

Burlington Planning Commission

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Yves Bradley, Chair
Bruce Baker, Vice-Chair
Lee Buffinton
Emily Lee
Andy Montroll
Harris Roen
Jennifer Wallace-Brodeur
Vacant, Youth Member



Burlington Planning Commission

REGULAR MEETING

Tuesday, April 8, 2014 - 6:30 P.M.

Conference Room #12, Ground Floor, City Hall, 149 Church Street

AGENDA

Note: times given are approximate unless otherwise noted.

- I. **Agenda**
- II. **Public Forum** - Time Certain: 6:35 pm
The Public Forum is an opportunity for any member of the public to address the Commission on any relevant issue.
- III. **Report of the Chair (5 min)** – Yves Bradley, Chair
- IV. **Report of the Director (5 min)** – David E. White, Director
- V. **Joint Institution Parking Management Plan (20 min)**
The Commission will discuss the 2014-2019 update of the Joint Institution Parking Management Plan. (Copies of the plan available for review at the Planning & Zoning Department Office, City Hall, Ground Floor)
- VI. **Keystone Development Corp. VT Sec. 248 Certificate of Public Good (utility permit) application**
The Commission will discuss this application for Certificate of Public Good in relation to potential solar utility installation at 0 Sunset Cliff Road.
- VII. **Committee Reports (5 min)**
- VIII. **Commissioner Items (5 min)**
- IX. **Minutes/Communications (2 min)**
The Commission will review minutes from the March 25, 2014 meeting.
- X. **Adjourn** (8:00 p .m.)

This agenda is available in alternative media forms for people with disabilities. Individuals with disabilities who require assistance or special arrangements to participate in programs and activities of the Dept. of Planning & Zoning are encouraged to contact the Dept. at least 72 hours in advance so that proper accommodations can be arranged. For information, call 865-7188 (865-7144 TTY). Written comments may be directed to the Planning Commission at 149 Church Street, Burlington, VT 05401.

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DEPARTMENT OF
PLANNING & ZONING

South Forty Solar, LLC
300 Swift St.
South Burlington, Vermont 05403
Telephone: (802) 578-2536

March 5, 2014

By Hand Delivery

Burlington City Council
and
Burlington Planning Commission
149 Church Street
Burlington, VT 05401

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, VT 05404-2109

Re: Proposed Solar Project — Sunset Cliff Road, Burlington, Vermont
45-Day Notice of Petition to be filed Under Section 248 at Vermont Public Service Board

Dear Councilors and Commissioners:

Pursuant to 30 V.S.A. §248(f) and Vermont Public Service Board ("PSB") Rule 5.402(A), South Forty Solar, LLC ("SFS") submits the following pre-application notice ("45 Day Notice Letter") concerning its proposed 2.5 megawatt (MW) solar project, to be sited on land off of Sunset Cliff Road in Burlington, Vermont. SFS anticipates filing a formal Section 248 petition with the PSB soon after the 45-day notice period expires, in mid-April 2014.

Introduction

SFS intends to seek a Certificate of Public Good ("CPG") from the PSB, to install and operate a 2.5 MW +/- (AC) solar electric generation facility to be known as the South Forty Solar Farm (the "Project") in Burlington, Vermont. The Project would be sited on a 39.2 acre parcel of land that is accessed from Sunset Cliff Road (a private road). The electricity from the Project will be sold to Burlington Electric Department ("BED") under a long-term Purchase Power Agreement ("PPA") recently approved by the Burlington City Council.

In preparation for filing the Section 248 Petition, SFS has been gathering information concerning the site's solar resource characteristics, interconnection requirements to the BED system, and environmental and other land-use conditions. This 45 Day Notice Letter will briefly describe the proposed Project and surrounding conditions including: (1) SFS's plans for construction and operation of the Project; (2) the expected benefits of the Project; (3) a preliminary impact assessment and consideration of on-site alternatives; (4) the expected date a

Section 248 Petition will be filed with the PSB; and (5) the rights of the local and regional planning commissions to comment on the Project plans in accordance with Board Rule 5.402(A).

Included with this letter are a location map (*Attachment A*), site plan (*Attachment B*), equipment specifications (*Attachment C*), and preliminary aesthetics assessment (*Attachment D*).

1. Project Site, Equipment, and Construction Plans

The proposed South Forty Solar Farm is a 2.5 Megawatts (+/-) (MW) (AC) solar electric generation facility located on Sunset Cliff Road, in Burlington, Vermont. The Project is expected to generate approximately 3,750,000 kilowatt hours (kWh) of electrical energy per year, which is enough to serve approximately 700 average Burlington households.¹

The Project will be sited on a 39.2 (+/-) acre property held by Keystone Development Corporation (an affiliate of SFS) under a long term lease. The Project parcel is currently undeveloped although in the past it was used for agricultural purposes. The parcel is bordered to the west and east by residential lots ranging from 1/8 to 3/4 acre in size. The southern boundary is comprised of similar single family house lots, but a small park and open space area provide a buffer to the parcel. The northern boundary of the tract is bordered by Sunset Cliff Road (located on Keystone's parcel) and a 19-acre parcel with seasonal "camps" located beyond, on the shore of Lake Champlain.

The Project's site plan was designed to meet a number of objectives: minimize the project footprint while maintaining the economic viability of the solar electric generation facility; maintain appropriate separation or screening from surrounding land uses; minimize shading of the solar panels; and minimize impacts to environmental resources including wetlands and sensitive natural communities. The solar array area will be located on the northern portion of the property which consists of a mix of open field, scrub/shrub vegetation and upland forest. This area will be cleared of vegetation to allow optimal solar generation.² See *Attachments A and B*.

Solar Panels and Racking System

SFS intends to install approximately 11,000 300-watt solar panels, with a combined rating of 3.3 MW (DC). See *Attachment C*. The final panel selection will be made prior to the initiation of construction based upon market conditions, but, in any case, the panels used will be materially similar to the panels shown in *Attachment C*.

The solar cells in each panel are dark blue in color and the panel glass is treated with an anti-reflective (AR) coating that lowers the overall reflectivity of a typical panel to less than 5%, which is well below the reflectivity of surrounding vegetation.

¹ Based on the average residential use of approximately 5,400 kWh per year, as reported by BED.

² A final layout will be included with SFS's Section 248 Petition. Any variations between the attached site plan and the final plan are not expected to be substantial.

The individual solar panels comprising each "array" are mounted on a rack system. The solar arrays and associated equipment will occupy approximately 18.5 acres of the parcel. Approximately 506 arrays will be utilized, depending on the final panel selection. The arrays will be set on driven steel foundation piles to hold the solar panels at a fixed angle of 30 degrees, to maximize solar radiance collection. The use of a driven pile foundation will not require any significant excavation or placement of precast concrete under the panel array and thus will minimize soil and vegetation disturbance. The support structures are designed to hold the bottom of the solar panels at approximately 4 feet above existing grade, which will allow snow to shed without creating buildup on the ground that might compromise energy production. The top of the solar panels will be approximately 10.5 feet above grade.

As shown in *Attachment B*, the arrays will be arranged in rows running east-west. The rows will be set a sufficient distance apart (approximately 35 feet) to minimize self-shading. The arrays will be connected via electrical cable in conduit to the inverters, which in turn will connect to transformers (see below). In areas outside of the wetlands and its 50-foot buffer zone, the electrical lines from the arrays to the inverter and the primary voltage lines to the BED interconnection point will be buried underground in conduit. In areas delineated as wet meadow or buffer zones, conduit for electrical and monitoring lines will be placed above ground supported by the array rack system.

Inverters and Transformers

SFS currently anticipates using five (5) Advanced Energy AE500NX (500 kW) inverters, or the equivalent, placed at two locations within the array rows. See *Attachment B*. The inverters will be housed in two prefabricated enclosures (1.5 MW and 1 MW), each of which is approximately 35 feet long by 12 feet wide by 10 feet high in dimension. The enclosures will also house controls, metering, and other necessary electrical equipment. The inverters in each structure will be connected to a medium voltage transformer located on each structure's steel deck. The transformers will use a non-toxic, biodegradable cooling oil. In addition, each structure will be equipped with a secondary oil containment pan under each transformer. The transformers will step up the inverter output (480V) to distribution voltage for interconnection to BED's distribution circuit (upgraded to 3 phase power) located on Starr Farm Rd. See *Attachments B and C – Site Plan and Equipment Specs*.

Other Project Components

A 24 foot x 48 foot maintenance "shed" will be constructed at the northwest corner of the site. The building will be used to store maintenance equipment and as a staging area for any service work that, from time to time, may need to be performed on the system. The location of the maintenance building is depicted on the site plan. In addition, a driveway and small parking area are also proposed to be constructed near the maintenance barn so that service personnel will not have to park on Sunset Cliff Road. Lastly, an information kiosk containing information

about the system is proposed to be located at the northwest corner of the site to provide invitees with an opportunity to view the Project.³

The solar arrays and other equipment will be surrounded by a 6-foot high wire mesh fence that is consistent with fencing at other Vermont solar projects and satisfies the National Electrical Code. *See Attachment C, sheet 9.*

Construction and Operation

Project construction is expected to take approximately 16 weeks. The general sequence of construction will be as follows: The first phase of construction will include the clearing of the treed area sited for panel installation. Soils in the upland area will be rehabilitated to enhance their capacity to infiltrate stormwater runoff. After clearing, a gravel access road to the inverter locations will be constructed and underground 3-phase primary wiring will be installed to the point of interconnection with BED. The second phase of construction will involve construction of the array support structures. The final phase of the construction will involve installation of the solar modules, placement of the inverter enclosures, and wiring to the enclosures. Following completion of these activities, the system will be tested and commissioned for operation.

The Project incorporates low-impact design characteristics including:

- Impervious surfaces will be limited to a 12-foot wide gravel access road, maintenance shed and parking area.
- Solar array support structures in the wetland areas will be pile driven causing very limited soil disturbance.
- Native soils will remain in place. Forested areas to be cleared will be tilled and the soils amended to improve infiltration rates. The areas beneath and around the arrays will remain vegetated, although the land inside the fence (and a 10 foot strip outside) will be routinely mowed.
- Tree clearing and pruning will be the minimum needed to avoid shading of the solar panels.

Daily access to the array is not required. The solar array production will be monitored remotely, with technicians dispatched to the site on only an as-needed basis.

Site Access and Equipment Delivery

The Project will be accessed from North Avenue to Starr Farm Road and then onto Sunset Cliff Road to the site parcel. The service road through the solar arrays will provide access to the two inverter/transformer enclosures.

³ SFS intends, on occasion, to invite schools and other interested persons and organizations to visit the site.

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South Forty Solar Farm – 45 Day Notice Letter

March 5, 2014

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The solar panels and rack components will be shipped on pallets, typically delivered by standard tractor-trailer truck. SFS expect approximately 20 (+/-) truckloads will be needed to deliver the solar panels and racks over a 6-week period. In addition, the two inverter enclosures with transformers will be delivered by tractor-trailer after the solar array is installed. All other equipment and material including wire, cable, conduit, etc., will be transported to the site utilizing standard-width trucks.

Construction equipment for installing electrical conduit and the solar array will likely include a tire or track mounted excavator and a small pile driver to install the foundation posts. A crane will be used for placement of the two inverter/transformer stations.

2. Project Benefits

The South Forty Solar Farm's owner, South Forty Solar, LLC, a Vermont limited liability company, has entered into a long term (25 year) power purchase agreement to sell 100% of the Project's output to BED. This will provide the city with a long term energy source at stable prices, serving its electrical needs by supplying approximately 3,750,000 kWhs of solar power annually. The Project will also benefit the broader Vermont economy in other ways: by the payment of municipal and education taxes, by employing Vermont businesses for the development work, and, where commercially feasible, by purchasing Project equipment from Vermont companies and by employing Vermont businesses for construction, installation, and maintenance work.

The solar energy produced by the Project will result in substantial environmental benefits. BED has established the goal of increasing its supply of renewable energy sources in order to lower greenhouse gas emissions and provide stable long-term rates. The Project will support achievement of that goal and is in conformance with BED's approved 2012 Integrated Resource Plan. Likewise, the Vermont Legislature has set a goal for the state to receive 20% of its electrical energy from new renewable resources by the year 2017. The solar energy produced by this Project will result in less electricity needed in the New England region from plants that use fossil fuel or nuclear energy. It will produce no emissions, and thus will help in a small but measureable way to reduce global warming, acid rain, and the negative public health effects associated with the use of fossil fuel and the waste storage challenges presented by nuclear energy production.

3. Preliminary Impact Assessment

SFS has employed a team of engineers and environmental and energy consultants with substantial experience with projects of this type. Based upon their assessment of conditions at this site, as well as work on other similar solar projects, SFS submits that the Project has been planned so that it will not cause undue adverse impacts to environmental resources, public health and safety, or aesthetics.

The solar array area is planned to be located on approximately 18.5 -acres at the northern portion of the property which consists predominantly of open field and upland forest. Approximately 8 acres of trees and 3 acres of shrubs will be cleared to allow placement of the solar panels and equipment. An additional clearing extent area (shrub management zone) is necessary beyond the fence line to allow for adequate solar gain. An additional selective tree height management zone within the designated 50 foot natural communities buffer is needed to allow for maintenance of optimal solar generation. *See Attachment B.*

The solar array racks are installed using driven piles,⁴ a practice allowed under federal wetlands regulation). A State of Vermont Wetlands Permit is necessary for a small amount of wetland impact and for forest clearing within parts of the wetlands and the wetlands buffer. SFS has submitted its wetlands permit application to the Vermont Agency of Natural Resources. The application includes a vegetation management plan to regulate maintenance activities within the shrub management zone and the wetland/natural community buffer area.

To avoid and minimize environmental impacts, the project has been designed as follows:

- No earth moving, grading or excavation will be required in the wetlands or buffer zone.
- Solar array support structures and inverter enclosure foundations will be pile-driven steel to eliminate the need for concrete footings and foundation excavation in the wetlands and buffer zone.
- Electrical conduit will be run above grade in the wetlands and buffer zone.
- Accepted erosion control measures will be used to minimize the amount of sediment discharged to the wetlands.
- Soil restoration measures will be implemented in uplands to increase their capacity to retain rainfall and reduce both the peak rate and volume of stormwater leaving the site.
- The rare wetland natural community (Wet Sand-Over-Clay Forest) on the project parcel will not be impacted by the Project. In addition, because this natural community currently contains a variety of invasive species, SFS is proposing to perform invasive species control in this area.
- Clearing of forest vegetation in wetland limited to approximately 0.5 acres within wetlands and 0.9 acres of wetlands buffer. Direct impacts to wetlands limited to approximately 84 square feet of wetlands and 6 square feet of wetlands buffer.
- No undue adverse impact on the quality of wildlife habitat. A wildlife study and an avian habitat study found that wildlife species on this site are common and typical of that found

⁴ Based on Public Service Board requirements, the piles and all other project infrastructure will be removed at the time the Project is decommissioned.

in a suburban environment. The Vermont Wetlands Program has indicated that the wetlands on the site rate low for the wildlife function.

An operational stormwater permit (General Permit 3-9015) is not required for the project because the total amount of impervious surface proposed is under the jurisdictional threshold of one acre. A Construction General Permit (General Permit 3-9020) will be obtained as more than one acre of earth disturbance is anticipated. During construction, stormwater Best Management Practices will be implemented in accordance with ANR guidelines.

The Project will meet the safety standards of the National Electrical Code and utility interconnection standards for safe and reliable operation of solar electric plants. The Project will not impose undue burdens on fire, police, or water/sewer services.

Electrical – System Impact Study

A System Impact Study will be completed by BED. BED has created an initial interconnection and facility plan for the Project that indicates the existing single phase power line along Sunset Cliff Road will need to be upgraded to 3-phase power conductors that tie into existing 3-phase power at the corner of Starr Farm Road and Curtis Avenue.

Aesthetics

A preliminary visual assessment was conducted by the S.E. Group. S.E. Group's assessment indicates that the site is well suited to support the Project with minimal impact to nearby areas. If more extensive impacts are found to exist after review of the design presented to the PSB, the site and surrounding landscape lend itself to effective mitigation measures such as landscaping, context-appropriate fencing and inverter screening. A full aesthetics analysis will be included with the Section 248 Petition. The preliminary visual assessment is included as *Attachment D*.

The projected sound levels produced by the Project will meet noise guidelines/standards adopted by the USEPA, the WHO, and the Public Service Board. The estimated sound levels affecting the nearest residence to any of the noise producing components (645 feet in a northeasterly direction) would be 20 dBA (+/-). This low sound level is likely to be the same or lower than daytime background levels in the area.

On-Site Alternatives

SFS has entered into a PPA with BED to provide power from the Project. This is the only property owned or controlled by SFS that can satisfy the commitment under the PPA. Once the site was selected, SFS and its consultants reviewed various configurations within the parcel in order to minimize and avoid environmental, aesthetic, and other impacts while maintaining a viable project with minimal shading. The proposed configuration utilizes a low-impact design and locates the solar array so as to avoid sensitive environmental resources.

4. Expected Petition Filing Date with Vermont Public Service Board

SFS intends to file a Section 248 Petition and supporting materials with the PSB soon after the 45-day notice period expires, estimated in mid-April. Once the Section 248 Petition is filed, SFS would request the Board schedule any hearings and other necessary steps in the proceedings in time to render a decision by the fall of 2014. This schedule will allow the Project to be constructed and operational in 2015.

5. Municipal and Regional Planning Commissions' Comments to the Vermont Public Service Board

Under 30 V.S.A. Section 248(f), municipal and regional planning commissions "shall make recommendations, if any, to the Public Service Board and to the petitioner at least 7 days prior to filing of the petition with the Public Service Board." In addition, the planning commissions are entitled to provide revised recommendations "within 45 days of the date on which petitioner has filed a petition with the Board if the petition contains new or more detailed information that was not previously included in the petitioner's filing with the municipal and regional planning commissions pursuant to Section 248(f)." *See PSB Rule 5.402(A)(2).*

For additional information regarding this process, including your planning commission's right to participate in the Board proceeding, please refer to the "Citizens' Guide to the Vermont Public Service Board's Section 248 Process," which can be found by navigating to <http://psb.vermont.gov/sites/psb/files/publications/Citizens%27%20Guide%20to%20248%20February%2014%202012.pdf>.

Thank you for your attention to this matter. We look forward to progressing through the Section 248 process and welcome your input and suggestions to make this a successful Project.

Sincerely,

SOUTH FORTY SOLAR, LLC

By: Jericho Management Company, LLC, Manager



Frank von Turkovich, Managing Member



LAKE CHAMPLAIN



Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AEX, Getmapping, Aerotid, IGN, IGP, swisstopo, and the GIS User Community



TRUETT CONSULTING ENGINEERS
802.879.6331 www.tcevt.com



Legend
Project Parcel

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Notes
Source: Bing aerial photography (2012);
VT 911, Esri (2011);
Project Parcel by TCE (2013).
Disclaimer: The accuracy of information presented is determined by its sources; TCE is not responsible for any errors or omissions that may exist. Questions of on-the-ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not a replacement for surveyed information or engineering studies.

South Forty Solar Farm
Sunset Cliff Road
Burlington, VT
Location Map

Project: 2013113
Prepared By: LMJ
02/21/14
1 Inch = 500 Feet



TRUDELL CONSULTING ENGINEERS
478 BLAIR PARK ROAD | WILSTON, VERMONT 05495
802.879.4331 | WWW.TCEVT.COM

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- Use of These Drawings
1. Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such.
 2. Only drawings specifically marked "For Construction" are intended to be used in conjunction with contract documents, specifications, owner/contractor agreements and to be fully coordinated with other disciplines, including but not limited to, the Architect, if applicable. These Drawings shall not be used for construction layout. Contact TCE for any construction surveying services or to obtain electronic data suitable for construction layout.
 3. These Drawings are specific to the Project and are not transferable. As instruments of service, these drawings, and copies thereof, furnished by TCE are its exclusive property. Changes to the drawings may only be made by TCE. If errors or omissions are discovered, they shall be brought to the attention of TCE immediately.
 4. By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings and have met with all applicable parties/disciplines to insure these plans are properly coordinated with other aspects of the Project. The Owner and Architect are responsible for any buildings shown, including an area measured a minimum five (5) feet around any building.
 5. It is the User's responsibility to ensure this copy contains the most current revisions.



Project Title
**South Forty Solar Farm
Sunset Cliff Road
Burlington, Vermont**

Sheet Title
Overall Site Plan

Date: 02/24/2014
Scale: 1" = 40'
Project Number: 2013113
Drawn By: RMP
Project Engineer: JMM
Approved By:

C2-01



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Not for Construction

L.W. SEDDON, LLC
13 Bailey Ave.
Montpelier, VT 05602 USA
Tel: 802-272-7284

Client:
South Forty Solar, LLC
300 Swift St.
S. Burlington, VT 05403

Project:
South Forty Solar Farm
Sunset Cliff Rd.
Burlington, VT 05401

AC Capacity: 2.5 MW/AC
Array Size : 3.34 MW/DC
Annual Output = 3,750 MWH
Module: 300 Watts
Mounting: driven pile
Module tilt: 30 degrees
Azimuth: 180 degrees (True)

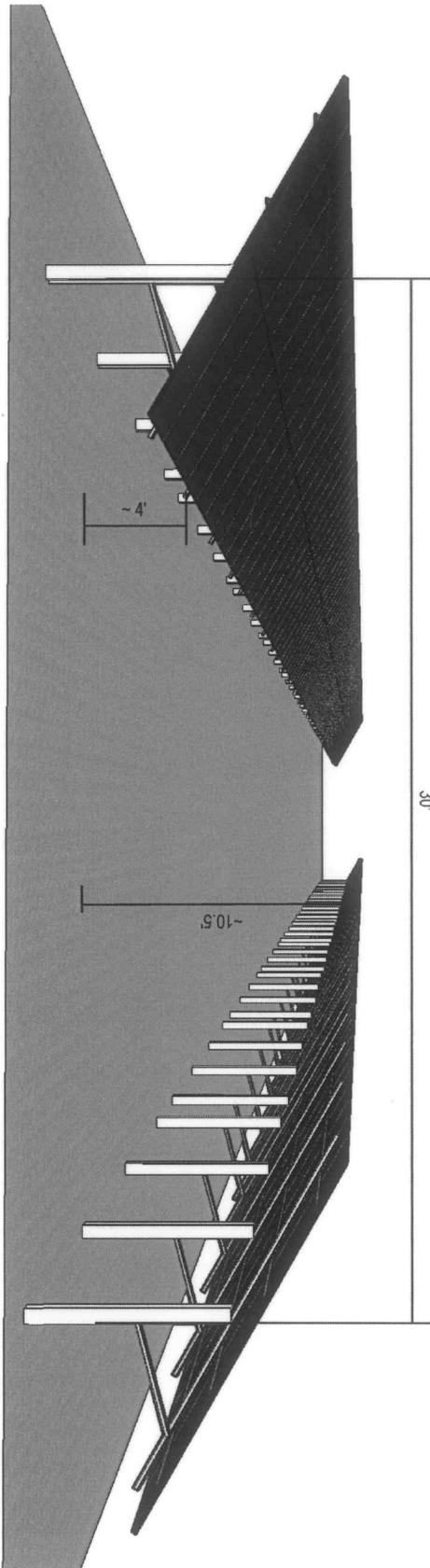
Vers	By	Date	Changes
1	LWS	21-Feb-2014	

This document is the property of L.W. Seddon, LLC. It is intended for the sole use of the Customer and Project indicated in the title block. It is privileged and confidential information that may not be used, reproduced, disseminated or transferred in any manner, without written permission of L.W. Seddon, LLC.

Drawing:
PV-A03

Description:
Array Elevation, Typical

Scale:
none



Typical Rack Height & Row Repeat Distance

156 Series Polycrystalline Solar Module

300W, 305W, 310W



High Module Conversion Efficiencies



Easy Installation and Handling for Various Applications



Mechanical Load Capability of up to 5400 Pa



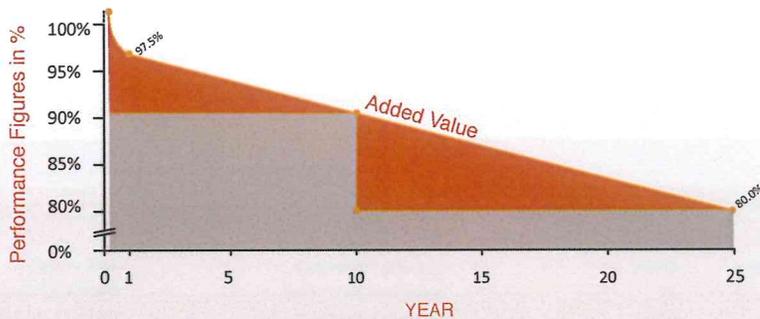
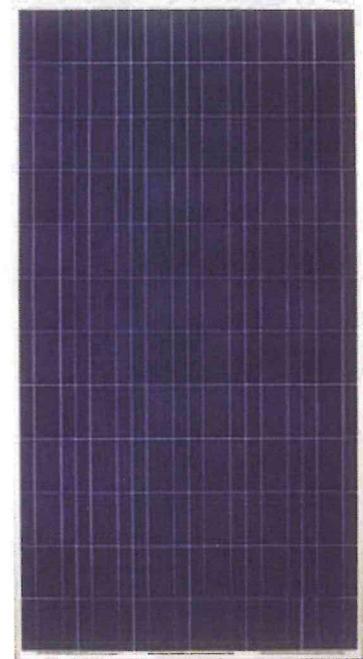
**Conforms with IEC 61215:2005,
IEC 61730: 2004, UL 1703 PV Standards**



ISO9001, OHSAS18001, ISO14001 Certified



Application Class A, Safety Class II, Fire Rating C



10-year
material & workmanship

25-year
linear power output



APPROVED PRODUCT

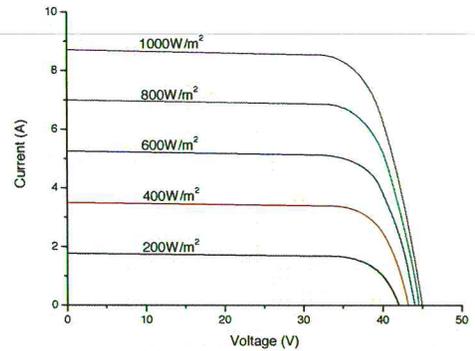


Dimensions



Drawing Only for Reference

I-V Curves



Varied Irradiation Efficiencies

Irradiance	200W/m ²	400W/m ²	600W/m ²	800W/m ²	1000W/m ²
Efficiency	15.8%	16.2%	16.2%	16.1%	16.0%

Electrical Characteristics STC

	JC300M-24/Ab	JC305M-24/Ab	JC310M-24/Ab
Maximum Power (Pmax)	300 W	305 W	310 W
Power Tolerance	0 ~ +5W	0 ~ +5W	0 ~ +5W
Module Efficiency	15.5%	15.7%	16.0%
Maximum Power Current (Imp)	8.20 A	8.33 A	8.38 A
Maximum Power Voltage (Vmp)	36.6 V	36.6 V	37.0 V
Short Circuit Current (Isc)	8.69 A	8.73 A	8.80 A
Open Circuit Voltage (Voc)	44.8 V	44.9 V	45.0 V

Values at Standard Test Conditions STC (Air Mass AM1.5, Irradiance 1000W/m², Cell Temperature 25°C)

Electrical Characteristics NOCT

	JC300M-24/Ab	JC305M-24/Ab	JC310M-24/Ab
Maximum Power (Pmax)	222 W	226 W	230 W
Maximum Power Current (Imp)	6.67 A	6.72 A	6.80 A
Maximum Power Voltage (Vmp)	33.4 V	33.6 V	33.8 V
Short Circuit Current (Isc)	7.02 A	7.04 A	7.10 A
Open Circuit Voltage (Voc)	41.9 V	42.0 V	42.1 V

Values at Normal Operating Cell Temperature, Irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s

Mechanical Characteristics

Cell Type	156 x156 mm Polycrystalline, 72 (6x12) pcs in series
Glass	High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP65/IP67 rated, with bypass diodes
Dimension	*77 x 39.1 x 2 inches
Output Cable	12 AWG, 47.2 inches
Weight	63.9 lbs
Installation Hole Location	See Drawing Above

Characteristics

Temperature Coefficient of Voc	-0.30%/°C
Temperature Coefficient of Isc	0.04%/°C
Temperature Coefficient of Pmax	-0.40%/°C
Nominal Operating Cell Temperature (NOCT)	45°C±2°C

Packing Information

Container	20' GP	40' GP	40' HQ
Pallets per Container	10	24	24
Pieces per Container	200	480	528

Maximum Ratings

Operating Temperature	-40°F ~ + 185°F
Maximum System Voltage	1000VDC (EU) / 600VDC (US)
Maximum Series Fuse Rating	20A (EU) / 20A (US)

Rev. No: KC/TDS/2013.02 *Contact ReneSola for tolerance specification
CAUTION: All Rights reserved. Design and specification are subject to change without prior notice.

FS System

Features and Benefits

- ETL Listed
- High level of pre-assembled parts
- Proven extremely short installation time
- High quality and sustainable materials
- Easily accessible for ground and system maintenance
- Included certified engineering by professional engineer licensed in the location of the project
- Included soil tests and pull out tests on systems larger than 250 kW
- Options for in field adjustment, if needed

The Schletter FS Racking System has a proven worldwide product and installation history, with over 6 GW of ground mounted installations installed throughout the world with many FS installations ranking among the largest globally. Project specific system calculations and optimized material utilization address the ever increasing pressure to reduce costs in planning PV systems, taking into account balance of system (BoS). Complete structural calculations are provided for system design, while assuring compliance with current building codes and regulations.

With this established history and experience in ground mounted PV installations, the latest generation of the FS System offers a culmination of experience and the highest level of in-house pre-fabrication to date, while always maintaining the focus of making the overall cost of a PV system more competitive. **The result is an attractive system installed quickly, efficiently, and with the durability to last.**

Schletter stands behind the quality, durability, and functionality of its products and services its customers with professionalism. Because of our commitment to customer satisfaction, all Schletter systems have a voluntary 10-year warranty.

For more information, please visit www.schletter.us or call (520) 289-8700.





Technical Data

Material	<ul style="list-style-type: none"> Fastening elements, bolts: Stainless steel 304 and 316 Profiles (rails): Aluminum alloy 6105 T5 High life-expectancy, high residual value, no disposal costs Pile driven support posts: Steel, hot-dip galvanized with a G235 process <ul style="list-style-type: none"> - Easy plant re-powering due to modular design
Logistics	<ul style="list-style-type: none"> Quick and simple mounting Maximum level of prefabrication prior to shipment
Construction	<ul style="list-style-type: none"> Can be installed on uneven terrain Simple adjustment options Cost optimized configurations for framed and unframed modules
Accessories	<ul style="list-style-type: none"> Cable channels, cable ducts Components for potential equalization/grounding Clamps for every type of module Fastening systems for large laminate modules (OptiBond system)
Calculations	<ul style="list-style-type: none"> 100% code compliant designs for any locality Third-party structural PE, stamped drawings and calculations Individual system structural calculations based on geotechnical report Individual system design calculations based on regional load values Design loads according to IBC 2006 or 2009 Patented profile geometries with optimum material utilization Verification of all construction components based on FEM-calculation Earthquake simulation, optional
Available Third-Party Services	<ul style="list-style-type: none"> Geotechnical soil investigation and analysis Ramming of foundations Optional: rack mounting Optional: complete module mounting EPC services PPA formation
Terrain maintenance	<ul style="list-style-type: none"> Simple terrain maintenance due to single support <ul style="list-style-type: none"> - Specification of module height above ground possible
Grounding, Potential equalization	<ul style="list-style-type: none"> Grounding options available Components for the internal potential equalization
Warranty and Certifications	<ul style="list-style-type: none"> 10-year warranty, optional 20-years



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PowerStation™ TX

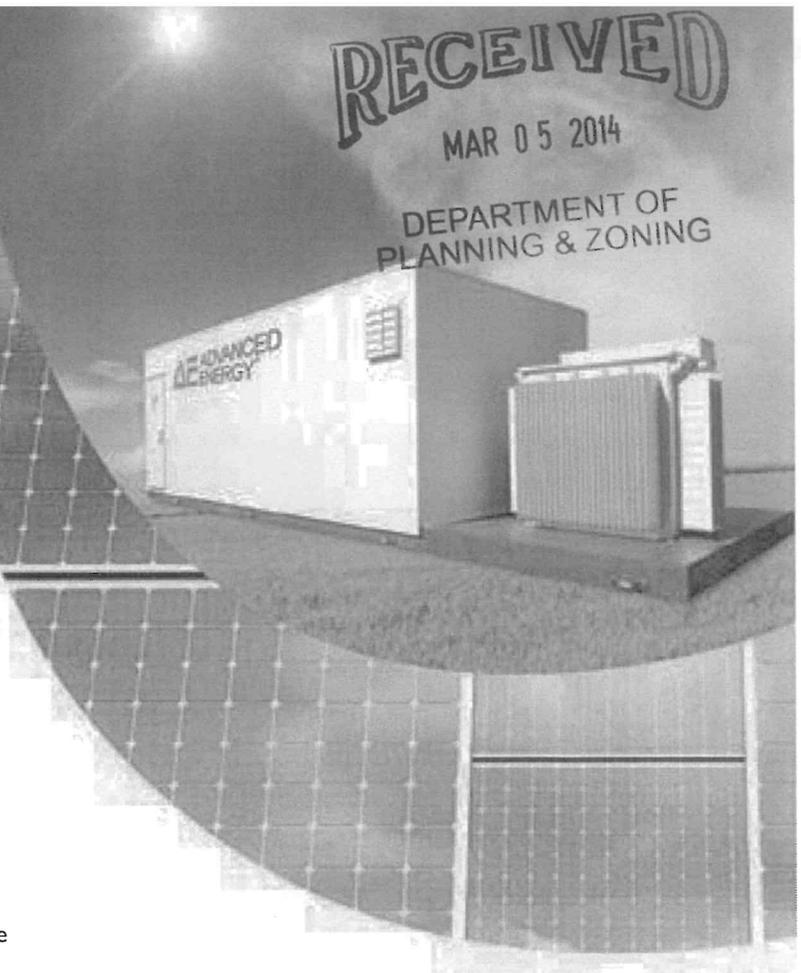
Turnkey Integration Solution for MW-Scale Projects

The PowerStation TX from Advanced Energy is a fully integrated power conversion solution for MW-scale PV projects that accepts PV DC inputs and provides medium voltage AC output. The PowerStation TX is built around the Advanced Energy line of TX inverters which offer exceptional reliability and a 20+ year operating life. The PowerStation TX also offers industry-leading efficiency by combining a high efficiency medium voltage transformer with Advanced Energy's high efficiency inverters. This combination of reliability, long life, and optimized energy harvest makes the PowerStation TX the right choice to maximize return on investment in large PV systems.

The pre-wired, outdoor-rated solution reduces project engineering costs, accelerates project schedules, and significantly decreases the cost of on-site labor and installation. The entire package is designed to be pier mounted to further simplify installation. Pad mounting is also available on certain configurations.

The PowerStation TX includes inverters, medium voltage transformer, auxiliary power, and other customer components such as data monitoring and control equipment, all pre-wired and factory tested. The pad mount transformer with integrated medium voltage switch is a compact and cost-effective choice that enables low-cost loop-feed installations and minimizes the need for individual pieces of medium voltage switchgear. The flexible design offers several configuration options to meet local utility requirements and installation preferences.

AE's integrated TX inverters are backed with an industry leading 10-year nationwide warranty with optional, comprehensive 20-year warranty. The balance of the solution carries a 1-year warranty with option to extend to five years. The complete PowerStation TX is supported by the most responsive service and support team in the business.



System Optimization and Management

- Full system application engineering support
- Leverage AE's strategic partnerships with equipment suppliers and integrators
- Single point of contact for project coordination and management
- Job specific composite drawings and project documentation

Superior Reliability

- Low inverter parts count reduces potential failure points
- Increased availability with >99% monitored fleet availability
- Redundant cooling system with Smart Air Management™
- Card cage circuit board system minimizes electronic interconnections and enables fast service
- Complete PowerStation TX solution factory pre-wired and tested, reducing potential for errors

Significant Financial Benefits

- Factory installation and wiring greatly reduces field labor
- Optional pier mount installation reduces pad costs and simplifies conduit entry
- High efficiency and long service life maximize energy harvest every day for 20+ years
- Integration solution reduces project management, engineering costs, and shortens project construction cycle
- Optional enclosure protects from vandalism without additional fencing or other on-site construction

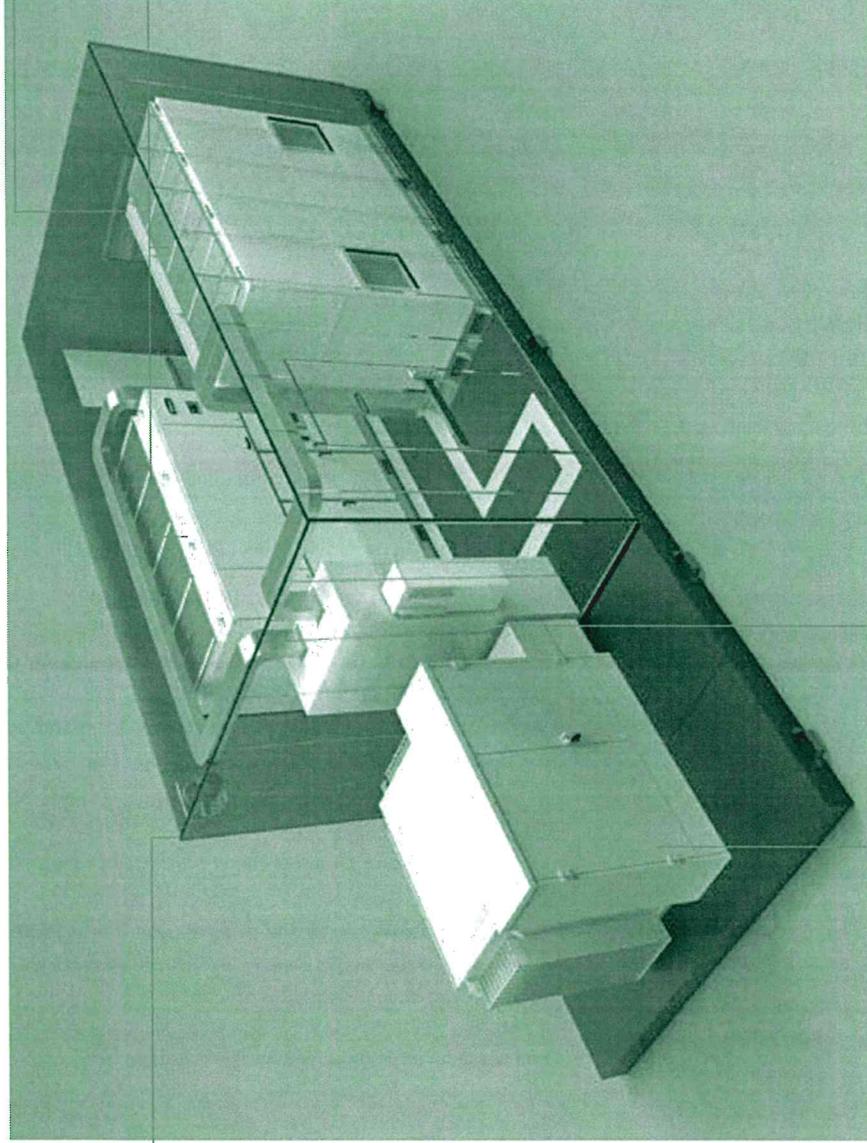
PowerStation™ TX

PowerStation™ TX Solution

- Fully assembled, pre-wired, tested, and ready to connect
- Includes inverters, medium voltage transformer, distribution switchboard, auxiliary power, and other custom components required to meet job specific requirements
- Open and enclosed options available

Monitoring and Communications (Optional)

- Revenue grade metering
- Subcombiner monitoring
- Central communications box for single point access to all PowerStation data
- All control wiring from inverters and monitoring devices to central comm box, factory installed and tested
- Power supply, RS485 port, and Ethernet switch included for easy connection to SCADA or third party monitoring system



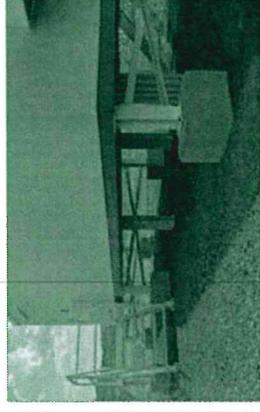
- Inverter Smart Air Management™ complements the PowerStation TX cooling system
- Enclosure heat removed using a high-efficiency exhaust fan

- Shown with (2) 500 kW Commercial Inverters*
- Separate DC in to each inverter
- 97% CEC Efficiency
- 310-600 Volt MPPT Range

* Additional inverter configurations available

Pier Mount

- Easy access to AC and DC conduits simplifies installation
- Eliminates need to grade and level pad site and stub in conduit
- Reduces installation time and expense
- Pad mount option available for some configurations



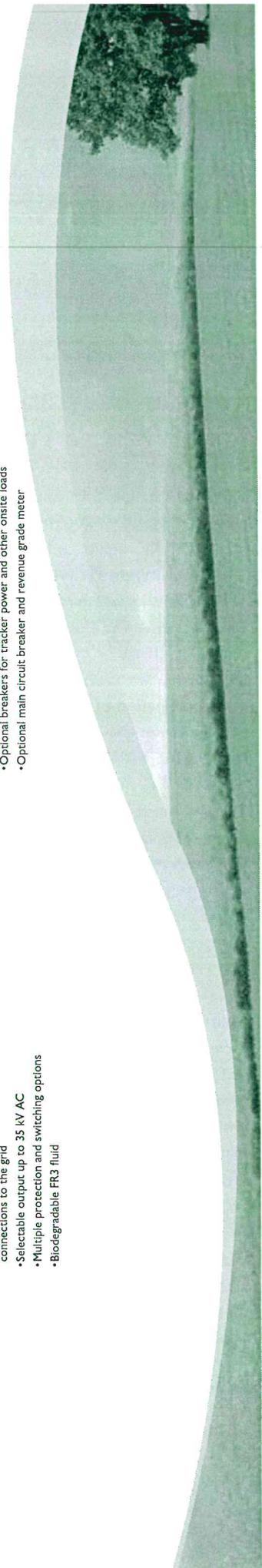
Pier mount PowerStation™ TX

Switchboard

- 480/277 V 3 phase, 4 wire
- Inverters are pre-wired to the switchboard and combined into single output to transformer
- Optional breakers for tracker power and other onsite loads
- Optional main circuit breaker and revenue grade meter

Medium Voltage Step-up Transformer

- Integrated medium voltage load-break switch
- Loop feed to minimize medium voltage connections to the grid
- Selectable output up to 35 KV AC
- Multiple protection and switching options
- Biodegradable FR3 fluid



ENVIROTEMP® FR3™ FLUID

DESCRIPTION

Envirotemp® FR3™ fluid is a Fire Resistant Natural Ester based dielectric coolant specifically formulated for use in distribution transformers where its unique environmental, fire safety, chemical, and electrical properties are advantageous.

Envirotemp FR3 fluid is formulated from edible seed oils and food grade performance enhancing additives. It does not contain any petroleum, halogens, silicones or any other questionable material. It quickly and thoroughly biodegrades in both soil and aquatic environments. The fluid tested non-toxic in aquatic toxicity tests. It is tinted green to reflect its favorable environmental profile.

Envirotemp FR3 fluid has an exceptionally high fire point of 360°C and flash point of 330°C. It has the highest ignition resistance of less-flammable fluids currently available. It is referred to as a High Fire Point or "Less-Flammable" fluid, and is Listed as a Less-Flammable Dielectric Liquid by Factory Mutual and Underwriters Laboratories for use in complying with the National Electric Code® (NEC®) and insurance requirements.

Envirotemp FR3 fluid is compatible with standard transformer insulating materials, components and with fluid processing equipment and procedures. It demonstrates improved thermal characteristics with a viscosity closer to conventional transformer oil, superior dielectric strength in new and continued service applications, and excellent chemical stability over time.

Because of its excellent environmental, fire safety and performance characteristics applications for Envirotemp FR3 fluid have expanded into a variety of other equipment, including sectionalizing switches, transformer rectifiers, electromagnets, and voltage supply circuits for luminaries. Other potential applications under study include voltage regulators, high voltage cables, and power substations. The fluid is also used in retrofill applications for other fluid filled distribution equipment.

TYPICAL INITIAL ENVIROTEMP FR3 FLUID PROPERTIES

Property	Value	Test Method
<i>Electrical</i>		
Dielectric Strength	56 kV @ 25°C (0.080" gap) 47 kV @ 25°C	ASTM D1816 ASTM D877
Relative Permittivity [Dielectric Constant]	3.2 @ 25°C	ASTM D924
Dissipation Factor [Power Factor]	0.05% @ 25°C	ASTM D924
Volume Resistivity	30 X 10 ¹² Ω-cm @ 25°C	ASTM D1169
Impulse Strength (Sphere to Sphere)	226 kV @ 0.15" gap	ASTM D3300
Gassing Tendency	-79 (µL/min.)	ASTM D2300
<i>Physical and Chemical</i>		
Specific Gravity	0.92 @ 25°C	ASTM D1298
Interfacial Tension	27 mN/m @ 25°C	ASTM D971
PH	5.8	EPA 9045C
Neutralization (Acid) Number	0.022 mg KOH/g	ASTM D974
Kinematic Viscosity	33 cSt @ 40°C 8 cSt @ 100°C	ASTM D445
Moisture Content	20 mg/kg	ASTM 1533B
Percent Saturation of Moisture	1 - 2%	CPS Method
Air Solubility	16% @ 25°C @ 1 atm.	ATSM D2779
Appearance	Clear, Light Green	ASTM D1524
Color	L 0.5	ASTM D1500
<i>Thermal</i>		
Flash Point (Closed Cup)	316°C	ASTM D93
Flash Point (Open Cup)	330°C	ASTM D92
Fire Point (Open Cup)	360°C	ASTM D92
Pour Point	-21°C	ASTM D97
Thermal Conductivity	4.0 X 10 ⁻⁴ cal/(cm • sec • °C) @ 25°C	CPS Method
Specific Heat	0.45 (cal/gm/°C) @ 25°C	ASTM D2766
Coefficient of Expansion	7.4 x 10 ⁻⁴ /°C @ 25°C	CPS Method
Heat Capacity	2.10 @ 50°C 2.39 @ 100°C	ASTM E1269
<i>Environmental Properties</i>		
BOD/COD Ratio	45%	APHA SM5210B
Aquatic Biodegradation	100%	EPA OPPTS 835.3100
Acute Toxicity to Trout Fry	Zero Mortality to Test End Point	OECD G.L. 203

The typical properties shown above are for new fluid prior to factory shipment. These properties are subject to change without notice. Contact CPS Dielectric Fluids Products for recommended acceptance values. Ask for Envirotemp FR3 fluid Specification Guideline, Bulletin 97080.

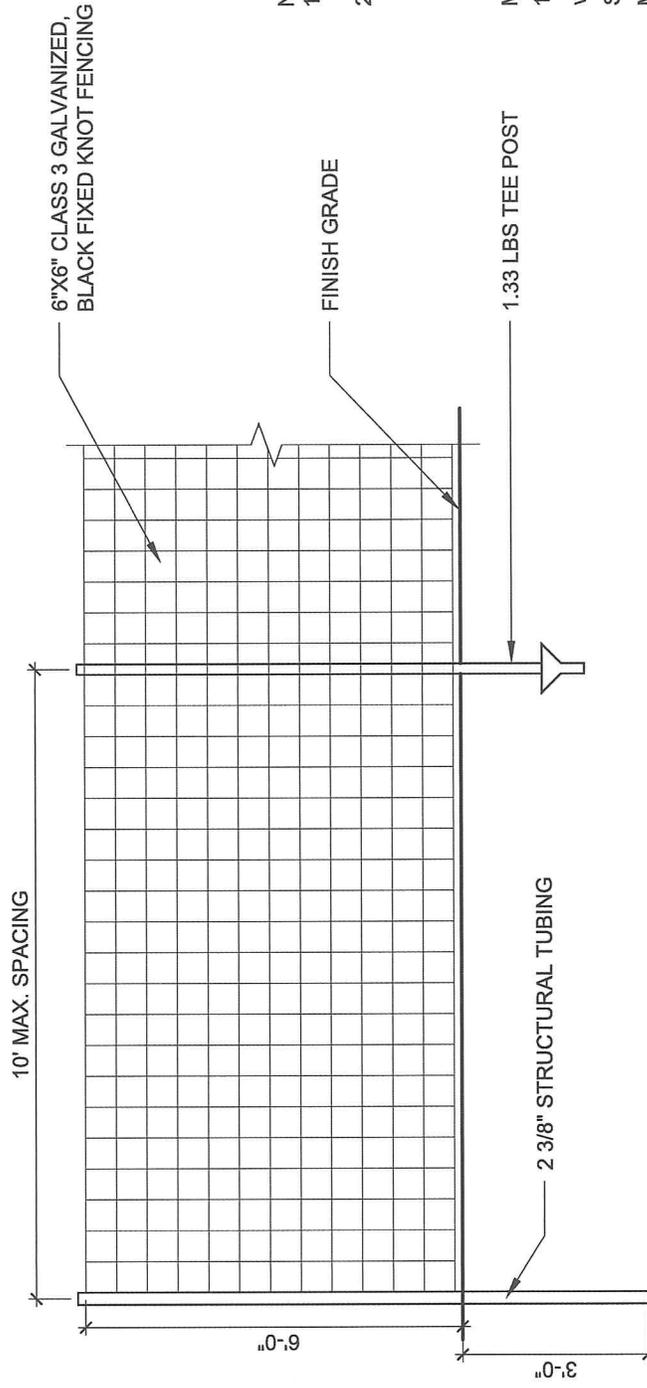
Bulletin 00092
Product Information
June, 2001

(Supersedes May, 2001)

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NOTE:
1. ALL FENCING COMPONENTS TO BE
BEZINAL + PAINT ADVANCED COATED.
2. INSTALL PER MANUFACTURER'S
RECOMMENDATIONS

MANUFACTURER: BEKAERT
1-800-241-4126
www.fencing.bekaert.com
Solidlock - Fixed Knot Game Fence
MODEL: 136261
COLOR: BLACK

6' Solidlock FENCE

SCALE 1/2" = 1'-0"

d-6' Solidlock fence.dwg

South Forty Solar Project Preliminary Aesthetics Assessment for 45 Day Notice Letter

Pursuant to the Section 248 review of energy generation and transmission projects, a preliminary analysis of potential visual and aesthetic impacts of the proposed South Forty Solar Project (“Project”) has been completed by SE Group of Burlington, Vermont. The purpose of our analysis was to evaluate the “fit” of the Project relative to its scenic context and whether it poses an undue adverse impact on aesthetics.

Description of the Project

The Project site is a 39.2 +/- tract of land within the City of Burlington located on Sunset Cliff Road (a private road). The direct footprint of the solar array will occupy approximately 18.5 +/- acres of the property. To the southwest of the property are residential and common area uses associated with the Strathmore neighborhood, while to the east are residential uses associated with Curtis Avenue. Residential areas to the south (also Strathmore) are separated by an existing wet sand-over-clay forest. On the northwest side of the property are seasonal camps situated along the shore of Lake Champlain, but separated from the property by an undeveloped buffer of trees and fields. Finally, the Sunset Cliff neighborhood, consisting of seasonal and single family homes is located to the west, separated from the Project area by heavily treed acreage.

The property is located on a semi-rural part of Burlington, part of its New North End, close to the border with Colchester. The property was part of the original farm assembled by John J. Flynn in the early 1900’s and remained in agriculture or open land as recently as the 1970’s. The Strathmore development, consisting of single family and multifamily housing was developed in the 1990’s. As noted above, a substantial amount of the land in the immediate vicinity of the property (southern and western sides) remains undeveloped or sparsely populated.

At present the property is approximately 75% forested with a combination of mixed-hardwoods (mostly successional) in the northeastern quadrant and wet sand-over-clay forest on the southern half of the land. The open lands within the property are mostly associated with a wet meadow whose vegetation is dominated by small deciduous shrubs and grasses. Topographic grades on the property range from a low of 120 feet at the southwest corner to about 142 feet at a “high point” in the interior of the site. This minimal change in grade across the site gives it a rather “flat” appearance. The property and surrounding areas are shown along with the project limits on **Figure 1**.

The Project will consist of a solar field comprised of 506 +/- solar arrays (the structures that hold the individual solar panels at a fixed position to the sun), set on driven steel piles that place the bottom of the arrays at approximately 48” above existing grade. Setting this height allows the array to shed snow without creating

buildup on the ground that might compromise energy production. Each array is angled at 30 degrees and oriented towards solar south. These arrays will be located in rows set at a sufficient distance apart to minimize shading. The entire solar field will be fenced. The location of the solar field is illustrated on the site plan, **Figure 2**.

Individual solar panels comprising each array are mounted on a rack system. Given the mounting angle and with the bottom elevation at 48" above existing grade, the maximum height of a panel would be approximately 10'-6" above ground surface. The solar cells in each panel are dark blue in color and the panel glass is treated with an anti-reflective (AR) coating that lowers the overall reflectivity of a typical panel to below 5%, well below the reflectivity of surrounding vegetation.

The Project's inverters (converting DC to AC) will be enclosed within two pre-fabricated enclosures (PowerStations) located within the array rows. These enclosures are set on driven steel piles and reach a maximum height of approximately 11'-6". The Project's transformer(s) (stepping up the voltage to interconnect with the Burlington Electric Department line) will be located on the PowerStation deck adjacent to the inverter enclosure. In areas outside of the wetlands and its 50 foot buffer zone, the electrical and data monitoring lines from the array to the inverter will be buried in conduit. In areas delineated as wet meadow or buffer zone, the conduit for electrical and monitoring lines will be placed above ground on the array rack system.

In addition to the above, the Project will include a maintenance building (approximately 24'x 48' and 27' tall), a small parking area, and an informational kiosk. The maintenance building is designed as a barn-like structure which will house the equipment needed to mow and maintain the property and array. The parking area is primarily intended for the periodic use of service vehicles for the Project, but will also provide a convenient place for the Project developer to allow community schools and other interested persons and organizations to visit the site and view the informational kiosk. Information displayed in the kiosk will explain the production of energy from the facility.

The perimeter of the array will be surrounded by a cedar-post knotted mesh style fence, 6 feet in height. This fencing has been used extensively at other solar installations in Vermont and, when placed on cedar posts, maintains a more "agricultural" appearance.

Preliminary Visual Assessment

To initiate our preliminary visual assessment, SE Group conducted a field reconnaissance to the Project site in January 2014. During this visit we observed the Project setting relative to the proposed design and took photographs from various vantage points to help us better understand the visual context and potential impacts. The locations of these photographs are shown on Figures 1 and 2. Our primary objective during this visit was to identify potential viewshed "zones" in and around the

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Project. A viewshed zone is an area that, based on the Project's design and landscape context, has a potential for visibility of some portion of the Project. We documented three viewshed zones for the Project.

The first zone occurs along a stretch of Curtis Avenue, just south of its intersection with Starr Farm Road. Curtis Avenue is a traditional single-family residential neighborhood composed mostly of two-story "raised ranch" style homes. Approximately eleven (11) of the properties along the western side of Curtis Avenue are adjacent to the Project and may have some visibility into the Project site. At present, areas within the backyards of these residences and along the eastern edge of the subject property are wooded. Photographs A-C on **Figure 3** document the existing observed conditions. Public views from this viewshed zone would be limited by the density of existing residential structures as well as the retained vegetation along the shared property line. Any views from this viewshed would be of the back of the arrays which, given their orientation and spacing, tend to be in shadow, reducing their visual prominence.

The second viewshed zone was identified along the frontage of the Project with Sunset Cliff Road. Sunset Cliff Road, running approximately 1500 feet along the western side of the property is a private road, owned by the developer, and serves a number of year-round and seasonal dwellings located further to the west. At present about 50% of the frontage along Sunset Cliff Road is wooded. About mid-point along the frontage the roadside vegetation thins and views into the property open up. Moving further west, immature trees along the roadway appear and continue towards the northwest property line. Photographs D-F on **Figure 3** document the existing observed conditions in this viewshed zone. Public observation of the Project within this viewshed would be for a relatively short duration given that there are no residences located north of the roadway. A traveler heading either east or west on Sunset Cliff Road would have views into the Project site, but such views would be softened by retained roadside vegetation and additional landscape mitigation measures, if needed. Views heading west would be of the "backs" of the panels. Views heading east would largely see the side "profile" of the arrays given their orientation towards solar south.

The third viewshed zone observed is within the Strathmore neighborhood near the intersection of Nottingham Lane and Muirfield Road. Within this area we identified three private residences and the Strathmore development's outdoor pool/recreation structure. The shared property boundary between the Project and these adjacent residential uses is currently wooded with predominantly deciduous trees and shrubs. Residential plantings, including arborvitae and/or cedar were also observed. Some of these form a dense hedge such as the one surrounding the Strathmore pool complex. Photographs G-J on **Figure 4** document the existing observed conditions. Much of the landscape within these residential areas is mature and effective at softening views into the Project site. The photographs taken were during "leaf-off" condition and, given the density of understory shrubs, we would expect considerably more screening

during the summer months, when the outdoor pool complex would be in use. Retaining portions of this buffering landscape and supplementing it with additional landscape mitigation plantings if needed would limit the Project's visibility in these areas.

Cross-Sectional Analysis

We supplemented this field work by reviewing the Project plans and preparing three representative cross-sections as shown on **Figure 2**. These cross-sections highlight the relative position of components of the Project with respect to the property lines, roadways and/or adjacent residential areas. The purpose of these cross-sections is to better characterize the position of the Project and to illustrate the effect of existing vegetation has on limiting potential visibility. It also provides value in identifying the potential effectiveness of mitigation to lessen any impacts.

Cross-section A is positioned to reflect the conditions between Curtis Avenue and the Project. Again, the Project is set 75 feet back from the shared property line and approximately 120 feet back from the residential structures. A 10 foot area outside of the fencing surrounding the arrays will be mowed for maintenance access. Along the southern side of the Project, an area of approximately 15 feet beyond this mowing area will be part of the vegetation management zone for the Project. Within this management zone, taller trees and/or shrubs will be cleared or trimmed to prevent shading and/or falling limbs. Cross-section A also reflects that substantial areas of trees will be retained within a buffer along the edge property, which is generally more than 30 feet in width. As the array is oriented away from this zone, the retention of taller trees is possible without shading the array. While some additional plantings might be needed behind the neighboring properties on Curtis Avenue, it would likely be only in isolated areas where, following site clearing, natural vegetation is either too thin or unsuitable. Cross-section A is provided as **Figure 5**.

Cross-section B is drawn through Sunset Cliff Road into the Project site. Along the frontage, the setback between the roadway and the arrays ranges from 35 to 80 feet. Within the resulting buffer of 20-30 feet, existing trees of less than 30 feet in height would be maintained and additional trees would be provided as needed to help soften views into the site. The section and associated plan are provided as **Figure 6**.

Cross-section C documents the relationship between the Project and the intersection of Nottingham Lane and Muirfield Road within the Strathmore development. As noted above, this area includes the outdoor pool complex for the development. As the section presents, the array itself will be approximately 85 feet from the shared property boundary, with the Project fence being about 30 feet away. This condition leaves approximately 55 feet within which landscape mitigation (in the form of additional plantings and/or fencing) would be added, if needed, to further minimize visibility of the Project. While the exact composition of mitigation measures has not been determined, the cross-section confirms that even relatively low growing plant

materials would be effective in significantly screening potential Project views. This section and its associated plan are provided as **Figure 7**.

3D Analysis

To help further explore the Project in relationship to its surrounding context, we have prepared three 3D perspective renderings. These renderings were created using a 3D model developed of the Project site and the proposed components (solar arrays, interconnection points, access road, maintenance building, and kiosk) which allows the Project to be viewed from any location, onsite or nearby. To help connect these 3D perspectives with the existing conditions, we chose three locations from which we had taken photographs. In this way, we could match the general perspective of the existing conditions photograph in order to provide context to the modelled views.

The prepared model views also include the use of the cedar-posted wire fencing and the addition of new roadside trees along Sunset Cliff Road. These trees, shown at approximately 25 feet in height, (after some maturation) would be installed along the roadway in areas where proposed clearing is to occur and would align with existing roadside trees observed near the western side of the Sunset Cliff Road frontage (see the right side of Photograph D on **Figure 3**).

The first 3D perspective was taken from location D near the northeast corner of the property near the intersection of Sunset Cliff Road and Curtis Avenue. From this vantage point the Project becomes visible for an observer heading west along Sunset Cliff Road for the first time. An observer would see the maintenance shed, information kiosk, access drive and parking area to the left. The new roadside trees are also shown which soften the views of the array and reinforce the linearity of the roadway as it passes the Project site. The 3D perspective view and corresponding photograph from location “D” is provided as **Figure 8**.

The second 3D perspective simulates the view of the Project from location “F” (See **Figure 2** and Photograph F on **Figure 4**). In this view, the observer is heading to the east along Sunset Cliff Road and would see the array to the right. Existing roadside trees between the observer and the array would be retained and supplemented with the addition of new trees as discussed above. The maintenance building is visible in the midground while the cedar-posted fencing which surrounds the array separates the roadside planting area from the panels themselves. This perspective also highlights the fact that the panels are not oriented directly at observers from this orientation. This 3D perspective view and existing conditions photograph are provided as **Figure 9**.

The last 3D perspective prepared is taken from location “J” along Muirfield Road near the Strathmore Pool area. This vantage point (See **Figure 2** and Photograph J on **Figure 4**) is to the west and slightly south of the Project Site. From this vantage point, existing vegetation retained along the property line (see Cross-Section C on **Figure 7**)

has been simulated along with some additional lower-growing shrubs. These additional plantings are shown to help illustrate the potential effectiveness of supplemental landscaping in enhancing the natural and retained vegetated buffer. This 3D perspective is provided on **Figure 10**.

Preliminary Assessment

Overall, the Project is set in a location that has a very limited viewshed; essentially a few partially screened adjacent residential structures and from a sparsely used private roadway. The proposed setbacks from adjacent residential properties will further visually integrate the Project with its setting. The low profile nature of the Project's components assures that they will not project above the existing tree line or be seen from any prominent vantage point. The Project retains significant vegetation along portions of the property to limit offsite views. The Project does not introduce exterior lighting, additional traffic, noise or other impacts that often contribute to a sense of "incompatibility". The supportive components to the Project are designed and planned to be evocative of a more "agricultural" form, softening the appearance of the array and allowing the facility to have a more "finished" style. The dark color and non-reflective nature of solar arrays effectively eliminates annoying glare or reflectivity.

While the assessment of impacts will continue and be presented fully with the petition for a Certificate of Public Good (CPG), our preliminary conclusion is that there will not be an undue adverse impact to the aesthetics and the scenic or natural beauty of the area as a result of the Project. The site is well suited to support the proposed facility like this with minimal visual impact to nearby areas. In addition, the site and surrounding landscape are conducive to supplemental mitigation measures if any are determined to be needed, such as landscaping, context-appropriate fencing and the use of appropriate architectural design to enhance site screening.

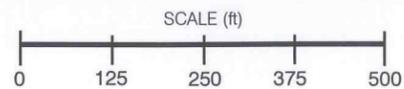


Legend

- Project Parcel
- Project Fence
- A Photographic Point - See Figure 2 or 3

Notes: The site information depicted on this plan was provided by Trudell Consulting Engineers. The aerial photograph is from Google Earth. SE Group has used this information as part of its analysis of the project, but makes no warrants as to the accuracy of it. This material is provided for review purposes only.

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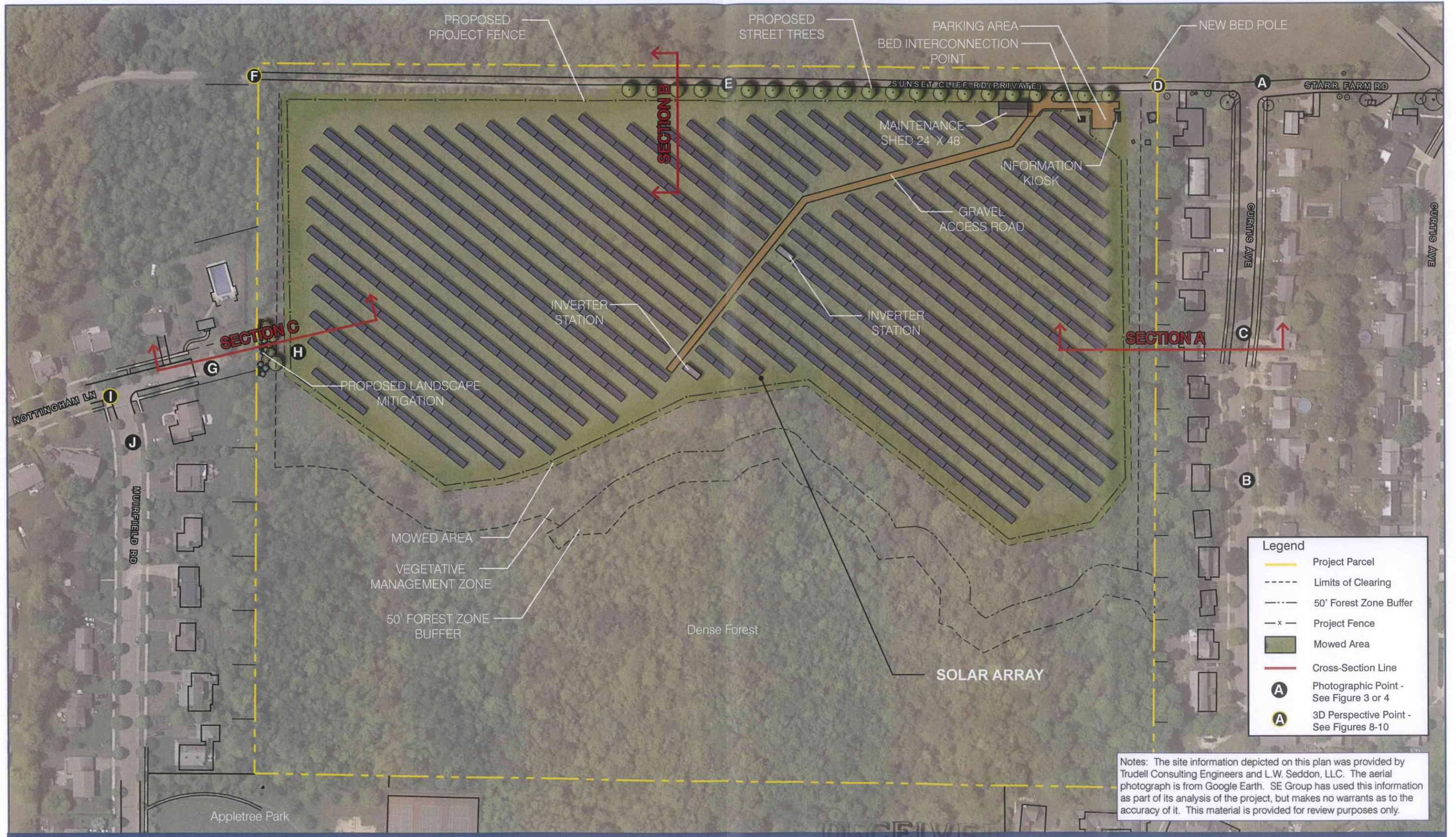
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South Forty Solar Farm

CONTEXT/VIEWSHED PLAN | Figure 1

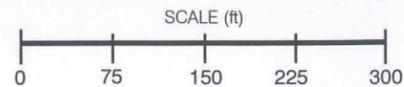
February 2014



Legend	
	Project Parcel
	Limits of Clearing
	50' Forest Zone Buffer
	Project Fence
	Mowed Area
	Cross-Section Line
	Photographic Point - See Figure 3 or 4
	3D Perspective Point - See Figures 8-10

Notes: The site information depicted on this plan was provided by Trudell Consulting Engineers and L.W. Seddon, LLC. The aerial photograph is from Google Earth. SE Group has used this information as part of its analysis of the project, but makes no warrants as to the accuracy of it. This material is provided for review purposes only.

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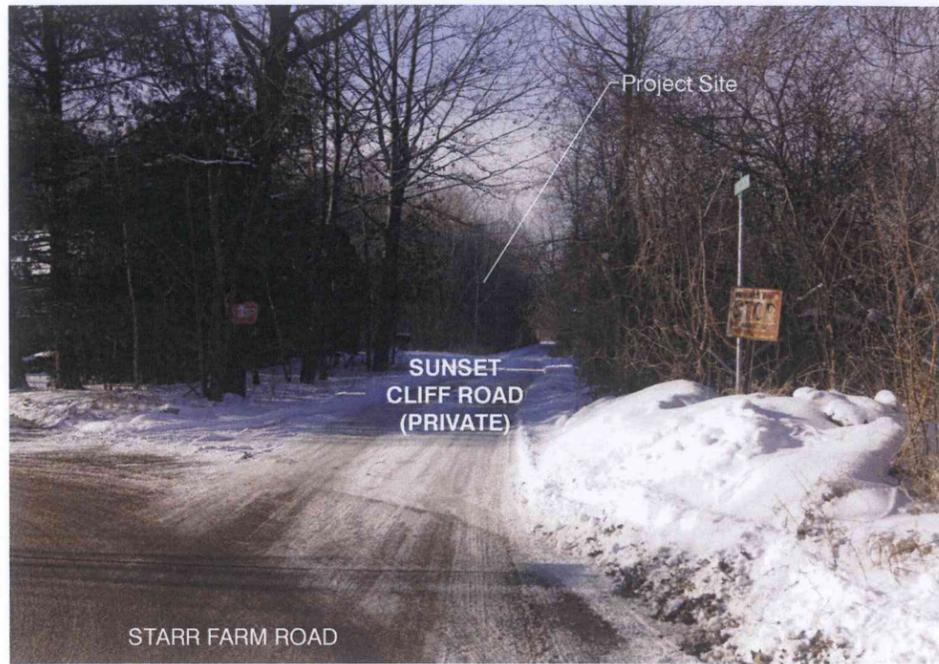


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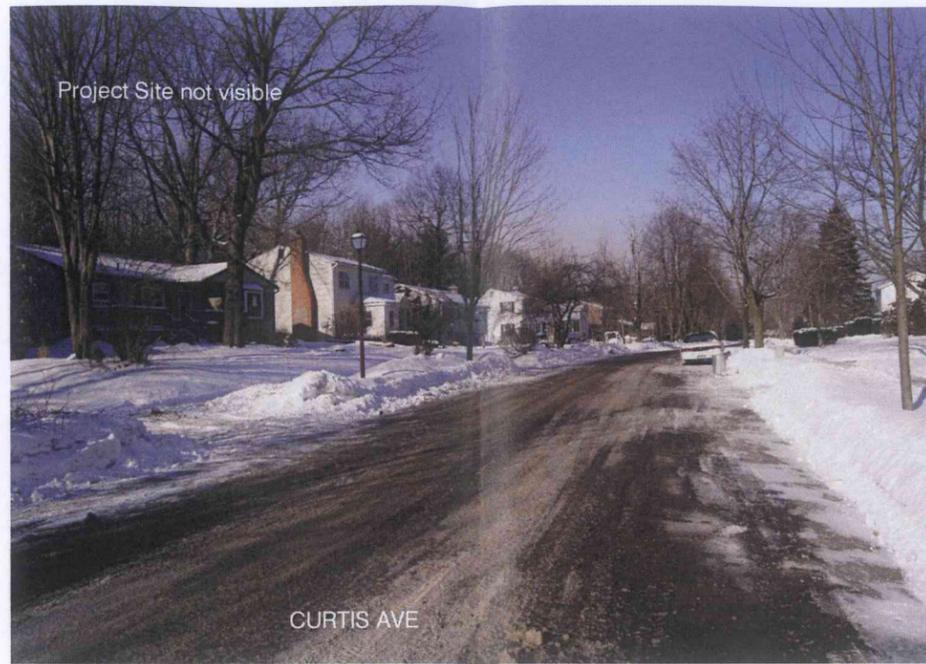
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South Forty Solar Farm
SITE PLAN | Figure 2

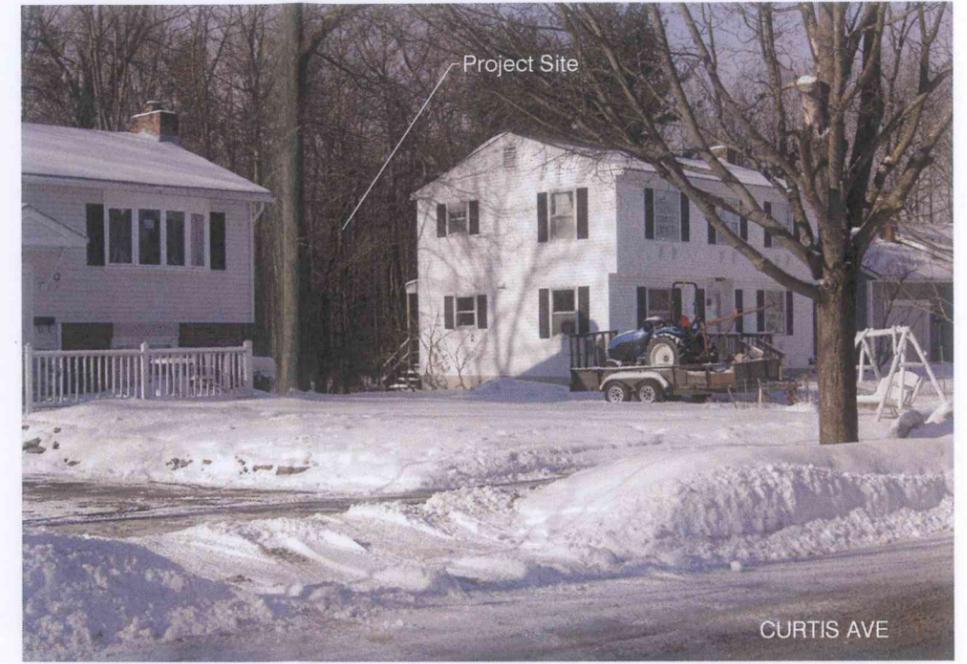
February 2014



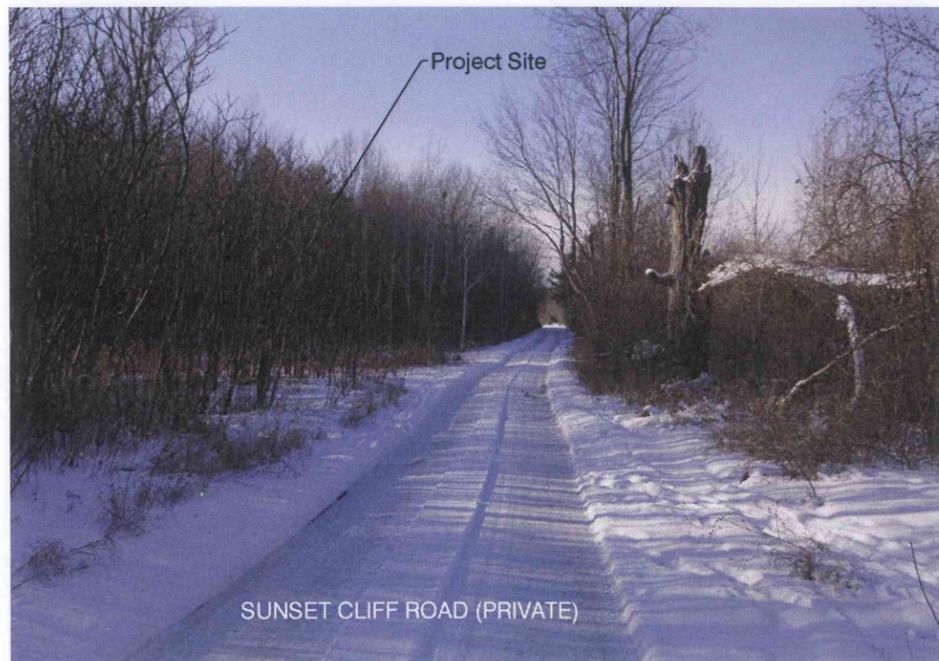
A - VIEW LOOKING SOUTH AND WEST FROM STARR FARM ROAD TOWARDS PROJECT SITE DOWN SUNSET CLIFF ROAD



B - VIEW LOOKING NORTH AND WEST UP CURTIS AVENUE PROJECT SITE OBSCURED FROM THIS VANTAGE POINT



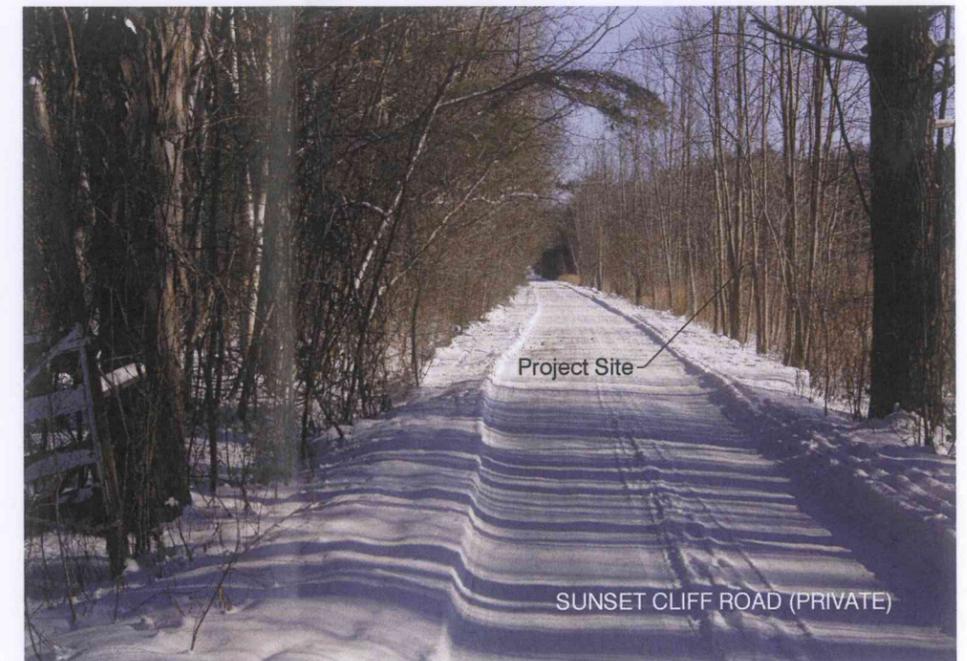
C - VIEW LOOKING WEST FROM CURTIS AVENUE FILTERED VIEWS OF PROJECT SITE THROUGH RESIDENCES



D - VIEW LOOKING SOUTH AND WEST DOWN SUNSET CLIFF ROAD FROM NEAR THE PROPERTY BOUNDARY TOWARDS THE PROJECT SITE



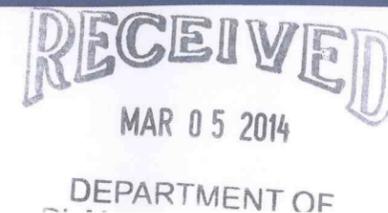
E - VIEW LOOKING SOUTH TOWARDS PROJECT SITE AND STRATHMORE DEVELOPMENT FROM SUNSET CLIFF ROAD



F - VIEW LOOKING NORTH AND EAST DOWN SUNSET CLIFF ROAD FROM NEAR THE PROPERTY BOUNDARY TOWARDS THE PROJECT SITE

All Photographs taken by SE Group using a Sony SLT A55V camera with a 52mm focal length (35 mm equivalent) on 01/22/2014 from 9:45- 11:00 AM

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South Forty Solar Farm

SITE PHOTOGRAPHS | Figure 3

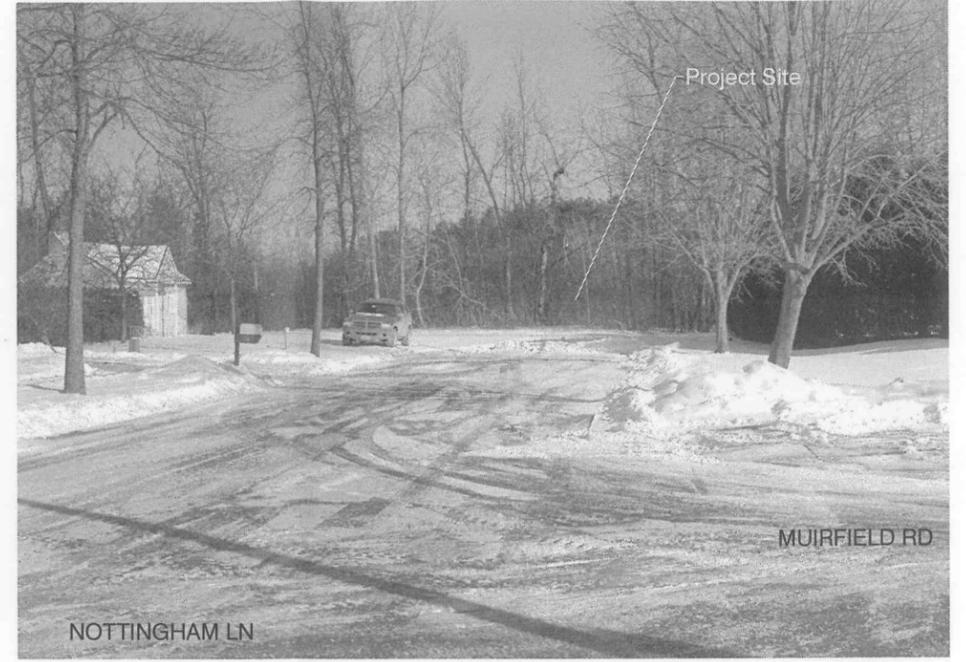
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G - VIEW LOOKING NORTH FROM THE END OF NOTTINGHAM LANE TOWARDS PROJECT SITE NEXT TO STRATHMORE POOL AREA



H - VIEW LOOKING SOUTH FROM WITHIN PROJECT SITE TOWARDS STRATHMORE RESIDENCE



I - VIEW LOOKING SOUTH FROM CORNER OF MUIRFIELD ROAD AND NOTTINGHAM LANE TOWARDS PROJECT SITE NEAR STRATHMORE POOL AREA



J - VIEW LOOKING NORTH TOWARDS PROJECT SITE FROM MUIRFIELD ROAD

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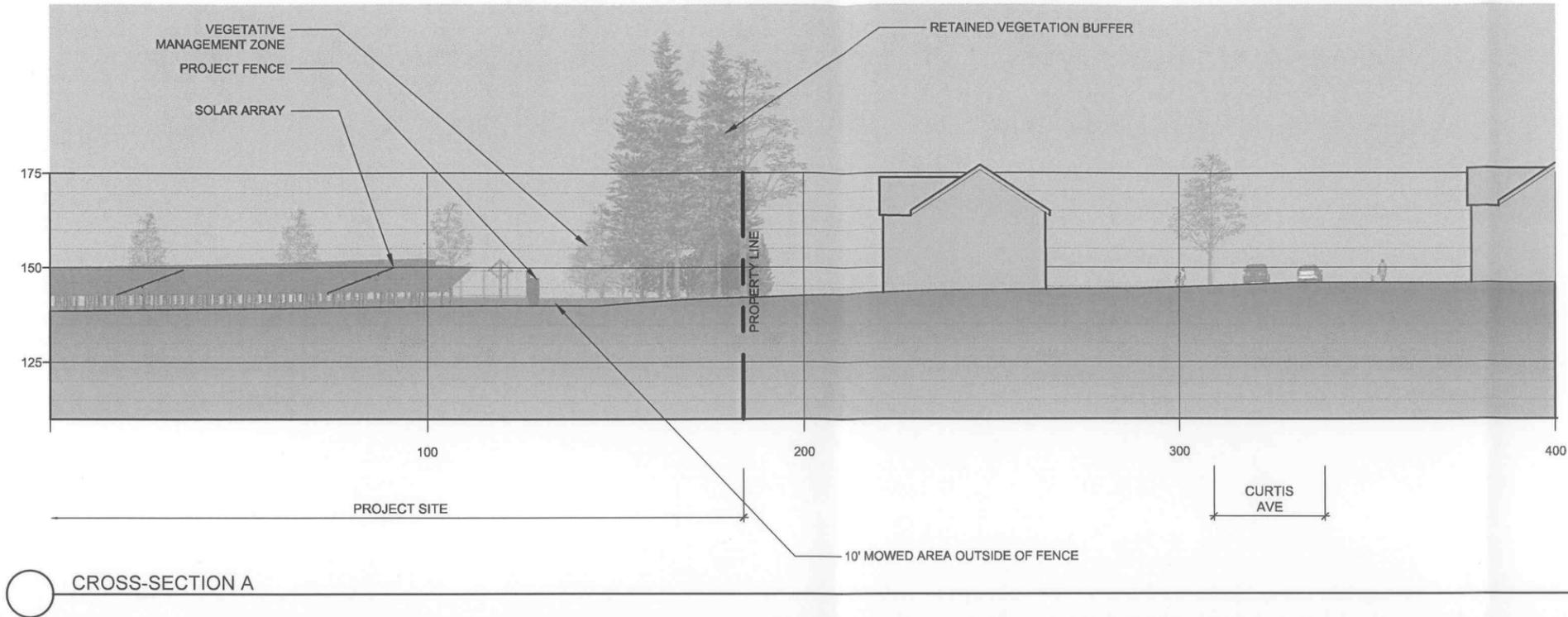
Prepared By:

SE GROUP

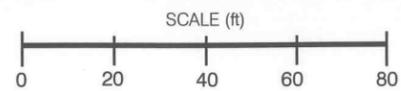
South Forty Solar Farm

SITE PHOTOGRAPHS | Figure 4

February 2014



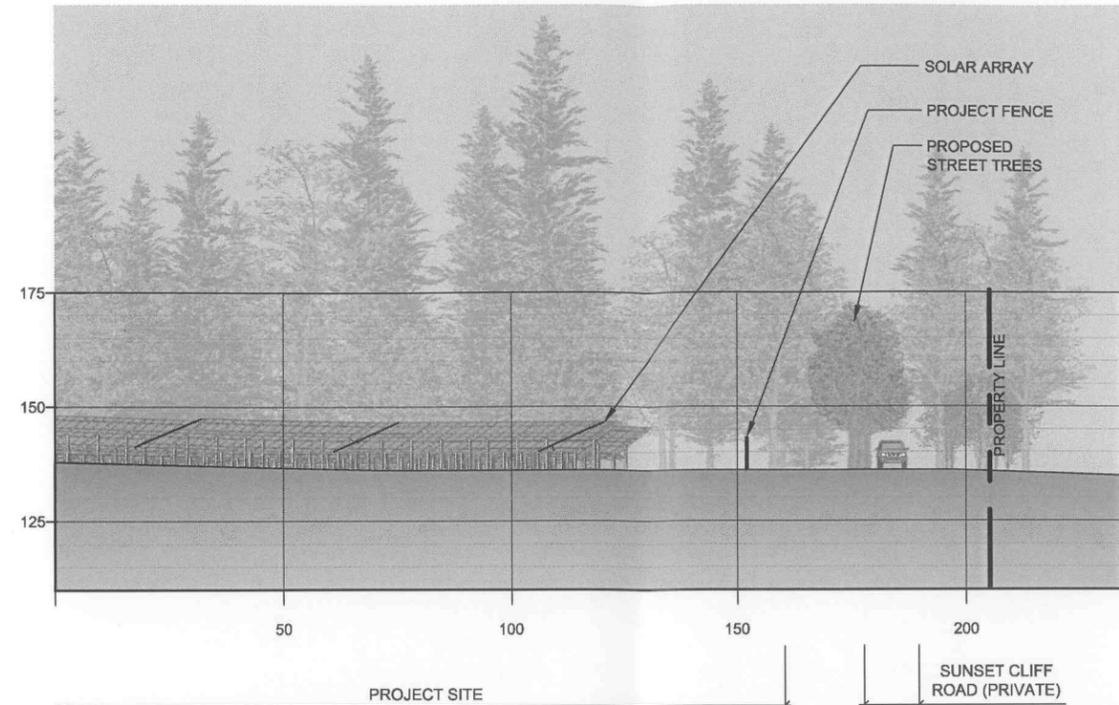
Prepared By:



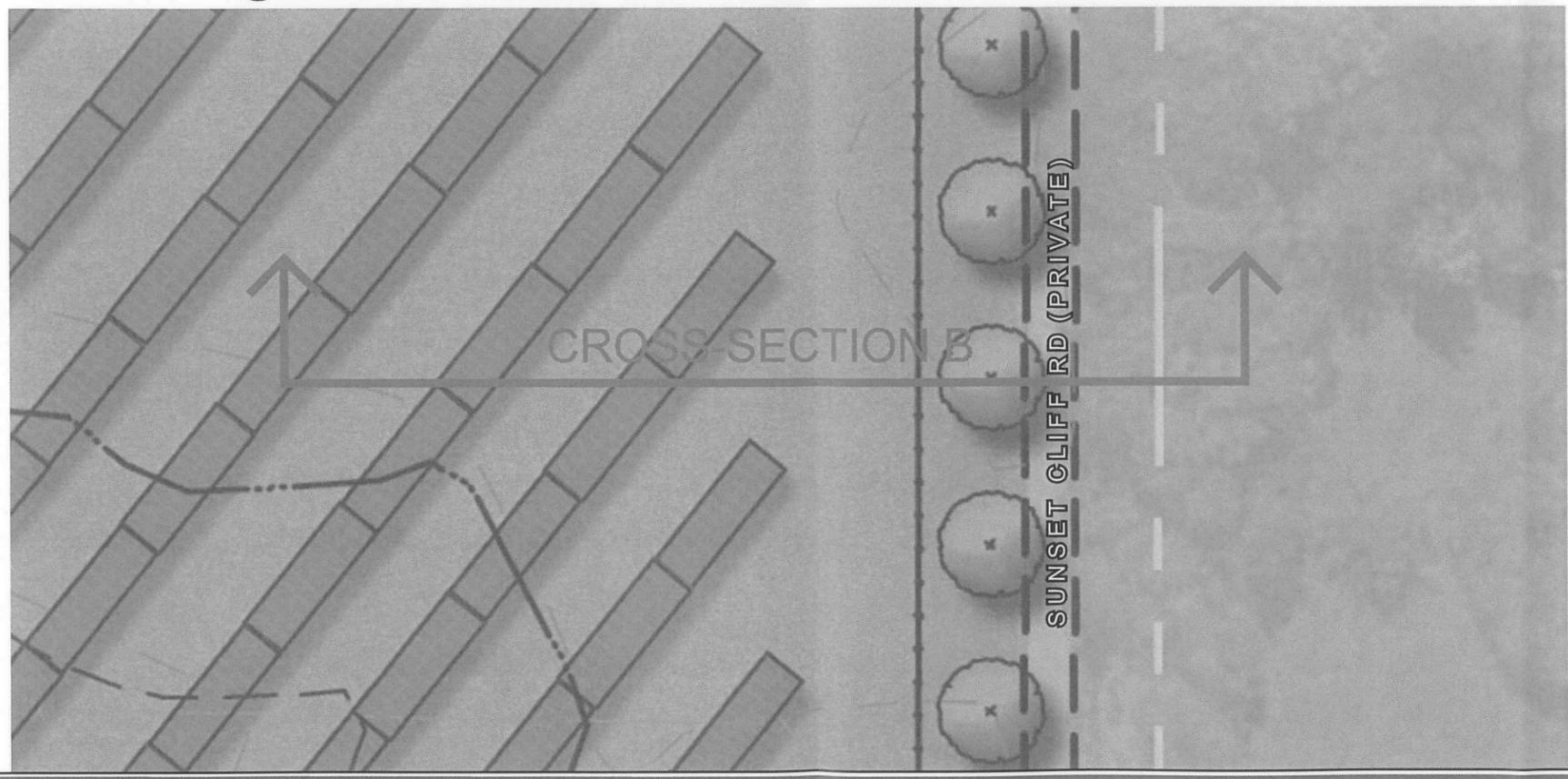
South Forty Solar Farm

CROSS SECTION A | Figure 5

February 2014

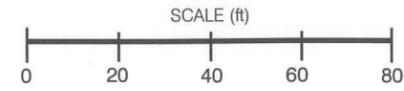


CROSS-SECTION B



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 MAR 05 2014
 DEPARTMENT OF
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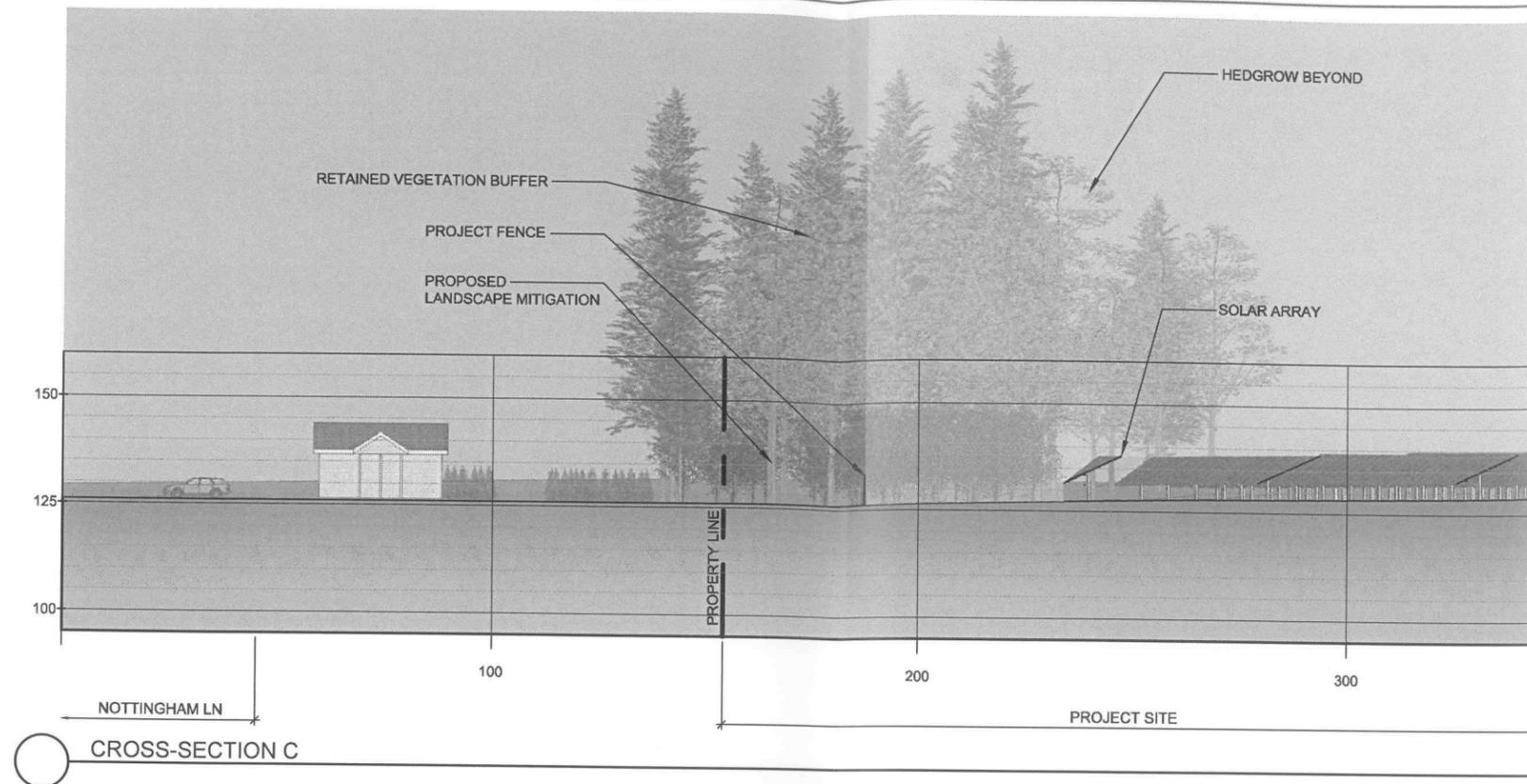
Prepared By:



South Forty Solar Farm

CROSS SECTION B | Figure 6

February 2014



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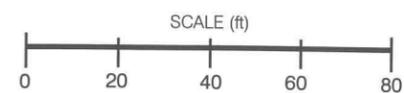
MAR 05 2014

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Prepared By:

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South Forty Solar Farm

CROSS SECTION C | Figure 7

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REFERENCE IMAGE

SUNSET CLIFF RD (PRIVATE)

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3D PERSPECTIVE D | Figure 8

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REFERENCE IMAGE

SUNSET CLIFF RD (PRIVATE)

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South Forty Solar Farm

3D PERSPECTIVE F | Figure 9

February 2014



MUIRFIELD ROAD

Prepared By:



RECEIVED

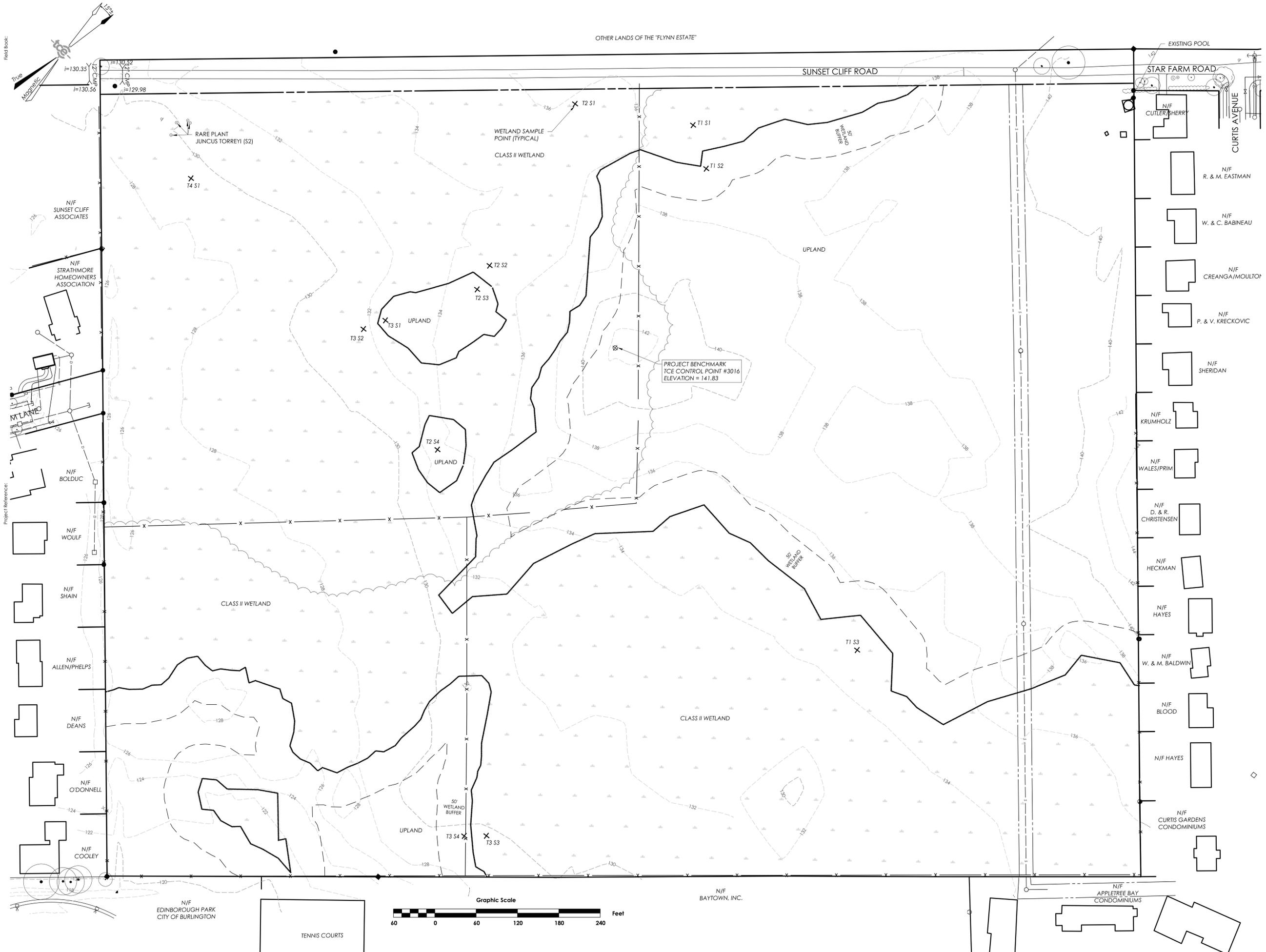
MAR 05 2014

DEPARTMENT OF
PLANNING & ZONING

South Forty Solar Farm

3D PERSPECTIVE I | Figure 10

February 2014



OTHER LANDS OF THE "FLYNN ESTATE"



TRUDELL CONSULTING ENGINEERS
 478 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
 802.879.4331 | WWW.TCEVT.COM

Revisions	No.	Description	Date	By

- N/F CUTLER/SHERRY
- N/F R. & M. EASTMAN
- N/F W. & C. BABINEAU
- N/F CREANGA/MOULTON
- N/F P. & V. KRECKOVIC
- N/F SHERIDAN
- N/F KRUMHOLZ
- N/F WALES/PRIM
- N/F D. & R. CHRISTENSEN
- N/F HECKMAN
- N/F HAYES
- N/F W. & M. BALDWIN
- N/F BLOOD
- N/F HAYES
- N/F CURTIS GARDENS CONDOMINIUMS
- N/F APPLETREE BAY CONDOMINIUMS

- Use of These Drawings**
- Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such.
 - Only drawings specifically marked "For Construction" are intended to be used in conjunction with contract documents, specifications, owner/contractor agreements and to be fully coordinated with other disciplines, including but not limited to, the Architect, if applicable. These Drawings shall not be used for construction layout. Contact TCE for any construction surveying services or to obtain electronic data suitable for construction layout.
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 - By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings and have met with all applicable parties/disciplines to insure these plans are properly coordinated with other aspects of the Project. The Owner and Architect, are responsible for any buildings shown, including an area measured a minimum five (5) feet around any building.
 - It is the User's responsibility to ensure this copy contains the most current revisions.

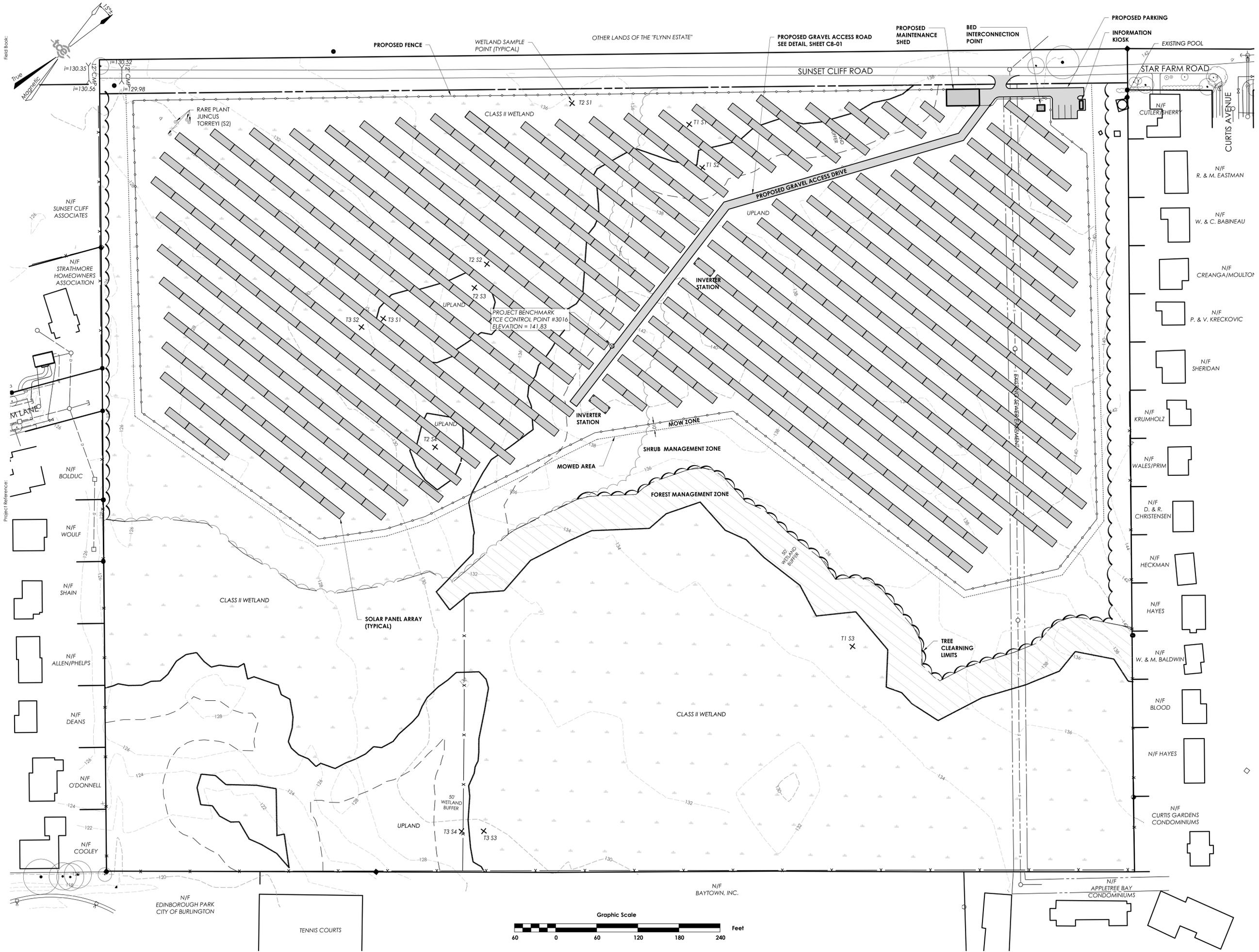


Project Title
South Forty Solar Farm
Sunset Cliff Road
Burlington, Vermont

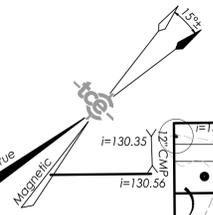
Sheet Title
Existing Conditions

Date:	02/24/2014
Scale:	1" = 60'
Project Number:	2013113
Drawn By:	RMP
Project Engineer:	JMM
Approved By:	

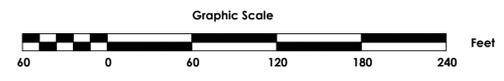
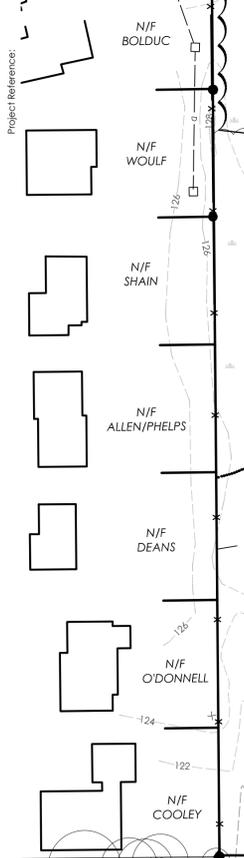
C1-01



Field Book:



Project Reference:



Revisions	No.	Description	Date	By

- Use of These Drawings
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 5. It is the User's responsibility to ensure this copy contains the most current revisions.



Project Title
South Forty Solar Farm
Sunset Cliff Road
Burlington, Vermont

Sheet Title
Site Plan

Date:	02/24/2014
Scale:	1" = 60'
Project Number:	2013113
Drawn By:	RMP
Project Engineer:	JMM
Approved By:	

C2-02



TRUDELL CONSULTING ENGINEERS
802.470.6331 | www.tcevt.com

Project Location



Legend

- Project Area Boundary
- Stream

Notes

Sources: Bing aerial photography (2012);
VT 911 Roads (2011); Streams by ANR (2012);
Project Area Boundary by TCE (2013).

Disclaimer: The accuracy of information presented is determined by its sources. TCE is not responsible for any errors or omissions that may exist. Questions or concerns regarding this information should be directed to the engineer of record. This map is not a replacement for a site survey or engineering studies.

South Forty Solar, LLC
Sunset Cliff Road
Burlington, VT

Locus Map

Project: 2013113
Prepared By: LMJ
11/25/13
1 Inch = 500 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar (USA), Airphoto, CNR, USDA, AeroGRID, IGN, SIA, USFSA, ESA, NOAA, GEBCO, Esri, Inc.

L.W. SEDDON, LLC
 13 Bailey Ave.
 Montpelier, VT 05602 USA
 Tel: 802-272-7284

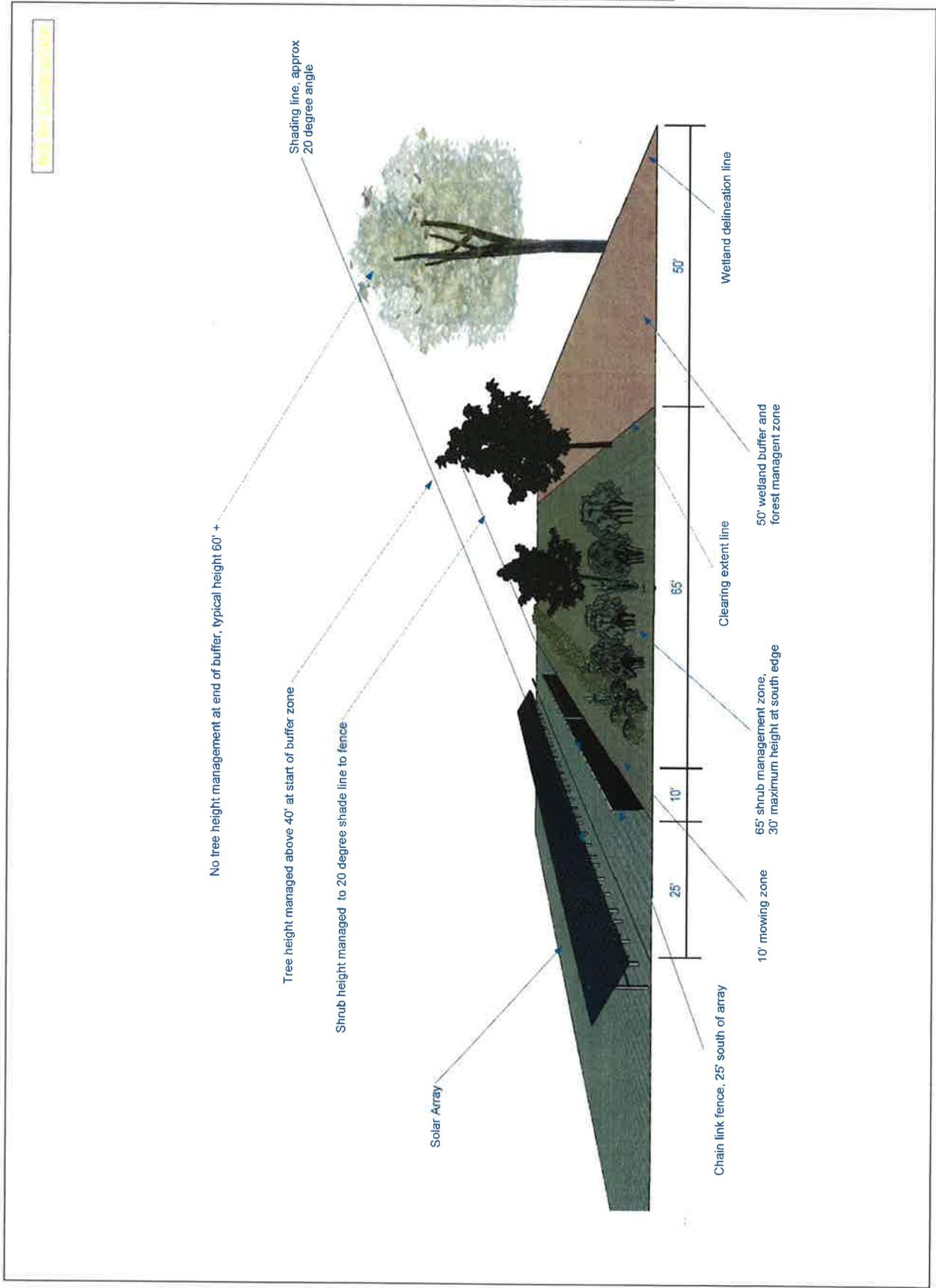
Client:
 South Forty Solar, LLC
 300 Swift St.
 S. Burlington, VT 05403

Project:
 South Forty Solar Farm
 Sunset Cliff Rd.
 Burlington, VT 05401
 AC Capacity: 2.5 MW AC
 Array Size : 3.28 MW DC
 Annual Output = 3,870 MWH
 Module: 300 Watt
 Mounting: driven pile
 Module tilt: 30 degrees
 Azimuth: 180 degrees (True)

Vers	By	Date	Changes
1	LWS	13-Nov-2013	

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Drawing:
 PV-A05
Description:
 Buffer Zone Shade line
Scale:
 N.T.S.
 (Printed 11x17)





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Project Location



Legend

- Surveyed Parcel Boundary
- 2 Foot Contour
- Shrub Mgmt Zone (65')
- Forest Mgmt Zone/Wetland Buffer (50')
- Wet Sand-Over-Clay Forest
- Solar Array Boundary
- Fence Line
- Wetland Buffer (50')
- Solar Array Clearing Limit (#422ac)
- Janous Torrey
- Delineated Wetland (#422ac)
- Stream

Notes

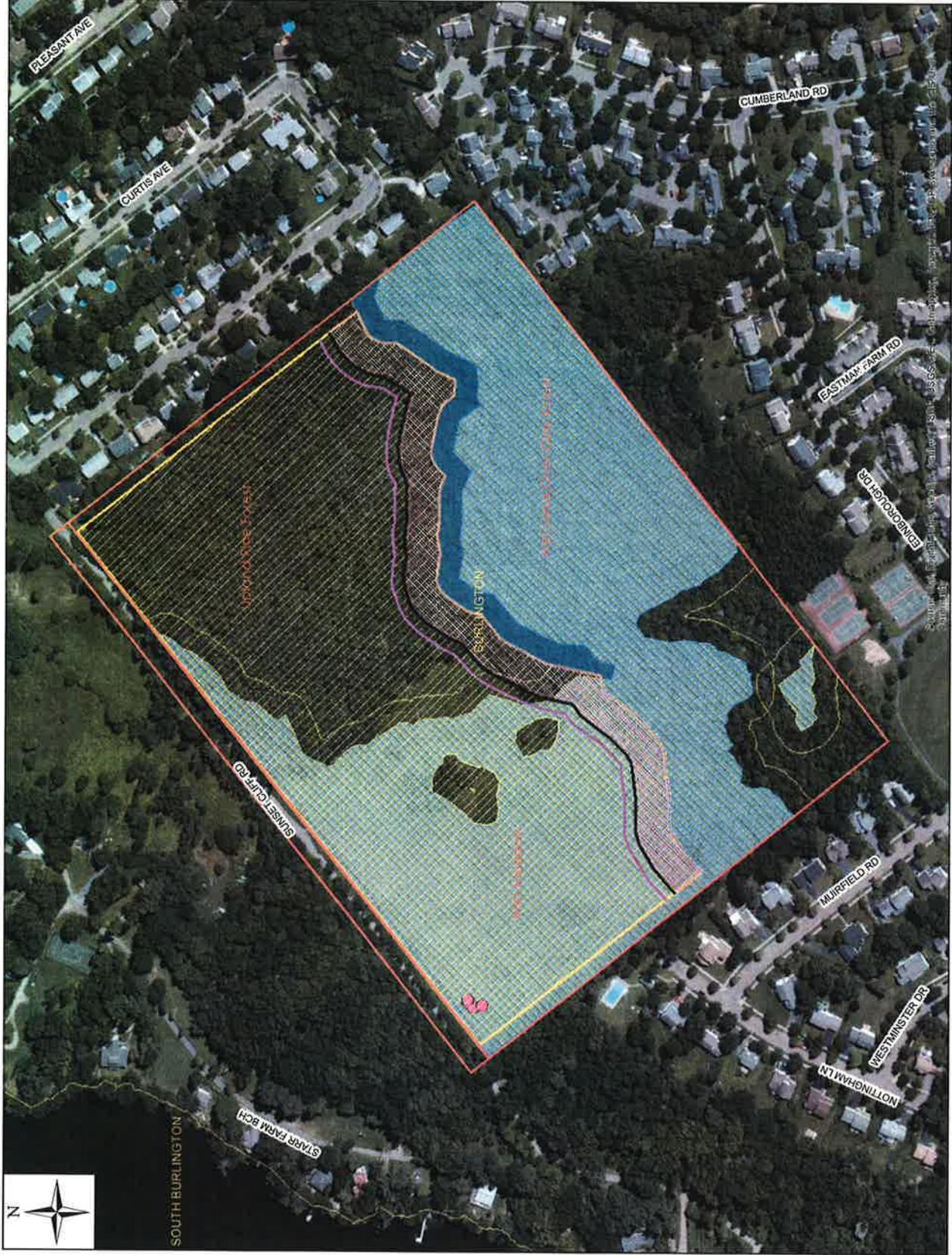
Sources: Bing aerial photography (2013); VT 8911 Roads (2011); Streets by ANR (2012); 211 Contour from VCGI by TCE (2013); Wetlands, Clearing Limits, Solar Array, Project Area Boundary, Fence Line, Management Zones by TCE (2013).

Disclaimer: The accuracy of information presented is determined by its sources. TCE is not responsible for errors or omissions that may exist in this information and/or survey by a registered surveyor. This map is not a replacement for surveyed information or engineering studies.

**South Forty Solar, LLC
Sunset Cliff Road
Burlington, VT**

**Vegetation Management
Plan**

Project: 20131113
Prepared By: KED, LMJ
12/12/13
1 Inch = 200 Feet



Burlington Planning Commission

149 Church Street
Burlington, VT 05401
Telephone: (802) 865-7188
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(802) 865-7144 (TTY)
www.burlingtonvt.gov/planning

*Yves Bradley, Chair
Bruce Baker, Vice-Chair
Andrew Saba
Lee Buffinton
Harris Roen
Andy Montroll
Jennifer Wallace-Brodeur
Vacant, Youth Member*



Burlington Planning Commission Minutes

Tuesday, March 25, 2014 - 6:30 pm

PC Present: L. Buffinton, H. Roen, J. Wallace-Brodeur, B. Baker, E. Lee

Absent: Y. Bradley, A. Montroll

Staff: S. Thibault, E. Tillotson, K Sturtevant

I. Agenda

No change to order of agenda.

H. Roen: Had sent an email to Commission members stating that he wanted to discuss the proposed solar farm tonight.

B. Baker: So shall we do Commissioner Items now since other people are here to discuss it also?

H. Roen: Did not want to discuss the merits of the project but the process or procedure for addressing the subject, and what the Planning Commission wants to do. He understands it is the preliminary application now and the comment period will close early in April. If the Commission is going to comment, there is opportunity now, the full application will come later.

S. Thibault: Has discussed with S Gustin the timing issue. The Conservation Board met March 10 and will discuss it again on April 7. The Department of Environmental Conservation will be meeting April 2nd. The pre-application has a 45 day period which is open for comments which ends April 18. The Conservation Board will send their comments by April 16. Comments from the City need to be filed a week before the applicant files its actual application. Staff has discussed this application and concluded that the Conservation Board is the place for stormwater and conservation issues.

H. Roen: The Conservation Board will do a thorough job on conservation and stormwater research. What about comments to the Conservation Board from the public?

S. Thibault: All items received from the public have been included in the Commission packets.

II. Public Forum

B. Baker – Opened the public forum at 6:35 to accommodate visitors.

T. Papp, President of the homeowners association, addresses the proposed solar farm.

1. The Association is not against solar but does have some concerns.
2. The Conservation Board does not have Public Service Board acknowledgement, the regional and local Planning Commissions are the entities that have a seat at this table.
3. The Association believes the current application is incomplete, more information from the developer was requested four months ago.
4. The developer, in the past, has clear cut and stumped the property creating stormwater problems.
5. A 45-day notice is invalid because the application is not complete.

There are wetland and stormwater issues as well as some set back issues. The Association Board has a fiduciary duty to its members to represent their interests.

As approved by the Burlington Planning Commission on.

J. Boucher, legal counsel for the Association: Comments that according to the PBS rules, the plans must include sufficient information to understand the project. At present information is lacking.

H. Roen: Could the Conservation Board be considered a part of the Planning Commission for review purposes?

B. Baker: Is concerned about having a public hearing without proper notice and the next opportunity for a warned meeting is April 8.

L. Buffinton: The public hearing is about content, is this procedural since there no information to review? It is imperative that the Planning Commission take some action, plans are lacking, the Commission should address the 45 day concern.

B. Baker: The City Council will comment based on the Conservation Board's comments and research. Do we need to comment in any other way?

J. Boucher: His reaction this evening, is that the City Council is in an odd situation. It is unusual for the Planning Commission to have equal status to the City Council, but the PSB hearing is to look at all issues. The Planning Commission has its own authority and mission. He would suggest asking the PSB to send report to the Commission. Without adequate information an evaluation cannot be made. It seems that the developer should start the clock again.

T. Papp: The Regional Planning Commission discussed the same problem.

J. Boucher: The PSB wants to hear all sides of the issues.

J. Wallace-Brodeur: Can the Commission act independently or not?

H. Roen: Can the Commission say that we agree with the recommendation of the Conservation Board? They have done an extremely thorough job.

S. Thibault: The Conservation Board meets the day before the next Commission meeting making it a very tight timeline for reacting.

B. Baker: We can put this on the agenda for April 8.th

L. Buffinton: If there is no stormwater plan, can we indicate that we believe the plan is not complete?

J. Wallace-Brodeur: And can somebody from staff help with process and information? She would like land use analysis to understand if the is current policy speaks to this issue, etc.

L. Krohn: The Commission has an opportunity to proceed or comment, generally relevant issues are linked to the act 250 process but policies in the Municipal Plan are relevant. He hasn't seen the application, but cautions to be careful with process.

B. Baker: – Closed the public forum at 6:59pm.

III. Report of the Chair

None, since he is not present.

IV. Report of the Director

Report by S. Thibault: Work on the Form Based Code has slowed somewhat due to complications with staff. They have reached out to the NPAs offering to visit in May or June to expose the public to the proposed changes, they will meet with Wards 4 and 7 in late April, and again in June for changes specific to Burlington. In April they will start to work with Commission to familiarize them with the new FBC. This is specific to the Planbtv study area, the downtown area. The hope is to visit all NPAs.

As approved by the Burlington Planning Commission on.

V. Affirmatively Furthering Fair Housing Training

Ted Wimpy, Director of Fair Housing Project at CVOEO, and Lee Krohn from the RPC

T. Wimpy: This is a statewide program in outreach providing information and advice training to developers, providers, planners, etc., basically anyone who relates to fair housing issues. Federal and state laws protect people from discrimination. HUD wants to see that people in positions to affect housing, receive training around fair housing issues. He will be leading training for the Burlington Development Review Board. Lee Krohn has also had some training and he will give an overview.

L. Krohn: He has been a planner for many years in Manchester. The Commission is familiar with their own community needs. In Burlington there is pressure on housing stock from colleges and businesses. There are many ways to provide fair housing but Burlington is the only city that has inclusionary housing. Champlain College and UVM are proposing to build student rentals to relieve housing pressure. There is a lot of strain on families to find housing which creates social issues, inability to participate in civic events, difficulty in owning the experience of belonging. Housing is the biggest piece of the puzzle and the real challenge is the political will to approve and stand up for projects that meet city policy. The standards need to be clear and predictable. It is tough issue, more housing is needed, there is demand but the cost of housing is a challenge. VHFA has done a study for Burlington and has, as well, information for many towns.

T. Wimpy: The need is there, in the entire county and state. Every municipality is supposed to abide by the fair housing laws, the object is to go beyond requirements. Race, color, religion, family status, gender, public assistance, sexual preferences are all circumstances protected by the fair housing laws. Providing more affordable housing affects lower income people. Policies if not intended to be discriminatory, with disparate impact, can be fair housing policy against a disproportionate number of people in disadvantaged class. He would encourage the City to move assertively toward creating fair housing. Burlington does have an inclusionary housing policy, density bonuses, PUDs of a nature that encourage affordable housing, so the City is doing a pretty good job. There is a need to continue going in the same direction. At one time HUD was not serious about enforcing affirmative fair housing practices, but now there is a different approach.

L. Buffinton: It is good to go through each of pages and see where Burlington stands.

T. Wimpy: Creative interest in transportation/housing policies intersection is a big part of this.

L. Buffinton: Another issue for Burlington is that housing trusts now can get more funding for projects outside of the City which creates a higher cost for housing in Burlington.

T. Wimpy: Creativity linking housing with transportation is key. Conversations with VNRC examine issues within affordability, there seems to be potential for more streams of funding in a creative manner. It would be good to dialogue with neighboring communities to support affordable housing in the area.

J. Wallace-Brodeur: She is pleased with and appreciates the discussion. Some of the issues have to be a subject of further discussion. She appreciates the connection between transportation and housing, it's important to keep talking about.

T. Wimpy: Inclusionary zoning perhaps needs to be tweaked. He hopes everybody is cautious not to roll it back.

VI. Downtown Parking Amendment

S. Thibault: Members all received a memo from D. White last week containing a draft from the comments of the first meetings. We would like to send it to the City Council as a recommendation.

J. Wallace-Brodeur: The first page, last paragraph refers to parking as a secondary use, what does that mean?

S. Thibault: Without unencumbering the present ordinance, it would be for the Commission to look into allowing the leasing spaces to another entity as a separate use, if they are above and beyond the requirements of the permits.

As approved by the Burlington Planning Commission on.

E. Lee: It seems like a reasonable idea.

H. Roen: It might help downtown with parking for commuters, something which is a problem for the Price Chopper on Shelburne Road for instance.

L. Buffinton: D. White mentioned unencumbering in reference to the equity issue, could we elaborate on this issue? She might suggest that there could be two different approaches so that there is no discrimination.

K. Sturtevant: Yes it is possible to do that based on the use analysis.

L. Buffinton: Why would there need to be two approaches?

K. Sturtevant: Perhaps it doesn't, it may just need more thought and focus.

B. Baker: He thinks the letter is fine. An engineer friend stated that the Burlington requirements are more exacting than those of other towns.

S. Thibault: Yes, we are looking to change some dimensional requirements when FBC is incorporated.

B. Baker: Measurements are relevant to the FBC. Conversations examining the land use perspective need to happen with the Downtown Parking Task Force. The LRPC meeting could be the driving force and Long Range Planning Committee will keep the Commission informed.

On a motion by J. Wallace-Brodeur, seconded by H. Roen, the Commission unanimously approved a motion to provide the City Council with a memorandum on the proposed changes drafted by staff and reviewed by the Board.

VII. Joint Institution Parking Management Plan

Sandy Thibault, CATMA: Are there questions about the presentation at the last meeting?

Lani Ravin, UVM: The DRB will ultimately approve the packet.

E. Lee: Would like a little more time to review the information. She is curious about the college requirements, it seems as if they could have a big impact.

S. Thibault, CATMA: At the Eagles Club location, per ordinance the parking is not changing. College parking is being accommodated off site.

S. Thibault, Planner: The Downtown Transition zone allows for off-site parking.

L. Buffinton: There is concern that students will park on streets.

E. Lee: What is the long term commitment for providing parking if the City Council doesn't retain space for student housing?

S. Thibault, CATMA: Champlain College enforces their parking spaces.

E. Lee: This will be a reduction in publicly provided parking spaces.

S. Thibault, CATMA: She would like to have it approved by the end of April.

L. Buffinton: This is a big plan with lots of documentation.

B. Baker: Where is the "drunk bus", walk by noise is huge problem. It would be nice to provide this.

L. Ravin: I think we do have a late bus.

B. Baker: I think it is shut down. That's what he hears in the community.

S. Thibault, CATMA: 10 pm to 3 in the morning, every ten minutes on Fridays and Saturdays.

J. Wallace-Brodeur: The transportation management plan is a really good resource, important.

This item will be place on the next Commission agenda.

As approved by the Burlington Planning Commission on.

VIII. Committee Reports

Executive Committee - met last week.

Long Range Planning Committee - hasn't met.

Ordinance Committee - scheduled during the storm, didn't happen.

IX. Commissioners Items

J. Wallace-Brodeur: Will miss both meetings in April.

H. Roen: He has been named to the Board of Renewable Vermont.

X. Minutes/Communications

On a motion by H. Roen, seconded by J. Wallace-Brodeur, the Commission unanimously approved the minutes with corrections for February 11 and March 3, 2014.

XI. Adjourn

On a motion by L. Buffinton, seconded by E. Lee, the Commission unanimously adjourned at 7:59 pm.

B. Baker, Vice Chair

Date

E. Tillotson, recording secretary