

Exhibit CS-BW-67

Docket 8302

Exhibit CS-DB-4

RTE Plant Mitigation Report



ARROWWOOD ENVIRONMENTAL

950 BERT WHITE ROAD
HUNTINGTON, VT 05462
(802) 434-7276 FAX: (802) 329-2259

11/11/14

**Rare, Threatened and Endangered Plant
Mitigation Report:
2.0 MW Solar Photovoltaic Generation Facility
Chelsea Solar Farm Project
500 Apple Hill Road
Bennington, Vermont**

Introduction

As part of the environmental assessment for the proposed Chelsea Solar Farm Project, Arrowwood Environmental (AE) submitted a preliminary report on natural resources at the site in the Environmental Assessment report dated 6/15/14. A subsequent rare, threatened and endangered plant inventory of the site was conducted on August 14th, 2014. Four uncommon-rare species were documented on the property and discussed in the Supplemental Environmental Assessment report dated 8/22/14. The current report discusses the pre-construction measures that were undertaken to mitigate impacts to the arrow-leaved American aster (*Symphyotrichum urophyllum*) on the property and the maintenance and monitoring plan necessary to ensure the mitigation measures are successful.

Mitigation Plan

As detailed in the 8/22/14 report, four species were documented on the property: arrow-leaved American aster (*Symphyotrichum urophyllum*), nimblewill muhly (*Muhlenbergia schreberi*), spreading sedge (*Carex laxiculmis*) and rough-leaved goldenrod (*Solidago patula*). The locations of these are shown on the map in Attachment A (also submitted with the 8/22/14 report).

AE worked with Vermont Agency of Natural Resources (ANR) and Chelsea Solar Farm to develop a mitigation strategy that would minimize impacts from the proposed Project to the arrow-leaved American aster on the site. At all stages of the development of the mitigation strategy, Bob Popp from ANR was consulted. A record of this email consultation is included in Attachment B. This strategy involved the establishment of two Conservation Areas (CA) centered around the largest concentrations of rare plants found on the site. The layout of these two CAs in relation to the proposed development is shown in Attachment C. As can be seen in this layout, six smaller sites containing arrow-leaved American aster remained within the area of proposed project development. Since these plants would be impacted by the development, it was recommended that they be transplanted into the CA prior to construction.

Bob Popp also expressed concern about the impacts of the development on the nimble muhly population (see Attachment B). Since the Chelsea Solar Farm project does not include any impacts to that population, no action was taken at this time. During the future development of the Apple Hill Solar Farm project, transplantation or other mitigation measures for this population will be explored if necessary.

Mitigation Action

Permission from ANR was obtained to transplant the arrow-leaved American aster plants in the fall of 2014 (see email correspondence in Attachment B). On 10/15/14, two AE personnel (Matt Peters and Michael Lew-Smith) visited the site to conduct the transplanting. In re-locating the populations, more arrow-leaved American aster plants were discovered than initially reported on. The discovery of more aster plants was due to the increase in visibility during the 10/12/14 site visit from the lack of leaves on the surrounding trees and shrubs. The vegetation at this site is very dense, making complete counts of individuals during the growing season difficult. The area with appropriate habitat in this area was searched, and the total number of plants transplanted is outlined in Table 1.

In addition to a larger number of plants to be transplanted, a larger number of plants were also discovered within the Conservation Area. While 10 plants were initially reported in the CA, approximately 30 individuals were counted during the 10/12/14 site visit. In addition, numerous plants were seen off property, mainly in the opening along the road to the south and southwest of the property.

Three permanent 2' x 2' plots were established within the conservation area to receive transplanted individuals. Plots were located randomly in the CA but avoided impact to existing arrow-leaved American aster individuals. These plots were prepared by removing existing vegetation and digging out an area deep enough to receive the transplants. Soil removed from these plots was placed aside to be used during transplanting. The establishment of plots for the transplanted individuals was undertaken to better facilitate maintenance and monitoring of the transplants.

Plants located for transplanting comprised two different types: those with only a basal rosette and those with a fruiting stalk. At the time of the transplanting, nearly all of the stalks had ripened fruit which was dispersing during the transplanting process. In these cases, the fruiting stalk was left on the plant after transplanting in the hope that most of the seeds would disperse in the conservation area. Upon locating an individual, a hole was dug around the base of the plant 12" to 18" in diameter in order to obtain a sufficient-sized root ball for transplanting. The sandy nature of the soils, however, sometimes resulted in much of this root ball falling away. Nevertheless, in most cases, it appeared that sufficient root material was obtained for successful transplanting. After digging, plants were placed in buckets and carried to the CA. Individuals were planted in one of the plots and native soil was used to fill in areas in between the plants. Table 1 shows the number of plants of each type that were transplanted into each plot.

Table 1. Number of arrow-leaved American aster plants transplanted into each plot

	Plot 1	Plot 2	Plot 3	Total
Fruiting Culms	14	25	26	65
Basal Rosettes	8	11	5	24
Total	22	36	31	89

After transplanting, each plot was watered with approximately 8 gallons of water. At the time of the transplanting, the soil was quite dry. The day after transplanting, however, a period of rain continued for approximately 10 days. For this reason, no further watering was deemed necessary.

A photo of each plot is included in Attached D.

Establishment of Conservation Area

The goal of the Conservation Area (CA) is to provide appropriate habitat for the survival and reproduction of the arrow-leaved American aster. In order to achieve this, a number of modifications to the site will be required. First, there are a few trees located in the CA which should be removed. These trees should be felled to the outside of the CA and skidded out. Stumps should be cut flush to ground level. Secondly, shrub vegetation should be cut at ground level and removed from the CA by hand. After this vegetation management work in complete and prior to commencement of site construction work on the Chelsea Solar Farm development, the boundaries of the CA should be flagged. A temporary perimeter fence such as an orange snow fence, should be placed around the border of the CA. The purpose of the fence is to ensure that no heavy equipment enters the CA. In addition, at no time should any earth work be conducted in the CA. Any activity that would create soil disturbance should be avoided. The perimeter fence should stay in place during construction but should be removed when construction is complete.

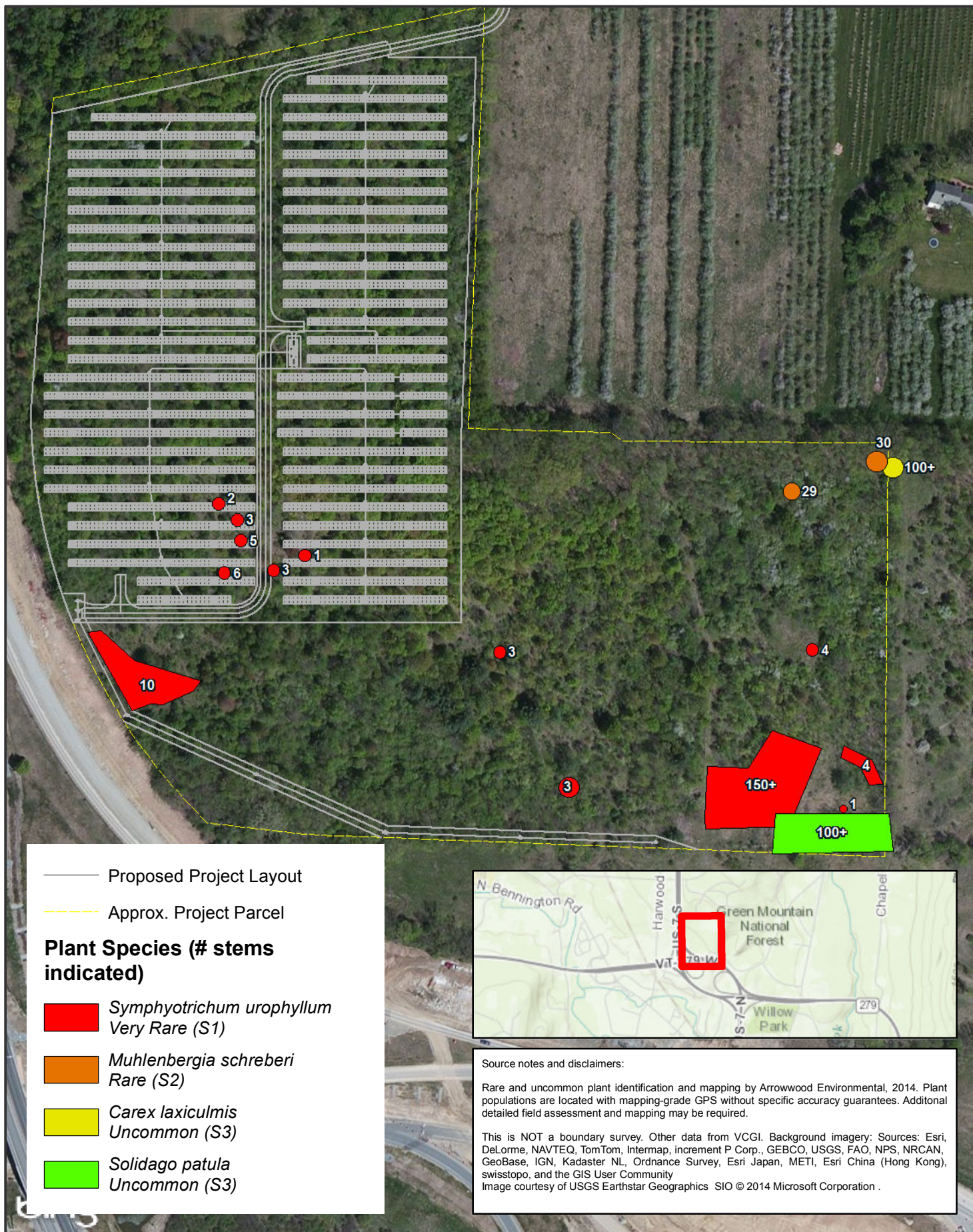
Maintenance and Monitoring

In order to prevent trees and tall shrub vegetation from dominating the CA, it is recommended that the site be mowed once every three years. Mowing should occur in October after the arrow-leaved American aster have flowered. This mowing can take place in conjunction with the mowing of vegetation in the Project development area if necessary.

Survivorship of the transplanted individuals should be monitored once per year for a period of 3 years post-construction. Monitoring will include assessing number of stems with basal rosettes and flowering present in each plot. In addition, the Project development area will be inventoried to determine if any “volunteer” arrow-leaved American aster plants become established. Monitoring should occur prior to mowing. An annual report will be submitted detailing the findings of the monitoring study.

Attachment A

Rare Plant Occurrence Map



Ecos Energy: Chelsea Solar Farm, Bennington Vt: RTE Plants

Friday, August 22, 2014

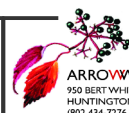
File: RTE1

Prepared By: A Worthley

NAD 83, Vt State Plane

1 in = 200 ft

0 62.5 125 Feet



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Attachment B

Arrowwood Environmental Email Correspondence with Bob Popp, Vermont ANR

From: Michael Lew-Smith [mailto:michael@arrowwoodvt.com]
Sent: Monday, September 08, 2014 9:59 AM
To: Popp, Bob; dori@arrowwoodvt.com
Subject: Bennington Solar

Hi Bob,

I wanted to discuss with you the plan for the solar arrays at the Bennington Solar site (Apple Hill) where we found the *Symphyotrichum urophyllum*, *Muhlenbergia schreberii*, *Carex laxiculmis* and *Solidago patula*.

Given the presence of these populations, the developer has rearranged the plan for the site and would like to get your input. I have attached a proposed layout which includes two conservation areas around the largest populations of the aster and sedge. I have also attached our map of the site showing the species and population numbers at each location. This is a two-phase project, with the arrays in the north being applied for now. The arrays in the south (near the conservation areas) are the second phase to be submitted at some later date. The second phase is not shown on the map produced by Arrowwood.

I assume that some transplanting of individuals that would be directly impacted by the development would occur. Plants would be moved into the conservation area.

Let me know what you think. Thanks.

-Michael

Michael Lew-Smith
Ecologist/Botanist
Arrowwood Environmental
1315 Hopkins Hill Road
Hardwick, VT 05843
802-434-7276
www.arrowwoodvt.com

From: Popp, Bob [mailto:Bob.Popp@state.vt.us]
Sent: Tuesday, September 09, 2014 3:08 PM
To: 'Michael Lew-Smith'; dori@arrowwoodvt.com
Subject: RE: Bennington Solar

Hi Michael, thanks for checking in about the Bennington Solar project.

In reviewing the plans, it appears that phase I is reasonable. I base this on the criteria of impacting no more than 20% of any population of rare plant (S1, S2, or S2/S3). However, there is potentially a problem with Phase II as presently proposed. Below I calculated the cumulative impact of both phases on the four plants at the site.

Arrow-Leaved American-Aster (*Symphyotrichum urophyllum*) S1: Impact to 30 of 195 plants = 15.4% of population impacted

Nimblewill Muhly (*Muhlenbergia schreberi*) S2: Impact to 29 of 59 plants = 49.2% of population impacted

Rough-Leaved Goldenrod (*Solidago patula*) S3: Impact to 0 of 100+ plants = 0 % of population impacted

Loose Sedge (*Carex laxiculmis*) S3: Impact to 0 of 100+ plants = 0 % of population impacted.

So the concern is the impact to the Muhly. I assume that not all of the 29 plants located within the arrays would be directly impacted, and that only a subset would be taken by the posts. However, I am concerned about the long term shading cast by the arrays proposed for the NE corner in the vicinity of the Muhly polygons.

We'll also need to discuss ongoing management at the site, mowing regime and invasive species monitoring.

Give me a call if you want to discuss further.

Bob

P.S. I note in your email message that you say that the conservation area is around the largest population of aster and sedge whereas the plans depict the conservation area around the *Solidago*. Did you mean to say *Solidago* in your email or is the legend on the plan incorrect?

Bob Popp
Department Botanist
VT. Dept of Fish and Wildlife
Natural Heritage Inventory
(802) 476-0127

From: Michael Lew-Smith [mailto:michael@arrowwoodvt.com]
Sent: Wednesday, September 10, 2014 8:55 PM
To: Popp, Bob; dori@arrowwoodvt.com
Subject: RE: Bennington Solar

Hi Bob,

Quick question about phase 1. Would you recommend/require transplanting the individuals of aster that will be destroyed by the development? If so, would you recommend a late fall transplanting, or early spring (if the locations are flagged now).

Thanks.

-Michael

Michael Lew-Smith
Ecologist/Botanist
Arrowwood Environmental
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Hardwick, VT 05843
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www.arrowwoodvt.com

From: Popp, Bob [mailto:Bob.Popp@state.vt.us]
Sent: Tuesday, September 16, 2014 12:00 PM
To: 'Michael Lew-Smith'
Subject: RE: Bennington Solar

Hi Michael. Yes because of its rarity we certainly would recommend if not require transplanting the Arrow-Leaved American-Aster (*Symphyotrichum urophyllum*). Fall would be fine, if it is not too late. The concern would be frost heaving if the ground begins to freeze before the plants have time to extend their roots and get well established. Spring would be ok too, but you would need to be certain that the plants are identifiable early in the year and there would be a longer period of watering.

(Additional text unrelated to the project redacted)

Bob

Bob Popp
Department Botanist
VT. Dept of Fish and Wildlife
Natural Heritage Inventory

(802) 476-0127

From: Michael Lew-Smith [mailto:michael@arrowwoodvt.com]
Sent: Wednesday, September 24, 2014 9:16 PM
To: Popp, Bob
Subject: RE: Bennington Solar

Hi Bob,

I just wanted to check in with you about this. I heard that we got the go ahead to transplant from your agency/lawyers. I assume they consulted you as well about this and you are ok with us commencing even though the permit is still pending.

Also, what is your sense of timing for this? You expressed concern about getting them transplanted sooner because of the frost. I was thinking to wait a few weeks because they are in bloom right now.

Thanks for your input.

-Michael

Michael Lew-Smith
Ecologist/Botanist
Arrowwood Environmental
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802-434-7276
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From: Popp, Bob <Bob.Popp@state.vt.us>
Sent: Friday, September 26, 2014 10:50 AM
To: 'Michael Lew-Smith'
Subject: RE: Bennington Solar

Hi Michael, thanks for checking back. Yes, I was consulted re. the transplanting, and approved of it. I don't generally like moving plants prior to a permit being issued just to avoid moving them unnecessarily if something were to change, but it sounds like they want to break ground next spring probably before the plants are recognizable so this may be our best opportunity. Also the plants are not

listed so they are afforded less protection. I am concerned about doing it too late, but your concern about them still being in flower is an equal concern. I think that we should wait a couple of weeks, but I'm not sure that we'd want to go beyond the middle of Oct. My thought would be to cut any flowers remaining at that time, and move them. Being that far south the ground probably won't freeze much for another couple of months. Since it is not state listed you would not need a permit to remove flowers.

Bob Popp
Department Botanist
VT. Dept of Fish and Wildlife
Natural Heritage Inventory
(802) 476-0127

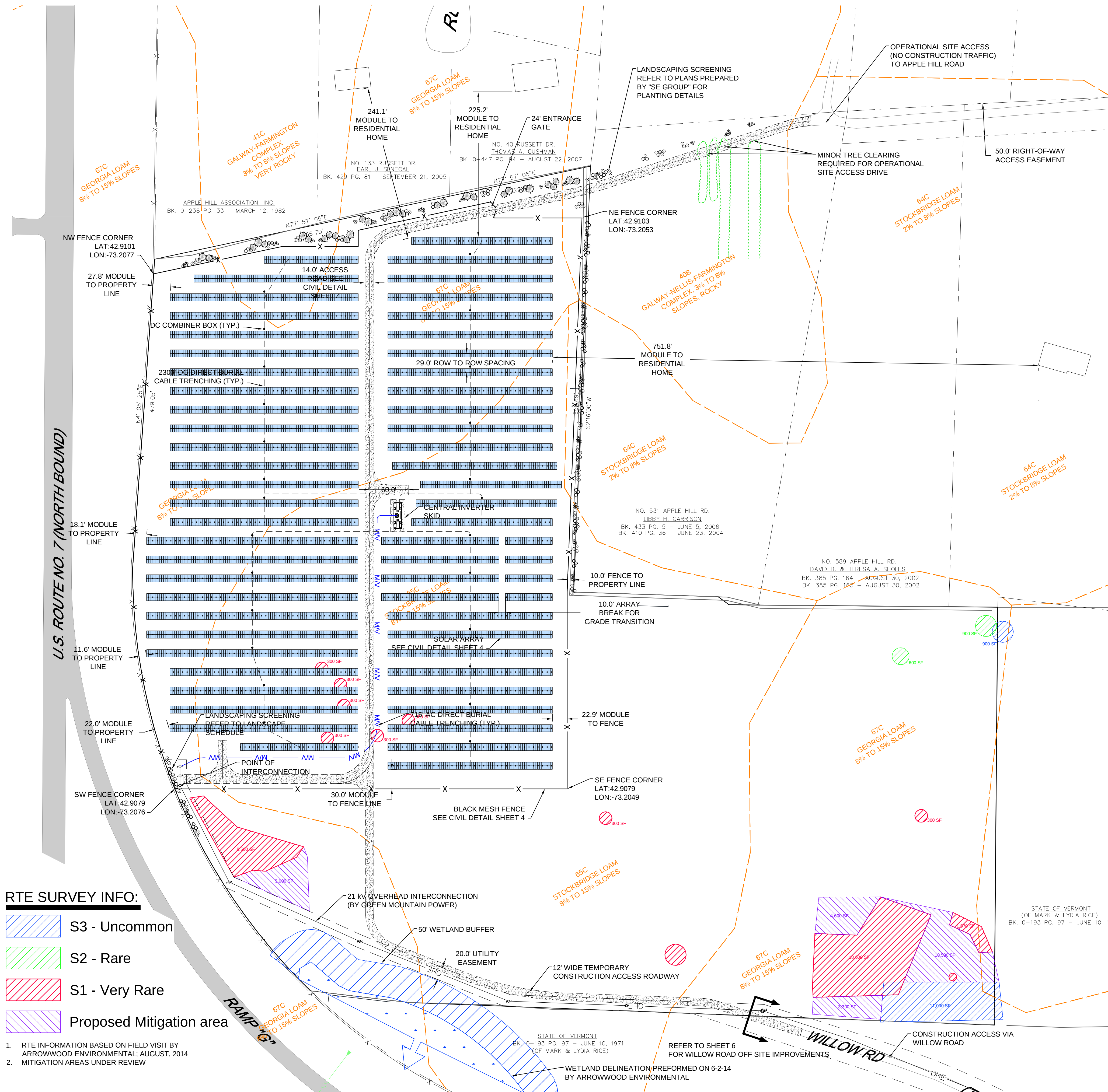
Attachment C

Site Plan with Conservation Areas

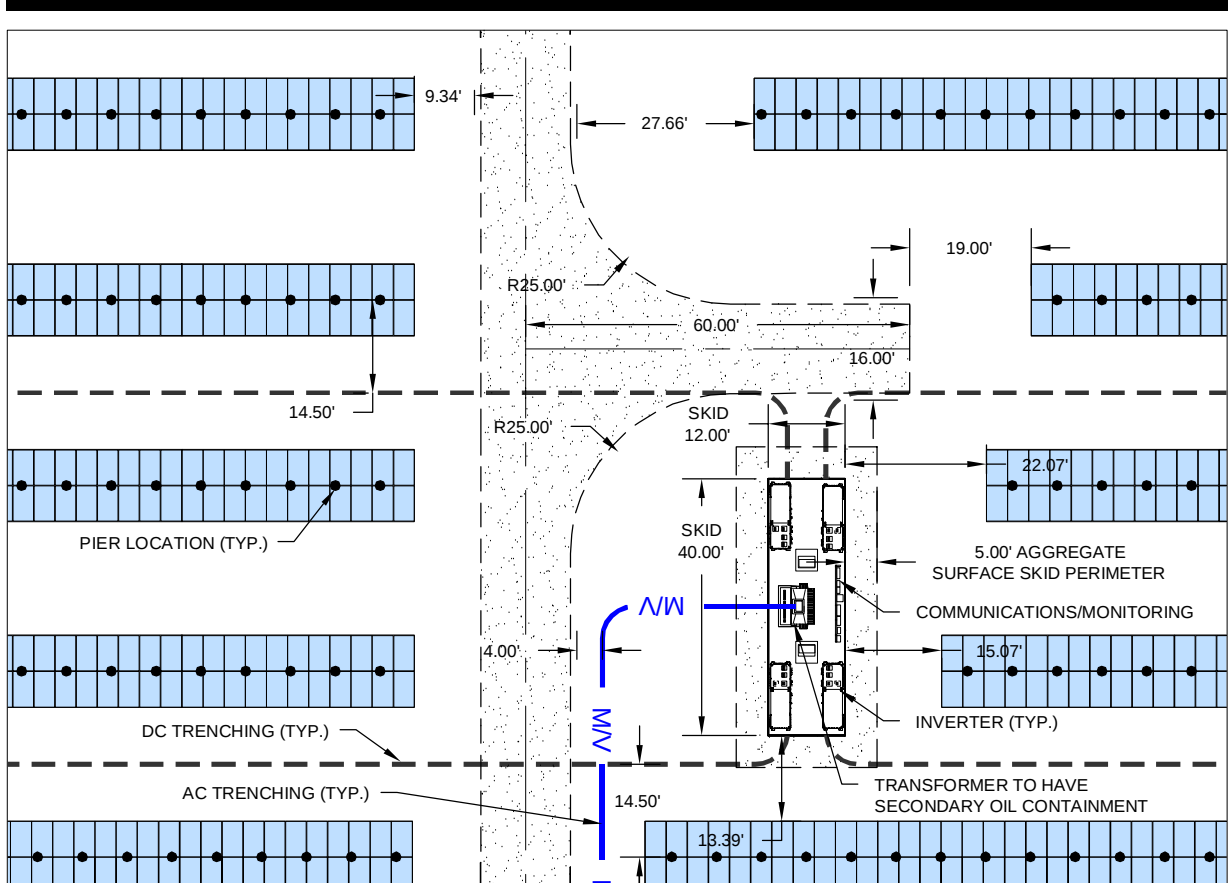


0' 60' 120'

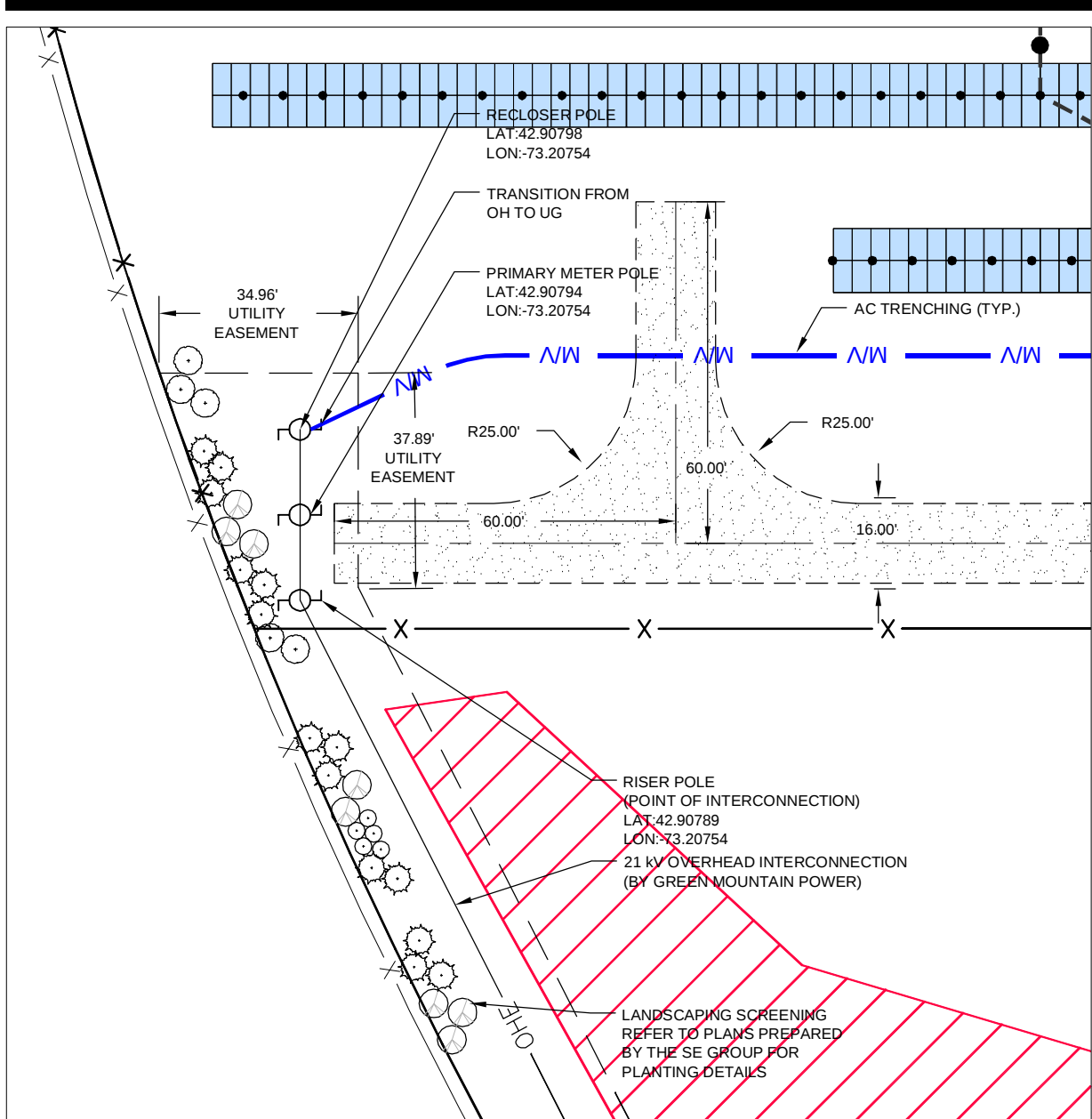
Sheet:



INVERTER SKID DETAIL - 1"=30'



INTERCONNECTION DETAIL - 1"=30'



LEGEND:

- EXISTING PROPERTY LINE
- PROPOSED SETBACK
- PROPOSED FENCE
- PROPOSED GRAVEL ACCESS ROAD
- PROPOSED SOLAR ARRAY BLOCK
2 STRINGS - 11 MODULES
- AC DISTRIBUTION TRENCH
- DC DISTRIBUTION TRENCH
- NRCS SOIL INFORMATION

GENERAL NOTES

- PROPERTY SURVEY INFORMATION FOR THIS PROJECT PROVIDED BY VERMONT SURVEY CONSULTANTS, LLC.
- REFER TO ALTA SURVEY FOR LOT BEARINGS, DIMENSIONS AND AREAS. GEOTECHNICAL REPORTS HAVE BEEN PREPARED BY NEIL O ANDERSON AND ASSOCIATES. THE CONTRACTOR SHALL BE FAMILIAR WITH THE REPORTS AND SHALL REVIEW ALL RECOMMENDATIONS.
- ALL DIMENSIONS ARE TO EDGE OF GRAVEL, FENCE LINES AND PERPENDICULAR TO PROPERTY LINES UNLESS OTHERWISE NOTED.

SITE SURFACE CALCULATIONS

IMPERVIOUS CALCULATIONS	EXISTING SITE		PROPOSED SITE	
	SF	AC	SF	AC
TOTAL SITE AREA	1189164	27.30	1189164	27.30
GRAVEL ACCESS ROAD			27209	0.62
TEMPORARY CONSTRUCTION ACCESS			11828	0.27
RACKING FOUNDATIONS			755	0.02
INVERTER SKID AREA			1100	0.03
TOTAL IMPERVIOUS	0	0.00	40892	0.94
PERCENTAGES	PERVIOUS	IMPERVIOUS	PERVIOUS	IMPERVIOUS
	100.00%	0.00%	96.56%	3.44%

RTE SURVEY INFO:

- S3 - Uncommon
- S2 - Rare
- S1 - Very Rare
- Proposed Mitigation area

- RTE INFORMATION BASED ON FIELD VISIT BY ARROWWOOD ENVIRONMENTAL; AUGUST, 2014
- MITIGATION AREAS UNDER REVIEW

Attachment D: Site Pictures



Title: Conservation Area



Title: Plot 1



Chelsea Farm Solar Rare Plant Mitigation Report



Title: Plot 2



Title: Plot 3

