

2018 Chelsea Hill Solar Rare Plant Monitoring Report

I. Introduction

As part of the environmental assessment for the proposed Chelsea Solar Project, Arrowwood Environmental (AE) assessed the proposed impacts on rare, threatened and endangered (RTE) plant species. An RTE plant inventory of the Project site was conducted on August 14th, 2014 and subsequently updated on October 11-12, 2017. In 2014, a population of arrow-leaved aster (*Symphyotrichum urophyllum*) was discovered in the Project area. This plant is not listed as Threatened or Endangered in Vermont, but it is ranked as S1-very rare. Transplantation of the arrow-leaved aster into an established Conservation Area occurred in 2014 and 2017. The purpose of this report is to document the monitoring efforts that were undertaken in 2018 to assess those transplantation efforts.

II. Monitoring

A map of the Project site with the Conservation Area, plant locations and plot locations is shown in Figure 1.

Monitoring of the transplant plots has occurred yearly since transplanting occurred in 2014. The monitoring in 2018 occurred on October 17. During each monitoring period, the number of basal rosettes and flowering stems in each plot was documented. In addition, the presence and abundance of other species colonizing the plots was recorded. The plots were “weeded” during the 2017 and 2018 monitoring events, and will continue to be weeded during each subsequent monitoring event. The focus of the weeding process was to decrease competition on the arrow-leaved aster plants. While most species other than the aster were removed, in order to minimize disturbance to the aster plants, some species were left untouched. Table 2 lists the plot data from the four transplant plots.

Table 2. Vegetation data of *Symphyotrichum urophyllum* transplant plots

	# Of Plants 2014	# Of Plants 2015	# Of Plants 2016	# Of Plants 2017	# Of Plants 2018
Plot 1	22	30	33	51	43
Plot 2	36	42	43	45	42
Plot 3	31	44	43	48	38
Plot 13*	NA	NA	NA	9	21
TOTAL	89	116	119	153	144

*Plot 13 was established in 2017.

As can be seen from this data, the total number of plants in the transplant plots increased after the first year of transplanting. This is true of both the 2014 plots as well as the 2017 plots. As mentioned in previous reports, most of the plants were in seed when transplanted. It is likely that some seeds germinated and became established within the plots. In addition, since there are arrow-leaved aster plants present in the area, there could be germination of seed-banked material with the creation of the transplant plots.

Since that time, the total number of plants has stayed relatively stable. There was a slight decrease in the number of plants in 2018. The reason for this decrease is not known. However, the overall health of the plants appears to be good, with each plot showing some reproduction. Deer appear to preferentially browse this species of aster. Some damage from browsing is apparent in most plots during most monitoring events.

A photographic record of each plot during each monitoring event is attached. To comply with the Memorandum of Understanding established with the Vermont Agency of Natural Resources, monitoring will continue for three years post-construction.

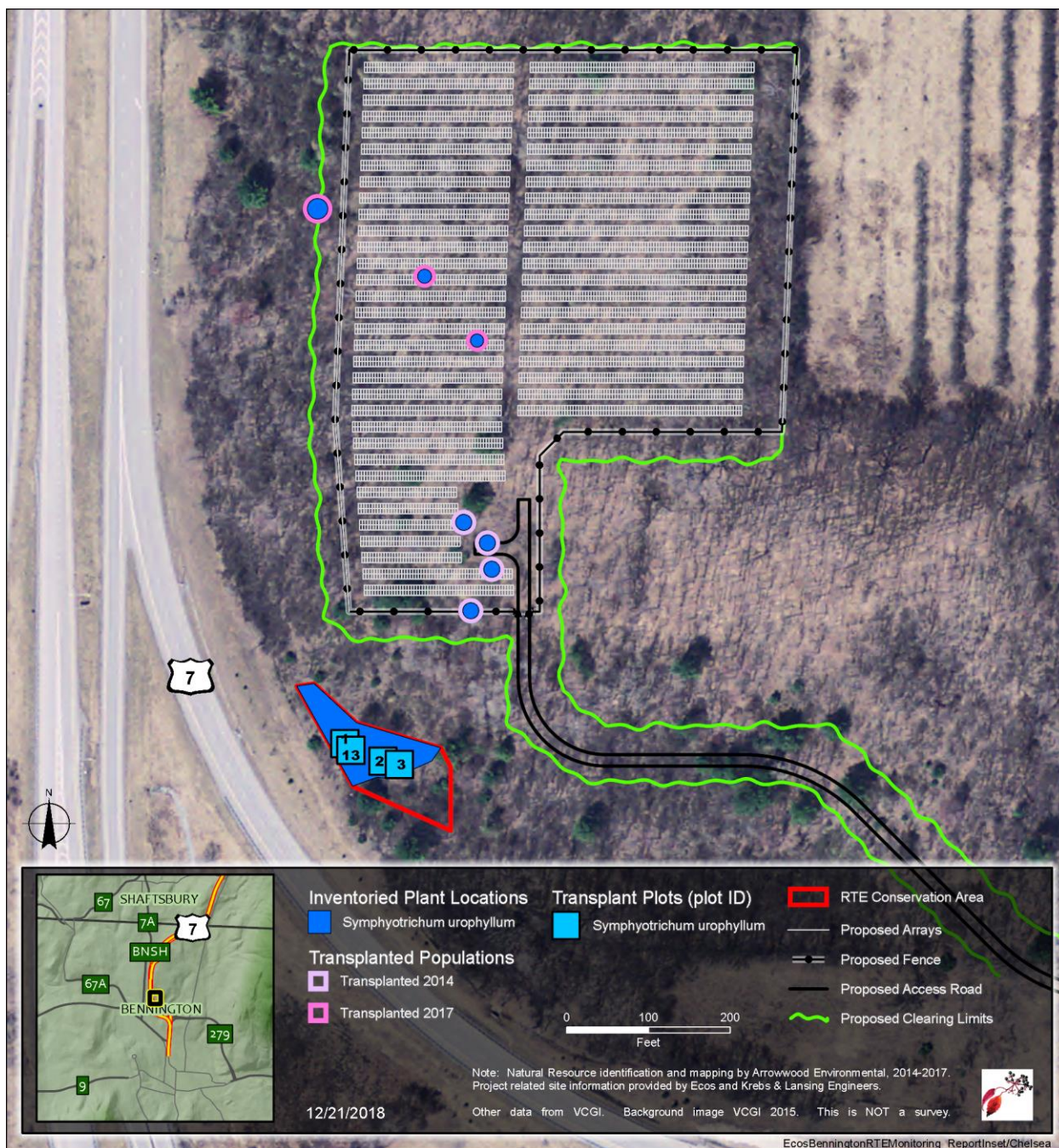


Figure 1. Map of rare plant populations and transplant plots

Appendix 1:

Photo Documentation of *Symphyotrichum urophyllum* transplant plots



Plot 1 10/12/2014



Plot 1 10/7/2015



Plot 1 9/13/2016



Plot 1 10/12/2017



Plot 1 10/17/2018



Plot 2 10/12/2014



Plot 2 10/7/2015



Plot 2 9/13/2016



Plot 2 10/12/2017



Plot 2 10/17/2018



Plot 3 10/12/2014



Plot 3 10/7/2015



Plot 3 9/13/2016



Plot 3 10/12/2017



Plot 3 10/17/2018



Plot 13 11/28/2017



Plot 13 10/17/2018