mr. Parker,

Atlantic Environmental, LLC (AE) is pleased to submit a natural resource analysis for a proposed solar facility located on Dublin Street and identified on the Town of Machias Tax Map #5 as Lot #51B. AE delineated the approximately sixty-two (62) acre parcel of land and identified natural resources, including wetlands and other potential development constraints for the proposed area of development. The wetland delineation was conducted on May 12, 2020 in accordance with the U.S. Army Corps of Engineers, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions (Version 2.0). All wetlands were flagged with pink, numbered flagging and located with a Global Positioning System (GPS) Trimble® GEO 7X unit by staff. AE provided GPS data to Loki Solar. The natural resources analysis included a desktop analysis of available data to include National Wetland Inventory (NWI) maps and the Maine Office of Geographic Information Systems (MEGIS) database of mapped resources.

#### **SITE DESCRIPTION**

The parcel is located off Dublin Street in the Town of Machias and totals approximately sixty-two (62) acres. The site consists of undeveloped forested upland and wetland areas, an unnamed stream, and the majority of the site was recently mechanically harvested for lumber. The topography of the site is generally flat within the entire area; however, there are small topographic changes along the northern and eastern sections.

The NWI has mapped wetland areas as shown on Figure One; however, the map does not include the small isolated wetlands as further described in this report. According to the U.S. Department of Agriculture (USDA), *Soil Survey of Washington County Area, Maine*, there are several soil types mapped within the project area. The soil types contain both poorly drained and well drained soils and their hydric status is outlined in Table One.



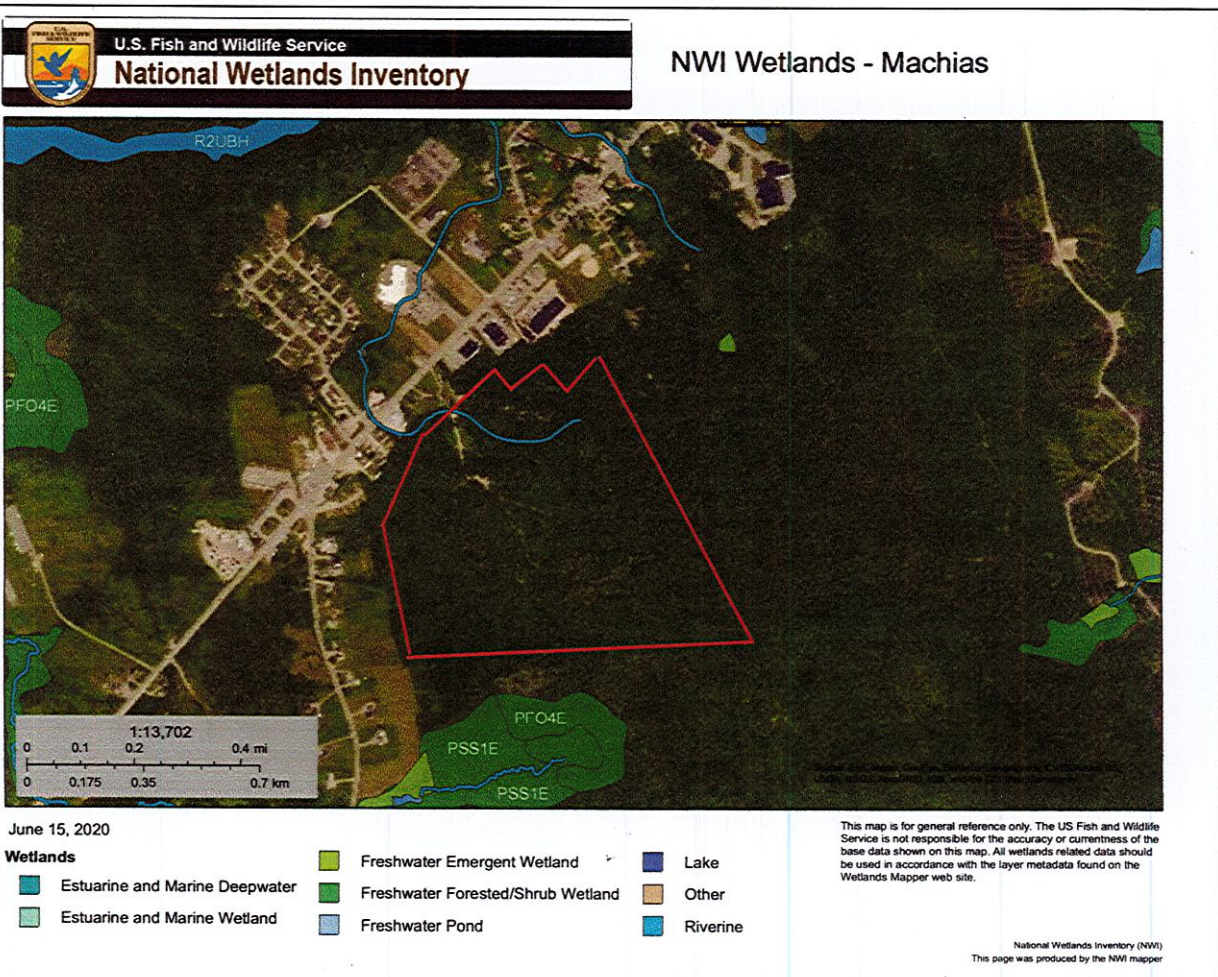


Figure One. National Wetland Inventory (NWI) of mapped wetlands on-site and wetlands extending off-site. Source: US Fish and Wildlife Wetlands Mapper. Date Accessed: June 15, 2020.

Table 1. Summary of Soils Identified in Project Area as Mapped by USDA.

Soil Map Unit and Map Unit Symbol	Approximate Percentage of Parcel (%)	Hydric Status
Scantic-Biddeford complex, 0 to 3 percent slopes (SF)	51.0	Yes
Tunbridge-Lamoine-Lyman complex, 3 to 15 percent slopes, very stony (TLC)	47.0	No
Udorthents-Urban land complex (Ud)	2.0	No

**DESCRIPTION OF WETLANDS**

AE delineated nine (9) wetlands and they are identified as Wetland One (W1) through Wetland Nine (W9). W1 and W3 – W9 consists of a palustrine, forested wetlands (PFO). W2 consists of a palustrine forested wetland (PFO) and is associated with an unnamed stream, a riverine wetland (R). Each wetland is described below:



**W1, W3 – W9**— All eight (8) of these wetlands consist of similar characteristics.

*Vegetation:* The canopy and shrub layers in these wetlands are dominated by Red Maple (*Acer rubrum*) Balsam Fir (*Abies balsamea*), White Cedar (*Thuja occidentalis*), and Speckled Alder (*Alnus incana*). The herbaceous layer includes Sphagnum (*Sphagnum spp.*) and Goldthred (*Coptis trifolia*). The canopy and shrub layers in the upland are dominated by White Spruce (*Picea glauca*), White Pine (*Pinus strobus*), and Balsam Fir (*Abies balsamea*).

*Primary Hydrology Indicators:* Surface Water (A1), Saturation (A3), and Water-stained leaves (B9).

*Soils:* The soils within the wetland were identified as hydric within the upper ten (10) inches of the soil profile with a value or three (3) or less and a chroma of two (2) or less.

**W2** - *Vegetation:* The canopy and shrub layer in this wetland is dominated by Red Maple (*Acer rubrum*) Balsam Fir (*Abies balsamea*), White Cedar (*Thuja occidentalis*), and Speckled Alder (*Alnus incana*). The herbaceous layer includes Sphagnum (*Sphagnum spp.*) and Goldthred (*Coptis trifolia*). The canopy and shrub layers in the upland are dominated by White Spruce (*Picea glauca*), White Pine (*Pinus strobus*), Balsam Fir (*Abies balsamea*).

*Primary Hydrology Indicators:* Surface Water (A1), Saturation (A3), Water-stained leaves (B9), and Drainage Patterns (B10).

*Soils:* The soils within the wetland were identified as hydric within the upper ten (10) inches of the soil profile with a value or three (3) or less and a chroma of two (2) or less.

## **REGULATORY REVIEW**

Wetlands located within twenty-five (25) feet of a river, stream, or brook are classified as Wetlands of Special Significance (WOSS) under the Natural Resources Protection Act (NRPA). Alterations of wetlands of special significance usually require an individual NRPA permit; however, some alterations of a WOSS may be eligible for a Tier 1 or Tier 2 review if the Maine Department of Environmental Protection (MDEP) determines, at the applicant's request, that the activity will not negatively affect the freshwater wetland or other protected natural resources at the site. Consultation with the MDEP is recommended if the proposed project will impact a WOSS. However, stream crossings and associated accessway construction within twenty-five (25) feet of the river, stream, or brook crossing (including access within a wetland) are eligible for a Section 10 Permit By Rule (PBR) provided the standards of Section 10 are met.

## **RIVER, STREAM, OR BROOK**

As previously noted, there is an unnamed stream associated with W2 located within the project site. Any alterations within seventy-five (75) feet of a river, stream, or brook is regulated by the MDEP under the NRPA.

## RARE, THREATENED, OR ENDANGERED SPECIES

**FEDERAL:** Based on the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPac) database, the project area is listed as habitat for the Endangered Northern Long-Eared Bat (*Myotis septentrionalis*), a federally threatened species and Atlantic Salmon (*Salmo salar*), a federally endangered species. The Northern Long-Eared Bat habitat is listed for the entire state of Maine and no known hibernacula or roosting trees exist within the site. ACOE recommends that any trees greater than 3" dbh be removed during the winter to minimize potential impacts to this species. Given the lack of habitat on-site for the Atlantic Salmon, it is highly unlikely this species exists on-site.

**STATE:** The Maine Natural Areas Program (MNAP) Beginning with Habitat publicly available data did not identify any species of concern at the project site; however, the State of Maine lists three *Myotis* species as either State Endangered or State Threatened. Five additional bat species are designated as Species of Special Concern. AE recommends contacting Maine Department of Inland Fisheries and Wildlife (MDIFW) and MNAP for their recommendations.

## SUMMARY

The site appears to provide at least twenty (20) acres of developable area for a solar array project as shown on the preliminary project plans. Based on AE's assessment of the site and the proposed location of the solar facility, there may be alterations to protected natural resources on-site that would require a NRPA permit from the Maine Department of Environmental Protection or alterations to wetlands that would require a permit from the ACOE. AE recommends you consult with these agencies in addition to the MDIFW and the MNAP for the issuance of clearance letters that meet the requirements of the Maine Public Utilities Commission's Distributed Generation Siting Attributes.

If you require any additional information or clarifications, please feel free to contact me at 207 - 837 - 2199 or by email at [tim@atlanticenviromaine.com](mailto:tim@atlanticenviromaine.com).

Sincerely,  
Atlantic Environmental LLC.



Timothy A. Forrester, Owner







**Photograph One. View of W1. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.**



**Photograph Two. View of W2 and associated unnamed stream. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.**





Photograph Three. View of W4. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.



Photograph Four. View of W8. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.





**Photograph Five. View of W7. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.**



**Photograph Six. View of W3. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.**



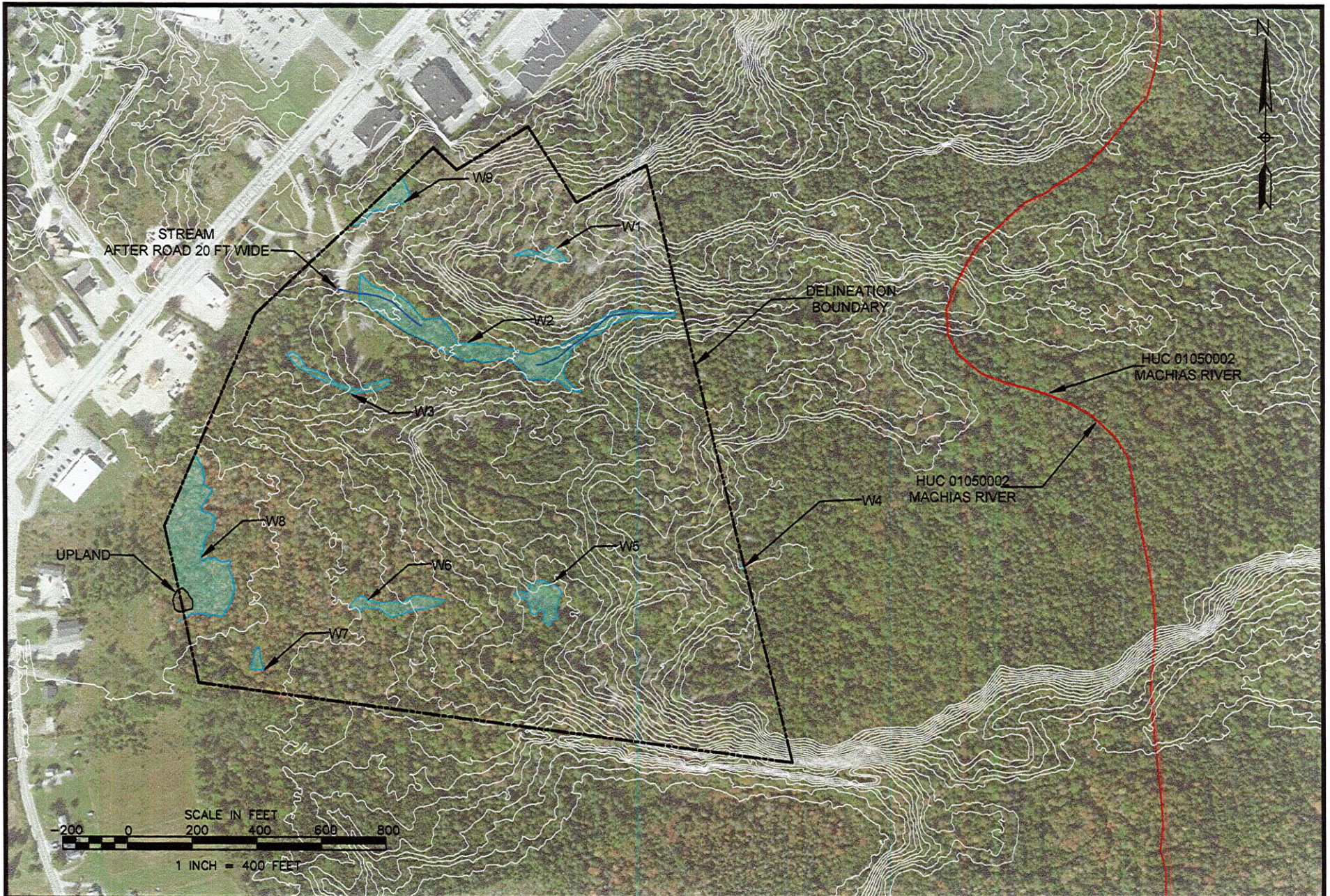


Photograph Nine. View of W5. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.



Photograph Ten. View of W6. Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: May 12, 2020.





**ATLANTIC ENVIRONMENTAL LLC.**  
 Environmental Consultants  
 135 River Road, Woolwich, ME 04579  
 (207) 837-2199  
 tim@atlanticenviromaine.com

Date: 6/15/2020  
 Rev:  
 Project: Loki, Machias  
 Drafted By: TAF/LCV

Overview of Wetland Delineation located on Dublin Street - Lot #5, Map #51B, Machias, Maine.

Sheet  
 1  
 of  
 1

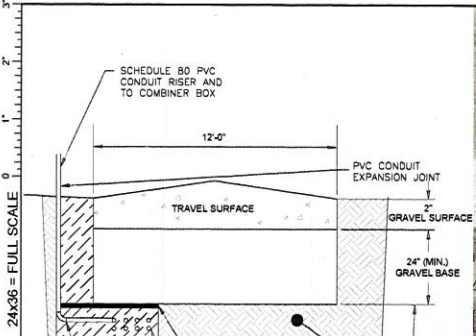
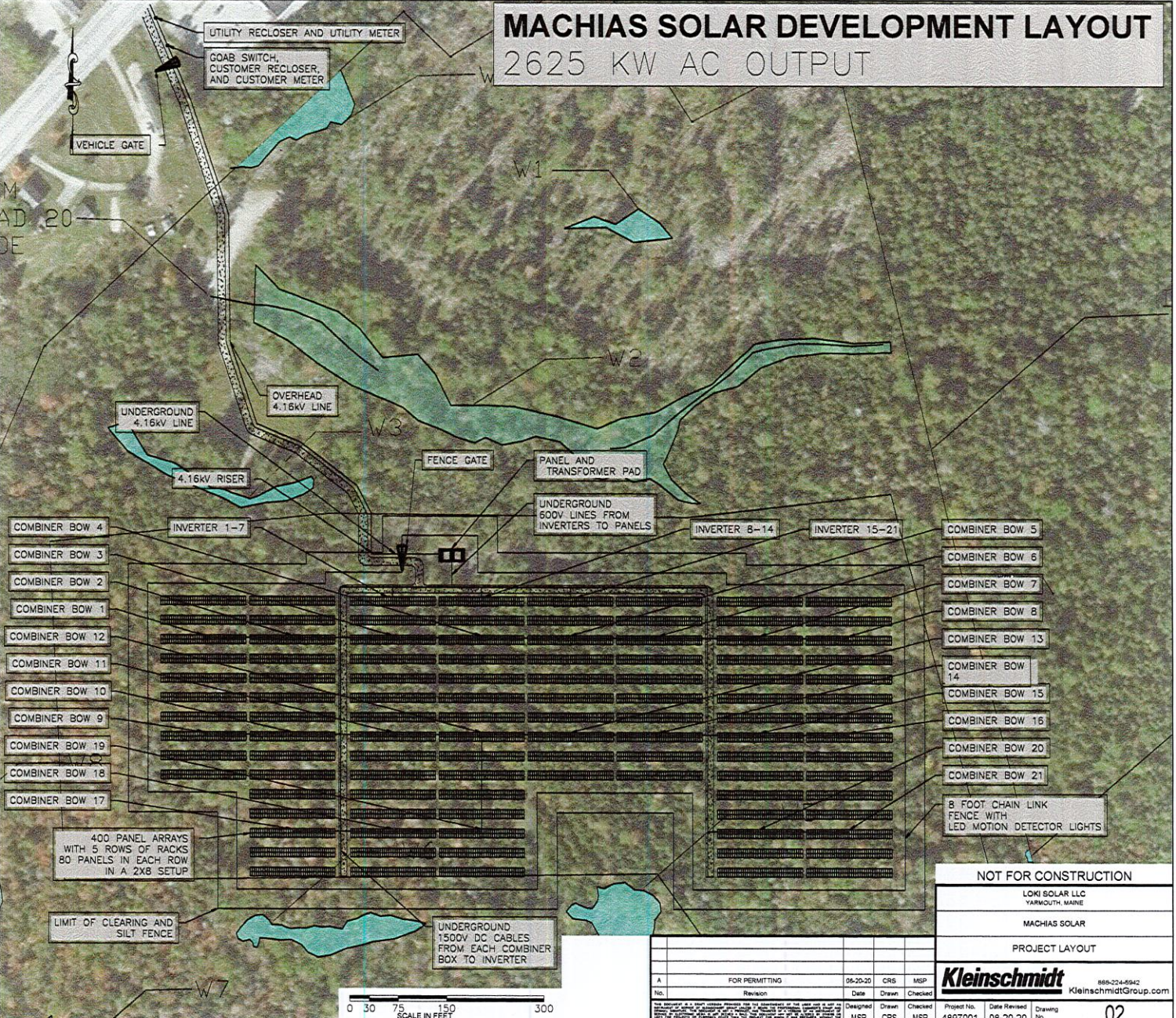




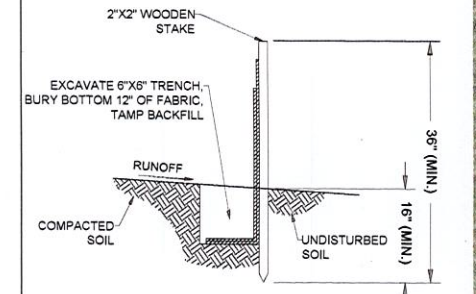


# MACHIAS SOLAR DEVELOPMENT LAYOUT

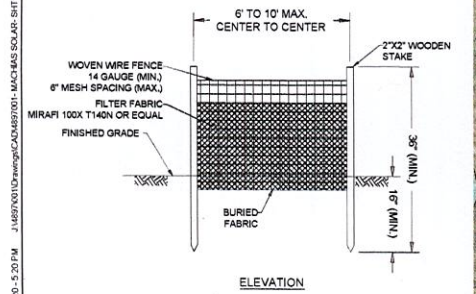
## 2625 KW AC OUTPUT



ACCESS ROAD DETAIL

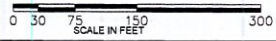


SECTION



ELEVATION

FILE NO. Aug 20, 2020, 5:20 PM J:\687\K010\Drawing\CAD\6870101 - MACHIAS SOLAR - SH1 (2).dwg



FOR PERMITTING		08-20-20	CRS	MSP
No.	Revision	Date	Drawn	Checked
		Designed	Drawn	Checked
		MSP	CRS	MSP
Project No. 4897001		Date Revised 08-20-20	Drawn No.	02

NOT FOR CONSTRUCTION

LOKI SOLAR LLC  
YARMOUTH, MAINE

MACHIAS SOLAR

PROJECT LAYOUT







**NUANCE ENERGY.**  
Leading Solar Innovation.



## INDUSTRY'S FASTEST INSTALLATION TIME + DRAMATIC COST REDUCTIONS

**OSPREY POWERPLATFORM®**  
2MW INSTALLATION

**CONVENTIONAL  
FOUNDATION INSTALLATION**  
2MW INSTALLATION

**16**

**DAYS TO INSTALL**

\*Fully trained, 16-person crew installing the foundation, racking and modules

**\$130,000+**

**SAVINGS**

\*Savings due to lower field labor costs, no pile driving, and no geotechnical reports

VS

**60+**

**DAYS TO INSTALL**

## SAVE TIME AND MONEY



No Geotechnical Reports<sup>1</sup>



No Heavy Equipment



No Ground Screws



No Concrete



No Skilled Labor<sup>2</sup>

<sup>1</sup> In atypical soil conditions, a geotechnical report may be advisable. <sup>2</sup> May not be applicable under certain instances (i.e., union labor wages).



Nuance Energy's Osprey PowerPlatform® is a proprietary ground-mounted racking system that has revolutionized the solar industry – both in terms of cost and time.

You hit a home run with this product!  
 — Jack Ramsey, CEO, AttSys Solar



## KEY SPECIFICATIONS

- Each unit holds as many as 16 panels; average installation time: 59 minutes, 4-person crew
- Average labor cost: \$0.0125/watt installed
- Total power output per unit up to 6kW
- Panel technology neutral; UL2703 certified
- Wind loads <150 mph and snow loads <60+ psf, CPP fully tested
- Anchors hold in all permafrost conditions
- 25-year "bumper to bumper" warranty protection
- Fixed tilt orientation (15° to 35°)
- Independent power adjustable legs
- Engineered for sloped terrain (up to 12°)
- Custom engineering for sloped terrain (up to 23°)
- Galvanized (G90) steel finish (standard); other options available
- Self-bonding mid clamps
- Tamper-proof module fasteners (optional)
- Integrated wire management
- Ideal for mounting string inverters

## Quick & Easy Installation - Lower Costs

Installation is blazing fast with six main steel components to assemble. Osprey PowerPlatform solar structures assemble on site using standard power hand tools.

Eliminate the higher cost of skilled labor and on site heavy machinery.

- **No foundations, no concrete**
- **No cutting, welding or drilling**
- **Minimal site prep and clean up**

## Sustainable Solution

A geotechnical report or 3rd party special inspection is usually not required. Real-time soil verification and load (pull) test is achieved through proprietary use of earth anchors during installation.

Anchors act like underground toggle bolts to secure structure to ground.

Up to 30 cubic feet of earth and sediment above each earth anchor support and ballast these versatile solar racking structures.

## Structural Engineering

A site specific Structural Calculation and Engineering Report complete with vertical and lateral analysis (dead load, live load, wind load and seismic load, etc.) is provided.

MODEL	PANEL TYPE	DIMENSIONS <sup>3</sup>	TILT	LEG ADJUSTMENT	SOLAR PANEL LAYOUT <sup>4</sup>	WIND/MPH <sup>**</sup>
OSP - STD	(60, 72 Cell) & SPR <sup>2</sup>	12ft x 26ft	15° - 35°	up to 26"	2x5 2x6 2x7 2x8*	< 150mph
OSP - HD <sup>1</sup>	(60, 72 Cell) & SPR <sup>2</sup>	12ft x 26ft	15° - 35°	up to 26"	2x5 2x6 2x7 2x8*	< 150mph

<sup>1</sup> Available in HD; Heavy Duty Snow Load or XHD: Extra Heavy Duty Snow Load; <sup>2</sup> SunPower Modules

<sup>3</sup> Based on 2x8 footprint; smaller footprint available; <sup>4</sup> All Sizes Portrait Design; Landscape available

\*Standard

\*\*110mph Standard





# Q.PEAK DUO L-G8.2

415-430

ENDURING HIGH PERFORMANCE



Q.PRO-G2 235 Best polycrystalline solar module 2014

Q CELLS  
174 modules tested



### Q.ANTUM TECHNOLOGY: LOW LEVELISED COST OF ELECTRICITY

Highly scalable BOS system  
classical 203



### INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal shading tolerance  
highly efficient



### ENDURING HIGH PERFORMANCE

Long life span with anti-PID  
TCH 1HSPCATA ai Ta™



### EXTREME WEATHER RATING

Highly resistant to hail  
up to 5400Pa and 2400Pa



### A RELIABLE INVESTMENT

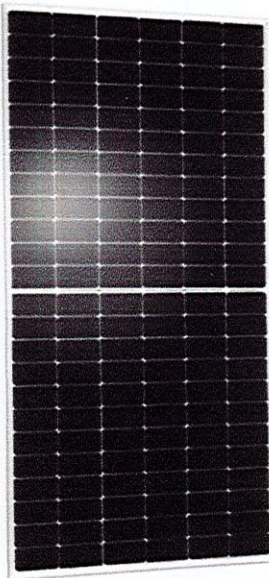
Low cost of ownership  
10-year warranty



### STATE OF THE ART MODULE TECHNOLOGY

ANTUM DUO crystalline silicon  
12-si-h ANTUM TCH

<sup>1</sup>APTS c i i s a c c i IEC TS 62804 1 2015 h B -1500V 168h  
<sup>2</sup>S a a s h i a i



THE IDEAL SOLUTION FOR:



R a a s  
c c i a i s i a  
i i s

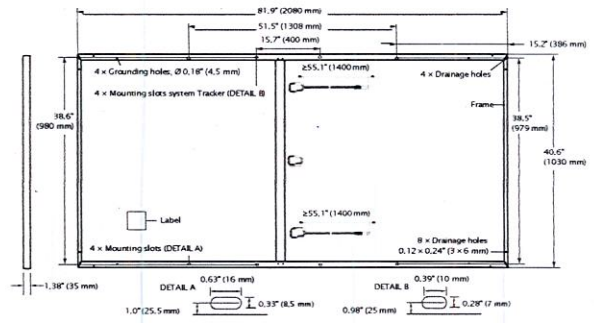


s a a s



## MECHANICAL SPECIFICATION

Format	819i 406i 138i c i a 2080 1030 35
Weight	551 s 250
Front Cover	013i 32 h a s s s a s s i h a i c i c h
Back Cover	C s i i
Frame	A i a i
Cell	6 24 c s a i ANTUM s a h a c s
Junction Box	2 09 3 98i 1 26 2 36i 0 59 0 71i 53 101 32 60 15 18 IP67 i h a s s i s
Cable	4 S a c a ≥551i 1400 (-) ≥551i 1400
Connector	S i M C 4 E 2 H a h a C E L L S H C 4 A h U T R h 0 5 8 M T H Y M 6 0 1 A T i C a 0 1 S F I P 6 8 F i s P V 2 I P 6 7



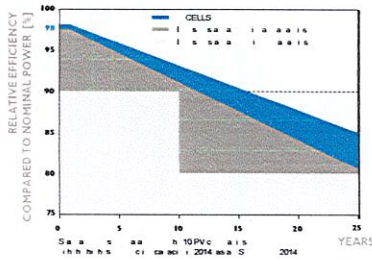
## ELECTRICAL CHARACTERISTICS

POWER CLASS	415	420	425	430		
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5W / -0W)						
Minimum	Power at MPP <sup>1</sup>	P <sub>MPP</sub> W	415	420	425	430
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub> A	10 69	10 74	10 78	10 83
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub> V	48 59	48 84	49 09	49 33
	Current at MPP	I <sub>MPP</sub> A	10 18	10 22	10 27	10 31
	Voltage at MPP	V <sub>MPP</sub> V	40 77	41 08	41 39	41 70
	Efficiency <sup>1</sup>	η	≥19 4	≥19 6	≥19 8	≥20 1
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>						
Minimum	Power at MPP	P <sub>MPP</sub> W	310 8	314 5	318 3	322 0
	Short Circuit Current	I <sub>SC</sub> A	8 61	8 65	8 69	8 72
	Open Circuit Voltage	V <sub>OC</sub> V	45 82	46 05	46 29	46 52
	Current at MPP	I <sub>MPP</sub> A	8 01	8 05	8 08	8 12
	Voltage at MPP	V <sub>MPP</sub> V	38 79	39 09	39 38	39 67

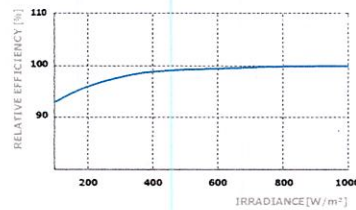
<sup>1</sup>M as a c s P<sub>MPP</sub> 3 I<sub>SC</sub> V<sub>OC</sub> 5 a STC 1000W <sup>2</sup> 25 2 C AM 15 acc i IEC 60904 3 + <sup>2</sup>800W NMOT s c AM 15

### Q CELLS PERFORMANCE WARRANTY

### PERFORMANCE AT LOW IRRADIANCE



A a s 98 i a i  
i s a T h a a 0 54  
a a i a A a s 93 1  
i a 10 a s A  
a s 85 i a  
25 a s  
  
A a a i h i a s a c  
s F a a i s i a c c a c i h  
h a a s h C E L L S  
s a s a i s a i s c i  
c



T i c a a c i a i a c c i i s i  
c a i s STC c i i s 25 C 1000W

### TEMPERATURE COEFFICIENTS

Temperature Coefficient of I <sub>SC</sub>	α	0 04	Temperature Coefficient of V <sub>OC</sub>	β	-0 27
Temperature Coefficient of P <sub>MPP</sub>	γ	-0 35	Normal Module Operating Temperature	NMOT	F 109 5 4 43 3 C

## PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>sys</sub>	V	1500 IEC 1500 UL	Safety Class	II
Maximum Series Fuse Rating	A DC	20	Fire Rating based on ANSI / UL 1703	C IEC TYPE1 UL
Max. Design Load, Push / Pull <sup>1</sup>	s <sup>2</sup>	75 3600Pa 33 1600Pa	Permitted Module Temperature on Continuous Duty	-40 F 185 F (-40 C 85 C)
Max. Test Load, Push / Pull <sup>1</sup>	s <sup>2</sup>	113 5400Pa 50 2400Pa		

<sup>3</sup>S I s a a i M a a

## QUALIFICATIONS AND CERTIFICATES

UL 1703 CE c i a IEC 61215 2016 IEC 61730 2016  
A i c a i C a s s II U S P a N 9 893 215 s a c s



## PACKAGING INFORMATION

Number of Modules per Pallet	29
Number of Pallets per 53' Trailer	26
Number of Pallets per 40' HC-Container	22
Pallet Dimensions (L x W x H)	84 6 45 3 48 0 i 2150 1150 1220
<sup>1</sup> Pallet Weight	1717 s 779

Note: I s a a i s c i s s S h i s a a i a a i a a c a c c h i c a s i c a h i a i a i s a a i a s

Hanwha Q CELLS America Inc.

400 S c C D i S i 1400 I i CA 92618 USA TEL 1949 748 59 96 EMAIL i i s c s c WEB c s s

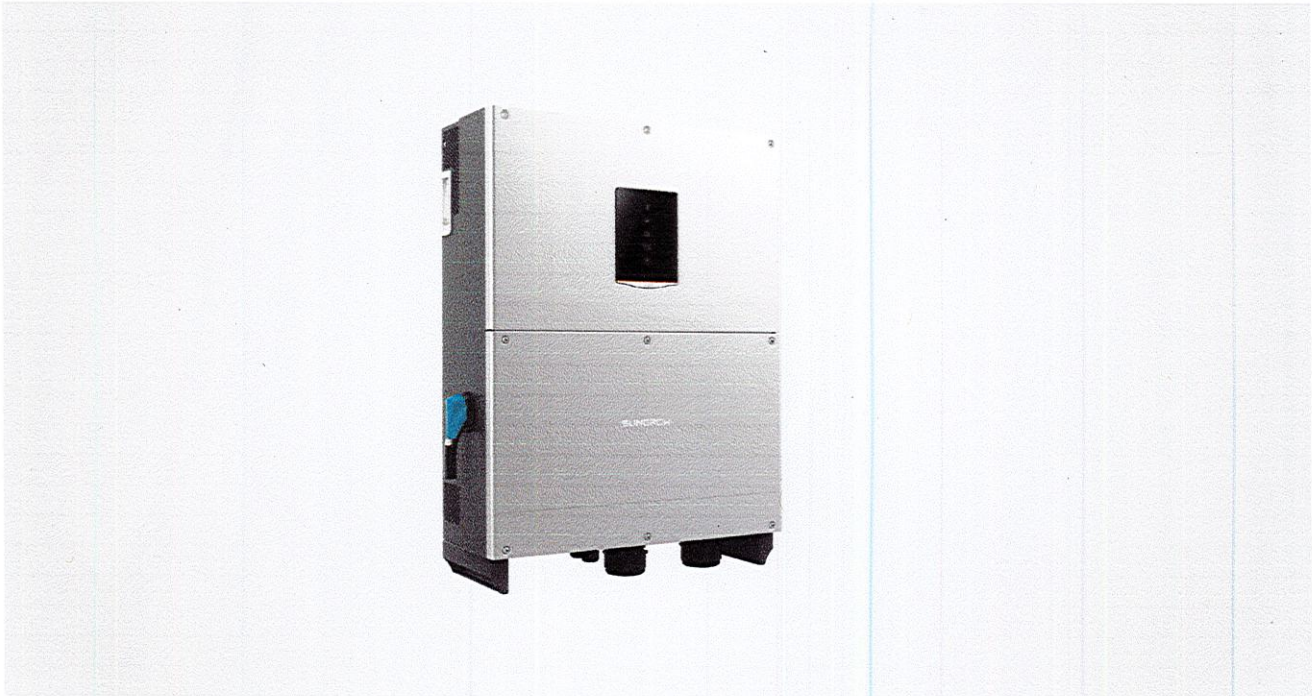


# SG125HV

String Inverter for 1500 Vdc System

SUNGROW

Clean power for all



## HIGH YIELD

- Patented five-level topology, max. efficiency 98.9 %, European efficiency 98.7 %, CEC efficiency 98.5 %
- Full power operation without derating at 50 °C
- Patented anti-PID function

## EASY O&M

- Virtual central solution, easy for O&M
- Compact design and light weight for easy installation

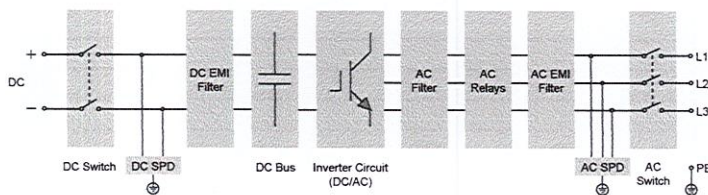
## SAVED INVESTMENT

- DC 1500V, AC 600V, low system initial investment
- 1 to 5MW power block design for lower AC transformer and labor cost
- Max.DC/AC ratio up to 1.5

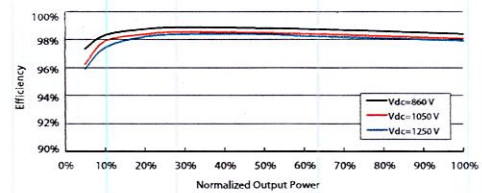
## GRID SUPPORT

- Compliance with both IEC and UL safety, EMC and grid support regulations
- Low/High voltage ride through(L/HVRT)
- Active & reactive power control and power ramp rate control

## CIRCUIT DIAGRAM



## EFFICIENCY CURVE





Type designation	SG125HV
<b>Input (DC)</b>	
Max. PV input voltage	1500 V
Min. PV input voltage / Start-up input voltage	860 V / 920 V
Nominal PV input voltage	1050 V
MPP voltage range	860 – 1450 V
MPP voltage range for nominal power	860 – 1250 V
No. of independent MPP inputs	1
No. of DC inputs	1
Max. PV input current	148 A
Max. DC short-circuit current	250 A
<b>Output (AC)</b>	
AC output power	125 kVA @ 50 °C
Max. AC output current	120 A
Nominal AC voltage	3 / PE, 600 V
AC voltage range	480 – 690 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
THD	< 3 % (at nominal power)
DC current injection	< 0.5 % I <sub>n</sub>
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading - 0.8 lagging
Feed-in phases / connection phases	3 / 3
<b>Efficiency</b>	
Max. efficiency / European efficiency	98.9% / 98.7%
CEC efficiency	98.5%
<b>Protection</b>	
DC reverse connection protection	Yes
AC short-circuit protection	Yes
Leakage current protection	Yes
Grid monitoring	Yes
DC switch	Yes
AC switch	Yes
Q at night function	optional
Anti-PID function	Yes
Overvoltage protection	DC Type II / AC Type II
<b>General Data</b>	
Dimensions (W*H*D)	670*902*296 mm 26.4"*35.5"*11.7"
Weight	76 kg 167.5 lb
Isolation method	Transformerless
Degree of protection	IP 65 NEMA 4X
Night power consumption	< 4 W
Operating ambient temperature range	-30 to 60 °C (> 50 °C derating) -22 to 140 °F (> 122 °F derating)
Allowable relative humidity range (non-condensing)	0 – 100 %
Cooling method	Smart forced air cooling
Max. operating altitude	4000 m (> 3000 m derating) 13123 ft (> 9843 ft derating)
Display / Communication	LED, Bluetooth+APP / RS485
DC connection type	OT or DT terminal (Max. 185 mm <sup>2</sup> 350 Kcmil)
AC connection type	OT or DT terminal (Max. 185 mm <sup>2</sup> 350 Kcmil)
Compliance	UL1741, UL1741SA, IEEE1547, IEEE1547.1, CSA C22.2 107.1-01-2001, FCC Part15 Sub-part B Class A Limits, California Rule 21, IEC 62109-1/-2, IEC 61000-6-2/-4, IEC 61727, IEC62116, BDEW, EN50549.VDE-AR-N 4110:2018, VDE-AR-N 4120:2018, UNE 206007-1:2013, P.O.12.3, UTE C15-712-1:2013, CEI 0-16:2017, IEC 61683, PEA, NTCO
Grid Support	LVRT, HVRT, ZVRT, active & reactive power regulation, PF control, soft start/stop





# PURCHASE AND SALE AGREEMENT - LAND ONLY

("days" means business days unless otherwise noted, see paragraph 20)

Offer Date April 28, 2020

APRIL 29, 2020 Effective Date  
Effective Date is defined in Paragraph 20 of this Agreement.

1. PARTIES: This Agreement is made between Michael Parker, Ryan Higgins, Loki Solar LLC ("Buyer") and Gerald Wood and Son, LLC ("Seller").

2. DESCRIPTION: Subject to the terms and conditions hereinafter set forth, Seller agrees to sell and Buyer agrees to buy  all  part of (if "part of" see para. 22 for explanation) the property situated in municipality of Machias, County of Washington, State of Maine, located at Tax Map 5, Lot 51B and described in deed(s) recorded at said County's Registry of Deeds Book(s) 4082 N/A, Page(s) 126 N/A.

3. PURCHASE PRICE/EARNEST MONEY: For such Deed and conveyance Buyer agrees to pay the total purchase price of \$119,000.00. Buyer  has delivered; or  will deliver to the Agency within 7 days of the Effective Date, a deposit of earnest money in the amount \$1,500.00. Buyer agrees that an additional deposit of earnest money in the amount of \$N/A will be delivered N/A.

If Buyer fails to deliver the initial or additional deposit in compliance with the above terms Seller may terminate this Agreement. This right to terminate ends once Buyer has delivered said deposit (s). The remainder of the purchase price shall be paid by wire, certified, cashier's or trust account check upon delivery of the Deed.

This Purchase and Sale Agreement is subject to the following conditions:

4. ESCROW AGENT/ACCEPTANCE: The Christopher Group LLC ("Agency") shall hold said earnest money and act as escrow agent until closing; this offer shall be valid until May 4, 2020 (date) 5:00  AM  PM; and, in the event of non-acceptance, this earnest money shall be returned promptly to Buyer.

5. TITLE AND CLOSING: A deed, conveying good and merchantable title in accordance with the Standards of Title adopted by the Maine Bar Association shall be delivered to Buyer and this transaction shall be closed and Buyer shall pay the balance due and execute all necessary papers on April 30, 2021 (closing date) or before, if agreed in writing by both parties. If Seller is unable to convey in accordance with the provisions of this paragraph, then Seller shall have a reasonable time period, not to exceed 30 calendar days, from the time Seller is notified of the defect, unless otherwise agreed to in writing by both Buyer and Seller, to remedy the title. Seller hereby agrees to make a good-faith effort to cure any title defect during such period. If, at the later of the closing date set forth above or the expiration of such reasonable time period, Seller is unable to remedy the title, Buyer may close and accept the deed with the title defect or may terminate this Agreement in which case the parties shall be relieved of any further obligations hereunder and any earnest money shall be returned to the Buyer.

6. DEED: The property shall be conveyed by a Warranty deed, and shall be free and clear of all encumbrances except covenants, conditions, easements and restrictions of record which do not materially and adversely affect the continued current use of the property.

7. POSSESSION: Possession of premises shall be given to Buyer immediately at closing unless otherwise agreed in writing.

8. RISK OF LOSS: Until the closing, the risk of loss or damage to said premises by fire or otherwise, is assumed by Seller. Buyer shall have the right to view the property within 24 hours prior to closing for the purpose of determining that the premises are in substantially the same condition as on the date of this Agreement.

9. PRORATIONS: The following items, where applicable, shall be prorated as of the date of closing: rent, association fees, (other) None. Real estate taxes shall be prorated as of the date of closing (based on municipality's fiscal year). Seller is responsible for any unpaid taxes for prior years. If the amount of said taxes is not known at the time of closing, they shall be apportioned on the basis of the taxes assessed for the preceding year with a reapportionment as soon as the new tax rate and valuation can be ascertained, which latter provision shall survive closing. Buyer and Seller will each pay their transfer tax as required by State of Maine.

10. DUE DILIGENCE: Buyer is encouraged to seek information from professionals regarding any specific issue or concern. Neither Seller nor Licensee makes any warranties regarding the condition, permitted use or value of Sellers' real property. This Agreement is subject to the following contingencies, with results being satisfactory to Buyer:

Page 1 of 5 - P&S-LO Buyer(s) Initials MP, LH, LS Seller(s) Initials GLW



CONTINGENCY	YES	NO	FULL RESOLUTION	OBTAINED BY	TO BE PAID FOR BY
1. SURVEY Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
2. SOILS TEST Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
3. SEPTIC SYSTEM DESIGN Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
4. LOCAL PERMITS Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
5. HAZARDOUS WASTE REPORTS Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
6. UTILITIES Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
7. WATER Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
8. SUB-DIVISION APPROVAL Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
9. DEP/LUPC/ACOE APPROVALS Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
10. ZONING VARIANCE Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
11. HABITAT REVIEW/WATERFOWL Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
12. REGISTERED FARMLAND Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
13. MDOT DRIVEWAY/ENTRANCE PERMIT Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
14. DEED RESTRICTION Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
15. TAX STATUS* Purpose: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	within <u>320</u> days	<u>Buyer</u>	<u>Buyer</u>
16. BUILD PACKAGE Purpose: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	within <u>N/A</u> days	<u>N/A</u>	<u>N/A</u>
17. OTHER Purpose: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	within <u>N/A</u> days	<u>N/A</u>	<u>N/A</u>

\* If the land is enrolled in the Maine Tree Growth Tax program, Seller agrees to provide Buyer with the current Forest Management and Harvest Plan within 14 days.  Yes  No

Further specifications regarding any of the above: **Offer is contingent upon continued agreement and approval to proceed from all partners, active and silent, known and potential, for the entirety of the 320 day due diligence period.**

Unless otherwise specified above, all of the above will be obtained and paid for by Buyer. Seller agrees to cooperate with Buyer and shall give Buyer and Buyer's agents and consultants reasonable access to the property in order to undertake the above investigations. Buyer agrees to take reasonable steps to return the property to its pre-inspection condition. If the result of any investigation or other condition specified herein is unsatisfactory to Buyer, Buyer will declare the Agreement null and void by notifying Seller in writing within the specified number of days, and any earnest money shall be returned to Buyer. If the result of any investigation or other condition specified herein is unsatisfactory to Buyer, and Buyer wishes to pursue remedies other than voiding the Agreement, Buyer must do so to full resolution within the time period set forth above; otherwise this contingency is waived. If Buyer does not notify Seller that an investigation is unsatisfactory within the time period set forth above, this contingency is waived by Buyer. In the absence of inspection(s) mentioned above, Buyer is relying completely upon Buyer's own opinion as to the condition of the property.

Page 2 of 5 - P&S-LO Buyer(s) Initials MP-Lola Salas Seller(s) Initials GLW



11. FINANCING: Buyer's obligation to close:

- is not subject to a financing contingency. Buyer has provided Seller with acceptable proof of the funds.
- is not subject to a financing contingency. Buyer shall provide proof of the funds acceptable to Seller within 10 days. If such proof is unacceptable to Seller, Seller may terminate this Agreement no later than 3 days from receipt. If proof of funds is not provided within such time period, Seller may terminate this Agreement which right shall end once such proof is received, however Seller retains the agreed upon time period to terminate if such proof is unacceptable. If Seller terminates in either case, the earnest money shall be returned to Buyer.
- Buyer's ability to purchase  is  is not subject to the sale of another property. See addendum  Yes  No.
- Buyer's obligation to close is subject to financing as follows:
  - a. Buyer's obligation to close is subject to Buyer obtaining a N/A loan of N/A % of the purchase price, at an interest rate not to exceed N/A % and amortized over a period of N/A years. Buyer is under a good faith obligation to seek and obtain financing on these terms. If such financing is not available to Buyer as of the closing date, Buyer is not obligated to close and may terminate this Agreement in which case the earnest money shall be returned to Buyer.
  - b. Buyer to provide Seller with letter from lender showing that Buyer has made application for loan specified in (a) and, subject to verification of information, is qualified for the loan requested within N/A days from the Effective Date of the Agreement. If Buyer fails to provide Seller with such letter within said time period, Seller may terminate this Agreement and the earnest money shall be returned to Buyer. This right to terminate ends once Buyer's letter is received.
  - c. Buyer hereby authorizes, instructs and directs its lender to communicate the status of the Buyer's loan application to Seller, Seller's licensee and Buyer's licensee.
  - d. After (b) is met, if the lender notifies Buyer that it is unable or unwilling to provide said financing, Buyer is obligated to provide Seller with written documentation of the loan denial within two days of receipt. After notifying Seller, Buyer shall have N/A days to provide Seller with a letter from another lender showing that Buyer has made application for loan specified in (a) and, subject to verification of information, is qualified for the loan requested. If Buyer fails to provide Seller with such letter within said time period, Seller may terminate this Agreement and the earnest money shall be returned to Buyer. This right to terminate ends once Buyer's letter is received.
  - e. Buyer agrees to pay no more than N/A points. Seller agrees to pay up to S/N/A toward Buyer's actual pre-pays, points and/or closing costs, but no more than allowable by Buyer's lender.
  - f. Buyer's ability to obtain financing  is  is not subject to the sale of another property. See addendum  Yes  No.
  - g. Buyer may choose to pay cash instead of obtaining financing. If so, Buyer shall notify Seller in writing including providing proof of funds and the Agreement shall no longer be subject to financing, and Seller's right to terminate pursuant to the provisions of this paragraph shall be void and Seller's obligations pursuant to 11e shall remain in full force and effect.

12. BROKERAGE DISCLOSURE: Buyer and Seller acknowledge they have been advised of the following relationships:

Aaron Currier ( 019912 ) of The Christopher Group, LLC ( 2494 )  
 Licensee MLS ID Agency MLS ID  
 is a  Seller Agent  Buyer Agent  Disc Dual Agent  Transaction Broker

Shirley Erickson ( 014813 ) of The Christopher Group, LLC ( 2494 )  
 Licensee MLS ID Agency MLS ID  
 is a  Seller Agent  Buyer Agent  Disc Dual Agent  Transaction Broker

If this transaction involves Disclosed Dual Agency, the Buyer and Seller acknowledge the limited fiduciary duties of the agents and hereby consent to this arrangement. In addition, the Buyer and Seller acknowledge prior receipt and signing of a Disclosed Dual Agency Consent Agreement.

13. PROPERTY DISCLOSURE FORM: Buyer acknowledges receipt of Property Disclosure Form.

14. DEFAULT/RETURN OF EARNEST MONEY: Buyer's failure to fulfill any of Buyer's obligations hereunder shall constitute a default and Seller may employ all legal and equitable remedies, including without limitation, termination of this Agreement and forfeiture by Buyer of the earnest money. Seller's failure to fulfill any of Seller's obligations hereunder shall constitute a default and Buyer may employ all legal and equitable remedies, including without limitation, termination of this Agreement and return to Buyer of the earnest money. Agency acting as escrow agent has the option to require written releases from both parties prior to disbursing the earnest money to either Buyer or Seller. In the event that the Agency is made a party to any lawsuit by virtue of acting as escrow agent, Agency shall be entitled to recover reasonable attorney's fees and costs which shall be assessed as court costs in favor of the prevailing party.

15. MEDIATION: Earnest money or other disputes within the jurisdictional limit of small claims court will be handled in that forum. All other disputes or claims arising out of or relating to this Agreement or the property addressed in this Agreement (other than requests for injunctive relief) shall be submitted to mediation in accordance with generally accepted mediation practices. Buyer and Seller are bound to mediate in good faith and to each pay half of the mediation fees. If a party fails to submit a dispute or claim to mediation prior to initiating litigation (other than requests for injunctive relief), then that party will be liable for the other party's legal fees in any subsequent litigation regarding that same matter in which the party who failed to first submit the dispute or claim to mediation loses in that subsequent litigation. This clause shall survive the closing of the transaction.

16. PRIOR STATEMENTS: Any representations, statements and agreements are not valid unless contained herein. This Agreement completely expresses the obligations of the parties and may only be amended in writing, signed by both parties.



17. HEIRS/ASSIGNS: This Agreement shall extend to and be obligatory upon heirs, personal representatives, successors, and assigns of the Seller and the assigns of the Buyer.
18. COUNTERPARTS: This Agreement may be signed on any number of identical counterparts, such as a faxed copy, with the same binding effect as if the signatures were on one instrument. Original, faxed or other electronically transmitted signatures are binding.
19. NOTICE: Any notice, communication or document delivery requirements hereunder may be satisfied by providing the required notice, communication or documentation to or from the parties or their Licensee. Only withdrawals of offers and counteroffers will be effective upon communication, verbally or in writing.
20. EFFECTIVE DATE/BUSINESS DAYS: This Agreement is a binding contract when the last party signing has caused a paper or electronic copy of the fully executed agreement to be delivered to the other party which shall be the Effective Date. Licensee is authorized to fill in the Effective Date on Page 1 hereof. Except as expressly set forth to the contrary, the use of the term "days" in this Agreement, including all addenda made a part hereof, shall mean business days defined as excluding Saturdays, Sundays and any observed Maine State/Federal holidays. Deadlines in this Agreement, including all addenda, expressed as "within x days" shall be counted from the Effective Date, unless another starting date is expressly set forth, beginning with the first day after the Effective Date, or such other established starting date, and ending at 5:00 p.m. Eastern Time on the last day counted. Unless expressly stated to the contrary, deadlines in this Agreement, including all addenda, expressed as a specific date shall end at 5:00 p.m. Eastern Time on such date.
21. CONFIDENTIALITY: Buyer and Seller authorize the disclosure of the information herein to the real estate licensees, attorneys, lenders, appraisers, inspectors, investigators and others involved in the transaction necessary for the purpose of closing this transaction. Buyer and Seller authorize the lender and/or closing agent preparing the entire closing disclosure and/or settlement statement to release a copy of the closing disclosure and/or settlement statement to the parties and their licensees prior to, at and after the closing.
22. OTHER CONDITIONS: **The obligation to complete the sale is contingent upon continued agreement and approval from all partners, active and silent, known and confidential, for the entirety of the 320 day due diligence period.**

**Buyer will provide the seller with transaction & due diligence progress reports on July 1st 2020, October 1st 2020, January 1st 2021 and April 1st 2021.**

23. GENERAL PROVISIONS:

- a. A copy of this Agreement is to be received by all parties and, by signature, receipt of a copy is hereby acknowledged. If not fully understood, contact an attorney. This is a Maine contract and shall be construed according to the laws of Maine.
- b. Seller acknowledges that State of Maine law requires buyers of property owned by non-resident sellers to withhold a prepayment of capital gains tax unless a waiver has been obtained by Seller from the State of Maine Revenue Services.
- c. Buyer and Seller acknowledge that under Maine law payment of property taxes is the legal responsibility of the person who owns the property on April 1, even if the property is sold before payment is due. If any part of the taxes is not paid when due, the lien will be filed in the name of the owner as of April 1 which could have a negative impact on their credit rating. Buyer and Seller shall agree at closing on their respective obligations regarding actual payment of taxes after closing. Buyer and Seller should make sure they understand their obligations agreed to at closing and what may happen if taxes are not paid as agreed.
- d. Buyer acknowledges that Maine law requires continuing interest in the property and any back up offers to be communicated by the listing agent to the Seller.
- e. Whenever this Agreement provides for earnest money to be returned or released, agency acting as escrow agent must comply with Maine Real Estate Commission rules which may require written notices or obtaining written releases from both parties.

24. ADDENDA:  Yes  No Explain: \_\_\_\_\_



25. ELECTRONIC SIGNATURES: Pursuant to the Maine Uniform Electronic Transactions Act and Digital Signature Act, the parties authorize and agree to the use of electronic signatures as a method of signing/initialing this Agreement, including all addenda. The parties hereby agree that either party may sign electronically by utilizing an electronic signature service.

Buyer's Mailing address is 42 Woods Circle Road, Yarmouth, ME 04096

<u>Michael Parker</u>	<u>4/28/2020</u>	<u><i>[Signature]</i></u>	<u>4/28/2020</u>
<del>BUYER Michael Parker</del>	DATE	<del>BUYER Ryan Higgins</del>	DATE
<u>Michael Parker</u>	<u>4/28/2020</u>		
<del>BUYER Loki Solar LLC</del>	DATE	<del>BUYER</del>	DATE

Seller accepts the offer and agrees to deliver the above-described property at the price and upon the terms and conditions set forth and agrees to pay agency a commission for services as specified in the listing agreement.

Seller's Mailing address is 972 Post Rd Machiasport, ME 04655

<u>Gerald I Wood</u>	<u>4/29/20</u>		
<del>SELLER Gerald Wood and Son, LLC</del>	DATE	<del>SELLER</del>	DATE
<del>SELLER</del>	DATE	<del>SELLER</del>	DATE

**COUNTER-OFFER**

Seller agrees to sell on the terms and conditions as detailed herein with the following changes and/or conditions:

The parties acknowledge that until signed by Buyer, Seller's signature constitutes only an offer to sell on the above terms and the offer will expire unless accepted by Buyer's signature with communication of such signature to Seller by (date) \_\_\_\_\_ (time) \_\_\_\_\_  AM  PM.

<del>SELLER</del>	DATE	<del>SELLER</del>	DATE
<del>SELLER</del>	DATE	<del>SELLER</del>	DATE

The Buyer hereby accepts the counter offer set forth above.

<del>BUYER</del>	DATE	<del>BUYER</del>	DATE
<del>BUYER</del>	DATE	<del>BUYER</del>	DATE

**EXTENSION**

The closing date of this Agreement is extended until \_\_\_\_\_ DATE

<del>SELLER</del>	DATE	<del>SELLER</del>	DATE
<del>SELLER</del>	DATE	<del>SELLER</del>	DATE
<del>BUYER</del>	DATE	<del>BUYER</del>	DATE