

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. 19-0516-PET

Petition of Otter Creek Solar LLC, requesting a certificate of public good, pursuant to 30 V.S.A. § 248, authorizing the installation and operation of the “Warner Solar Project,” a 2.2 MW solar electric generation facility in Bennington, Vermont	
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**PETITIONER’S RESPONSES TO
SECOND SET OF INFORMATION REQUESTS FROM
THE AGENCY OF NATURAL RESOURCES**

NOW COMES Otter Creek Solar LLC (“Petitioner” or “OCS”) by and through its attorney, Michael J. Melone, and hereby provides these supplemental responses to the November 3, 2020 request for information by the Agency of Natural Resources (“ANR” or the “Agency”).

PROPOUNDING PARTY: Vermont Agency of Natural Resources

RESPONDING PARTY: Otter Creek Solar LLC

SET NO: Second

EXHIBITS:

Exhibit WS-INFO-ANR-3 - Cover Types in Presumed Population Area
Exhibit WS-INFO-ANR-4 - Soils in Presumed Aster Population Area
Exhibit WS-INFO-ANR-5 - Bedrock Geology in Aster Population Area
Exhibit WS-INFO-ANR-6 - Map Showing Stark White Arrow-leaved Aster Location
Exhibit WS-INFO-ANR-7 - Stark White Arrow-leaved Aster Location Identification
Exhibit WS-INFO-ANR-8 - Flora of North America
Exhibit WS-INFO-ANR-9 - Element Occurrence_10717
Exhibit WS-INFO-ANR-10 - Rte 7 & 279 Interchange, North Bennington
Exhibit WS-INFO-ANR-11 - Principles of Angiosperm Taxonomy

GENERAL OBJECTIONS

1. OCS objects to any instructions contained in the ANR discovery requests to the extent such instructions purport to place on OCS greater requirements or reserve greater rights to ANR than are permitted by the Vermont Rules of Civil Procedure as made applicable to the Public Utility Commission (the “Commission”) proceedings through Commission Rule 2.214(A).

2. OCS objects to any request for information or production of document(s) that is (or are) subject to the attorney-client privilege, constitute work product, are protected under state or federal law or are proprietary, competitively sensitive or confidential, constitute draft and/or non-final documents and/or constitute communications containing or concerning any of the above.

3. OCS objects to the discovery requests to the extent that they (a) are overbroad or unduly burdensome; (b) are cumulative; (c) call for the production of documents not in the possession, custody, or control of OCS; (d) call for the review, compilation, or production of publicly available documents that could be obtained by the requesting party in a less burdensome manner, including on a public website; (e) call for the review, compilation and/or production of documents already in the possession of ANR, custody, or control; (f) are vague and/or ambiguous; (g) seek information not reasonably calculated to lead to the discovery of admissible evidence; or (h) call for the review, compilation, or production of a voluminous number of documents at material expense to OCS.

4. Each of these General Objections shall be incorporated by reference into the below-referenced objections and responses as if expressly restated therein. OCS does not hereby waive any objections, and it reserves the right to later raise any additional, available objections.

OCS expressly reserves the right to supplement, clarify, revise, or correct any or all of the responses herein at any time. By making any response to the Requests, OCS does not waive and hereby expressly reserves, the right to assert any and all objections as to the admissibility of such responses into evidence at the time of trial of this action, or in any other proceeding, on any and all grounds, including but not limited to competency, relevance, materiality, and privilege. OCS also does not waive and hereby expressly reserves the right to object on any ground at any time to a demand for further responses to these requests or any other discovery procedures involving or relating to the subject matter of the Requests responded to herein. Further, OCS provides the responses herein without in any manner, express or implied, admitting that the items in the Requests or in any response thereto are relevant or material to the subject matter of this proceeding.

Q.ANR:OCS.2-1. Please refer to the Third Supplemental Prefiled Direct Testimony of Jim McClammer and Exhibit WS-JM-17 (Second Supplemental Aster Survey Report) which claim “by extrapolation” that the local population of white arrow-leaved asters may be 9,013 and answer the following.

- a. Provide an aerial photo-based map demarcating the 247 acres utilized in the equation to calculate the population estimate.
- b. Identify every landcover type (e.g., open field or meadow, scrub or brush, wooded, brooks or streams, rivers, ponds, roads, buildings and other structures, parking lots and driveways, railroads, etc.) which exists in the referenced 247 acres and explain how you determined the landcover type.
- c. Identify the total amount (in square feet and acres) of each landcover type identified above which exists in the referenced 247 acres.
- d. Identify the total percentage of each specific landcover type identified above which exists in the referenced 247 acres so that the sum of the percentages equals 100%.
- e. Identify all soil and bedrock types which occur within the 247 acres and, for each specific soil and bedrock type, identify the total percentage of that soil and bedrock type within the referenced 247 acres so that the sum of the percentages equals 100%.
- f. Identify each and every location where you conducted soil sampling, identify who collected the soil samples, the methodology utilized to collect each soil sample, who analyzed the samples, the methodology utilized to analyze each soil sample, and produce all field notes, chain of custody reports and laboratory reports.
- g. If you did not collect any soil samples, so state.
- h. Indicate which, if any, of the above identified landcover-soil-bedrock types provide habitat for the white arrow-leaved aster and provide your justification for that assumption.

RESPONSE:

a. No specific 247 acres were delineated to encapsulate the “population”, the definition of which is vague and ambiguous. The Guidance defines a population “as all of the individuals of a given species that occur within one kilometer unless separated by an isolating barrier”¹. We used a hypothetical square kilometer which contains 247 acres, but these acres can be located at a number of different locations (e.g., with its center in the middle of the project site, or with one of its sides along one of the boundaries of the site). In addition, “within one kilometer”, can also be interpreted to mean the area within

¹ Population definition from “Guidance for Conducting Rare, Threatened, and Endangered Plant Inventories in Connection with Section 248 Projects” dated October 5, 2016.
<https://anr.vermont.gov/sites/anr/files/co/planning/documents/guidance/Guidance%20for%20Conducting%20RTE%20Plant%20Inventories%20248%20Projects.pdf>

a circle with a radius of one kilometer, which would encompass an area of 776.28 acres ($A = \pi r^2$), or even the area within one kilometer of the project boundary, which would yield a significantly greater area. For our estimate of the number of individuals in the population, we used the most conservative equation (i.e., the one that provides the smallest area - the square kilometer). This methodology assumes Route 7A, Route 279, Rice Lane and Route 67A are not “isolating barriers”, which is supported by recent work by NatureServe that indicates unsuitable habitat (a kilometer in width) is necessary to be a barrier to gene flow for vascular plant species².

- b.** See answer to “a” above.
- c.** See answer to “a” above.
- d.** See answer to “a” above.
- e.** See answer to “a” above.
- f.** See answer to “a” above.
- g.** See answer to “a” above.
- h.** See answer to “a” above.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

² NatureServe Biotics5 Habitat-based Plant Element Occurrence Delimitation Guidance;
https://www.natureserve.org/sites/default/files/eo_specs-habitat-based_plant_delimitation_guidance_may2020.pdf

Q.ANR:OCS.2-2. Refer to Mr. McClammer's estimate of 5,109 individuals which is based on a 140-acre area and answer the following.

- a. Provide an aerial photo-based map demarcating the 140 acres in the equation used to calculate the population estimate.
- b. Identify every landcover type (e.g., open field or meadow, scrub or brush, wooded, brooks or streams, rivers, ponds, roads, buildings and other structures, parking lots and driveways, railroads, etc.) which exists in the referenced 140 acres and explain how you determined the landcover type.
- c. Identify the total amount (in square feet and acres) of each landcover type identified above which exists in the referenced 140 acres.
- d. Identify the total percentage of each specific landcover type identified above which exists in the referenced 140 acres so that the sum of the percentages equals 100%.
- e. Identify all soil and bedrock types which occur within the 140 acres and, for each specific soil and bedrock type, identify the total percentage of that soil and bedrock type within the referenced 140 acres so that the sum of the percentages equals 100%.
- f. Identify each and every location where you conducted soil sampling, identify who collected the soil samples, the methodology utilized to collect each soil sample, who analyzed the samples, the methodology utilized to analyze each soil sample, and produce all field notes, chain of custody reports and laboratory reports.
- g. If you did not collect any soil samples, so state.
- h. Indicate which, if any, of the above identified landcover-soil-bedrock types provide habitat for the white arrow-leaved aster and provide your justification for that assumption.

RESPONSE:

a. An aerial photo-based map demarcating the 140 acres utilized in the equation to calculate the population estimate is provided as **Exhibit WS-INFO-ANR-3, Cover Types in Presumed Population Area**. Based on a re-delineation of the cover types, the referenced 140-acre population area is revised upward to **153.16 acres**.

b. Land cover types shown on **Exhibit WS-INFO-ANR-3** are based on interpretation of Google Earth Pro aerial photos and field reconnaissance.

c. The total estimated area of each cover type is as follows: 1) Field/Meadow: 2,032,089 square feet or 46.61 acres; 2) Wooded: 3,033,647 square feet or 69.66 acres; and, 3) Scrub: 1,607,820 square feet or 36.89 acres.

d. The total percentage of each specific landcover type identified above is: 1) Field/Meadow: 30.45%; 2) Wooded: 45.46%; and, 3) Scrub: 24.09%.

e. The soil and bedrock types within the 153.16 acres are shown on **Exhibit WS-INFO-ANR-4, Soils in Presumed Aster Population Area**, and **Exhibit WS-INFO-ANR-5, Bedrock Geology in Aster Population Area**.

Soil Map Units. The following table shows the soil map units that occur within the presumed 153.16-acre population area. The location of each of these units is shown on **Exhibit WS-INFO-ANR-4**. The small discrepancy between the total acreage calculations for cover types (153.16) and soil units (156.8) is because the soil map unit calculation includes land under the railroad right-of-way, access drives, hotel, and pond (just east of the Warner Solar Project site).

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
18B	Windsor loamy sand, 0 to 8 percent slopes	19.7	12.6%
18C	Windsor loamy sand, 8 to 15 percent slopes	14.5	9.2%
23A	Adrian and Saco soils, 0 to 2 percent slopes	9.2	5.9%
24A	Carlisle mucky peat, 0 to 2 percent slopes	0.1	0.0%
27B	Udipsamments and Udorthents, gently sloping	5.0	3.2%
64B	Stockbridge loam, 2 to 8 percent slopes	4.7	3.0%
64C	Stockbridge loam, 8 to 15 percent slopes	15.8	10.1%
66B	Georgia loam, 3 to 8 percent slopes	28.8	18.3%
66C	Georgia loam, 8 to 15 percent slopes	14.5	9.2%
68A	Massena silt loam, 0 to 3 percent slopes	5.0	3.2%
69B	Massena silt loam, 3 to 8 percent slopes, very stony	34.8	22.2%
70B	Groton gravelly fine sandy loam, 3 to 8 percent slopes	1.8	1.1%
70D	Groton gravelly fine sandy loam, 15 to 25 percent slopes	2.1	1.3%
71A	Hero gravelly fine sandy loam, 0 to 3 percent slopes	0.9	0.6%
W	Water	0.0	0.0%
Totals for Area of Interest		156.8	100.0%

Table 1. Soil map units that occur within the presumed population area by acreage and percentage. White arrow-leaved asters were documented growing on the following units: 18C, 66B, 66C, and 69B. Table produced by websoilsurvey.sc.egov.usda.gov.

The drainage classes of soil series on which white arrow-leaved asters were documented include excessively-drained (Windsor loam sand), moderately well-drained (Georgia loam), and somewhat poorly-drained (Massena silt loam).

Bedrock Geology. Bedrock types within the 153.16 acres include 1) dolostone and limestone of the Ordovician Bascom Formation (8.71 acres or 5.69%); 2) sandstone and dolostone of the Cambrian Monkton Quartzite (4.0 acres or 2.61%); and, 3) dolostone of the Cambrian Dunham Dolostone (140.45 acres or 91.7%).

f. Soils were sampled at hundreds of locations on the +/-70 acres under the control of the Petitioner to determine the location of hydric soils for wetland determinations. I conducted the soil sampling and made the interpretations, but I also had Dr. Rick van de Poll, Ecosystem Management Consultants, verify my interpretations. The samples were taken using a hand auger or tile spade and colors were determined using a Munsell Soil Chart in accordance with the most recent versions of the Army Corps of Engineers 1987 Wetlands Delineation Manual³ and the 2012 Regional Supplement to the Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region⁴. The upland soils lack hydric soil indicators even though they often have a chroma 2, or less, layer near the soil surface. Below the low-chroma horizon, upland soils typically have a chroma 3 loamy layer. This is consistent with the USDA NRCS Web Soil Survey⁵ that has the most common soils mapped as moderately well-drained Georgia loam. This soil series has surface soil (A or Ap) that is very dark grayish brown loam (1-10 inches) and overlies subsoil that is yellowish brown silt loam (18-30 inches). Wetland soils occur as inclusions in upland soils and are typically depleted below a dark surface (meeting hydric soil indicator A11 of the Regional Supplement) and have a depleted matrix below the surface (meeting hydric soil indicator F3 of the Regional Supplement).

g. I did not retain any of the soil samples.

h. White arrow-leaved aster plants were documented, within the presumed population area, growing on: 1) calcareous soils of Dunham Dolostone in all cover types (field or meadow, scrub, and wooded habitats); 2) poorly-drained, somewhat poorly-drained, moderately well-drained, and excessively drained soils; and 3) sandy and loamy soils.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

³ Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

⁴ US Army Corps of Engineers Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Technical Report ERDC/EL TR-12-1 (January 2012)

⁵ websoilsurvey.sc.egov.usda.gov

Q.ANR:OCS.2-3. Admit that neither Mr. McClammer nor anyone acting on your behalf performed any on-site surveys for white arrow-leaved asters in the referenced 247 acres and 140 acres with the exception of the 26.5-acre study area described and depicted in Exhibit WS-JM-17.

RESPONSE:

Admitted. No person surveyed for white arrow-leaved asters in any area within the 153.16 acres with the exception of the 26.5-acre study area.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-4. Provide the following information if your response to the immediately preceding request 2-3 is anything other than an unqualified admission.

- a.** Identify each location where on-site surveys for white arrow-leaved asters were performed and depict each such location on a map.
- b.** Identify every person who participated in the on-site survey for each separate location and provide their affiliation, address, educational background, training and experience and include copies of their resume or curriculum vitae.
- c.** Provide all field notes, drawings, photographs, and identify all reference materials utilized, in connection with the survey for each location.

RESPONSE:

See response to 2-3 above.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-5. Admit neither Mr. McClammer nor anyone acting on your behalf observed the presence of white arrow-leaved asters in the referenced 247 acres and 140 acres with the exception of the 26.5-acre study area described and depicted in Exhibit WS-JM-17.

RESPONSE:

Denied. I observed a white arrow-leaved aster plant on the proposed Stark Solar Project Site, which is north of the Warner Project Site and within the referenced 153.16 acres.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-6. If you contend that white arrow-leaved asters were observed as being present in the referenced 247 acres and 140 acres, excepting the 26.5-acre study area described and depicted in Exhibit WS-JM-17, provide the following information.

- a. Identify each location where white arrow-leaved asters were confirmed as being present and depict each such location on a map.
- b. Identify how many individual white arrow-leaved asters were confirmed to exist at each location.
- c. Identify every person who participated in the identification for each separate location and provide their affiliation, address, educational background, training and experience and include copies of their resume or curriculum vitae.
- d. Provide all field notes, drawings, photographs, and identify all reference materials utilized, in connection with each location.

RESPONSE:

a. *A white arrow-leaved aster was located by me on the Stark Solar Project site (42°54'48.81"N, 73°12'55.47"W), which is within the referenced 153.16 acres, on September 20, 2019. Its location is depicted on **Exhibit WS-INFO-ANR-6, Map Showing Stark White Arrow-leaved Aster Location**. No specific 247 acres were delineated to define the limits of the Aster population. See response to 2-2.*

b. *Only one white arrow-leaved aster plant was confirmed to exist at the above location.*

c. *No person other than me participated in the identification of the white arrow-leaved aster at the above location.*

d. *Notes on, and photographs of, the white arrow-leaved aster at the above location are provided in **Exhibit WS-INFO-ANR-7, Stark White Arrow-leaved Aster Location Identification**.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-7. Identify specifically Mr. McClammer's basis for extrapolating and projecting the number of white arrow-leaved aster individuals in the 247 acres and 140 acres as described in answer 4 on page 2 of 5 of his Third Supplemental Prefiled Direct Testimony and on page 3 of his Second Supplemental Aster Survey Report and produce copies of all reference materials, studies, articles, reports, and all other sources which support and formed the basis for the use of this methodology.

RESPONSE:

*The estimate of the number of white arrow-leaved aster individuals in the 153.16 acres is based on the following: 1) white arrow-leaved aster plants occur within the 26.5-acre study area in field, meadow, scrub and wooded habitats on poorly-drained to excessively-drained soils (i.e., they tolerate broad ecological conditions); 2) the 153.16 acres are comprised of identical habitats with similar soils on calcareous bedrock; 3) the Flora of North America confirms the white arrow-leaved aster occurs in a wide variety of habitats⁶ (see **Exhibit WS-INFO-ANR-8, Flora of North America**); 4) the assumption that the average density of white arrow-leaved asters identified within the study area is representative of the average density of white arrow-leaved asters within the 153.16 - acre population area; 5) the 153.16 acres of the population area are contiguous to, and within one kilometer of the edge of, the aster population on the Warner project site; 6) Route 7A, Route 279, Rice Lane and Route 67A are presumed to be 'isolating barriers' to dispersal and gene flow⁷; and, 7) hundreds of white arrow-leaved aster individuals were recently identified at the Chelsea and Apple Hill Solar Projects during listed species surveys (see **Exhibit WS-INFO-ANR-9, Element Occurrence_10717 & Exhibit WS-INFO-ANR-10, Rte 7 & 279 Interchange North Bennington**) less than a kilometer from known occurrences within the study area (suggesting they are discovered when diligently searched for).*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

⁶Flora of North America, North of Mexico, Vol. 20; 2006, p. 507, states "Open, dry or mesic, sandy or loamy, sometime rocky soils, limestone pavements, glades, ravines, open oak, sassafras, aspen, or pine woods, edges of woods, moist or dry, rocky bluffs, savanna, wooded banks, stabilized dunes, fields, roadsides, hedgerows, railroads; 40-300+ m".

⁷ However, NatureServe Biotics5 Habitat-based Plant Element Occurrence Delimitation Guidance indicates these roadways which have a width of less than one kilometer of unsuitable habitat are not "isolating barriers" for vascular plant populations; https://www.natureserve.org/sites/default/files/eo_specs-habitat-based_plant_delimitation_guidance_may2020.pdf. As such, the inclusion of Route 7A, Route 279, Rice Lane and Route 67A as "isolating barriers" is a conservative method of determining the number of individuals in the "population".

Q.ANR:OCS.2-8. Admit that the kind of extrapolation described in answer 4 on page 2 of 5 of the Third Supplemental Prefiled Direct Testimony of Jim McClammer and on page 3 of his Second Supplemental Aster Survey Report is not an accepted scientific methodology. If your response is anything other than an unqualified admission, explain why it is an accepted scientific methodology and produce copies of all reference materials, studies, articles, reports, and all others sources that support your contention that it is an accepted scientific methodology.

RESPONSE: *Denied. Our methodology is based on the Section 248 Guidance Document that states a population is “all of the individuals of a given species that occur within one kilometer unless separated by an isolating barrier”. With all due respect, although “[p]opulations are defined in different ways for different purposes”⁸, I believe the standard in the Guidance definition is arbitrary and not particularly scientific. Nevertheless, I used it in order to comply with the Guidance and determine the number of individuals that can be taken from the Warner solar site without causing a significant impact on the overall “population”. Our methodology, as noted in 2-7, is based on explicit assumptions that are reproducible, and proposes testable hypotheses.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

⁸ Davis, P. H. & V. H. Heywood. 1973. Principles of Angiosperm Taxonomy. Robert E. Krieger Publishing Company. Huntington, New York. p. 353; **Exhibit WS-Info-ANR-11. Principles of Angiosperm Taxonomy.**

Q.ANR:OCS.2-9. Describe your basis for, and produce all documentation which supports, Mr. McClammer's position that the condition of the 247-acre and 140-acre areas discussed in his Third Supplemental Prefiled Direct Testimony and his Second Supplemental Aster Survey Report are similar to the habitat conditions (for the aster) which exist at the Warner Solar project site.

RESPONSE: *My contention is habitats in the 153.16-acre area are similar to those found within the 26.5-acre study area. Specifically, field, meadow, scrub and wooded habitats on calcareous bedrock and soils with a wide range of drainage classes. This is based on field reconnaissance, published soil surveys and interpretation of aerial photos. See answers to 2-7 and 2-8.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-10. Identify the source of and produce all information regarding soil, moisture conditions, and disturbance regime of the 247-acre and 140-acre areas that Mr. McClammer reviewed and relied upon to form the basis of his extrapolation and projection of the total number of individuals in the local population discussed on page 2 of 5 of his Third Supplemental Prefiled Direct Testimony and on page 3 of his Second Supplemental Aster Survey Report.

RESPONSE: *Interpretations of soil moisture conditions and disturbance regimes are based on field observations, published soil surveys and examination of aerial photos taken at different times of the year and over the course of many years. See answers in 2-2.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-11. Admit that Vermont's rank of S1 (very rare) for the white arrow-leaved aster is based on the number of populations in the state and not the size of any of the local populations.

RESPONSE: *Admitted in part. Vermont's rank of S1 (very rare) for the white arrow-leaved aster is based on the number of known populations in the state.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-12. Mr. McClammer, in his answer 7 on page 3 of 5 in his Third Supplemental Prefiled Direct Testimony states that distinct populations of the white arrow-leaved aster are known to occur at three localities in the Bennington area. Identify all other distinct populations of the white arrow-leaved aster that occur with Vermont and that Mr. McClammer is personally aware of. If none, so state.

RESPONSE: *I am personally aware of the white arrow-leaved aster localities on and near the proposed Apple Hill and Chelsea Hill solar projects in North Bennington. See **Exhibit WS-INFO-ANR-9, Element Occurrence_10717** and **Exhibit WS-INFO-ANR-10, Rte 7 & 279 Interchange, North Bennington**. However, based on recent NatureServe Guidance for distinguishing element occurrences, it is my opinion that the Warner, Apple Hill and Chelsea Hill occurrences (and the Battle Creek and Stark occurrences) are all part of the same population. The distance from the western edge of the Chelsea Hill white arrow-leaved aster localities to Warner Locality 33 is 2,118 feet (0.65 kilometer) and to Battle Creek Locality BC24 it is 2,230 feet (0.68 kilometer). See **Exhibit WS-INFO-ANR-3**. The purpose of the revised Guidance, as stated in the Habitat-based Plant Element Occurrence Delimitation Guidance, is to more closely align element occurrences with biological populations in order to further conservation efforts.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-13. Mr. McClammer states that the white arrow-leaved aster is similar to several other aster species. Describe how he distinguished it from other aster species while conducting his survey of the 26.5-acre study area described and depicted in Exhibit WS-JM-17, specifically northern heart-leaved aster (*Symphyotrichum ciliolatum*), heart-leaved aster (*Symphyotrichum cordifolium*), and wavy-leaved aster (*Symphyotrichum undulatum*).

RESPONSE: *I initially distinguished the white arrow-leaved aster from similar asters based on characteristics of the peduncle bracts (following the identification key in Haines⁹) and then used the following features in the field - heads in elongate paniculiform arrays, white ray florets, distinctive lance-ovate blades with shallow cordate to truncated bases, and winged petioles. Heart-leaved aster (*Symphyotrichum cordifolium*) has blades with deeply cordate bases and sharply serrate teeth, and petioles that lack wings. Northern heart-leaved aster (*Symphyotrichum ciliolatum*) has few or no peduncle bracts; and, wavy-leaved aster (*Symphyotrichum undulatum*) have blue to violet flowers and stem leaves with petioles that clasp the stem.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

⁹ The taxonomy and nomenclature used here are from Arthur Haines (2011) *Flora Novae Angliae*.

Q.ANR:OCS.2-14. Explain how Mr. McClammer positively identified vegetative, i.e. non-flowering or fruiting plants during his survey(s) and distinguished them from the other aster species identified in the immediately preceding request 2-13.

RESPONSE: *I distinguished non-flowering plants of white arrow-leaved aster from other aster species by their distinctive lance-ovate blades with shallowly cordate to truncated bases, shallow crenate teeth, and distally-winged petioles.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-15. Admit that *Aster sagittifolius* Wedemeyer ex Willd is a synonym for what is currently named *Symphyotrichum urophyllum* (Lindl.) Nesom and that the concept of the species remains unchanged.

RESPONSE: *Denied. According to Haines, Aster sagittifolius Wedemeyer ex Willd is a synonym of Symphyotrichum cordifolium (L.) Nesom; whereas, Aster sagittifolius Wedemeyer ex Willd. var. urophyllum (Lindl.) Burgess is a synonym of Symphyotrichum urophyllum (Lindl.) Nesom.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-16. Identify each and every basis for Mr. McClammer's statement, on page 3 of 5 that the white arrow-leaved aster "has been overlooked because it flowers in late Fall and is similar to several other aster species" and produce copies of all reference materials, studies, articles, reports, and any other sources that support that statement.

RESPONSE: *Based on my own personal experience with finding and identifying this species, I think it may be overlooked because it flowers late in the Fall, is hard to definitively distinguish from closely related species (see answer to 2-13), often occurs in dense scrub-shrub habitats where it is difficult to see, and when it is found it may be erroneously identified by inexperienced observers as Symphyotrichum cordifolium (L.) Nesom. I also suspect fewer plant surveys are conducted by trained professionals during the late Fall and ANR's staff is too small to allocate much time to perform adequate surveys.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-17. Identify each and every basis for Mr. McClammer’s statement, on page 3 of 5 that the white arrow-leaved aster “is likely to occur at more than five locations within the State” and produce copies of all reference materials, studies, articles, reports, and any other sources that support that statement.

RESPONSE: *Based on my own observations white arrow-leaved aster is easy to overlook (see 2-16), and based on this study and published floras (e.g., Flora of North America) it occurs in a broad-range of habitats, including railroad rights-of-way, roadsides, woods, edges of woods, scrub, fields, and hedgerows. Since innumerable suitable habitats occur on calcareous bedrock throughout Vermont and white arrow-leaved aster appears to have efficient dispersal mechanisms, it only seems reasonable to assume it will be, or already is, present at many more locations.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-18. Identify each and every basis for Mr. McClammer’s statement, on page 4 of 5 that the white arrow-leaved aster “will find suitable habitat under the racks of solar panels” and produce copies of all reference materials, studies, articles, reports, and any other sources that support that statement.

RESPONSE: *It is my personal opinion that, in time, it is possible white arrow-leaved asters will find suitable habitat under the racks of solar panels. Installation of the racks has caused soil disturbance that provides substrate for white arrow-leaved aster seed to germinate and there are many seed sources located nearby. I am not particularly concerned about relatively low-light conditions under the solar panels as many white arrow-leaved aster plants are documented growing in comparable light conditions in dense scrub thickets.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-19. Admit that there is less direct sunlight under racks of solar panels than there is “on the southwest-facing slope” and “open habitats of the railroad corridor” adjacent to the Warner Solar project site which is discussed and depicted by photos in Mr. McClammer’s reports issued in connection with this case.

RESPONSE:

Admitted.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-20. Refer to the “Battle Creek Aster Distribution” map included in Exhibit WS-JM-17 (Second Supplemental Aster Survey Report) and admit that no white arrow-leaved asters were identified growing in the areas under the racks of solar panels at the Battle Creek Solar Project.

RESPONSE: *Admitted, no white arrow-leaved asters are currently growing under the racks.*

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-21. Is it your position that plant species which are native to, and which presently occur in Vermont (whether ranked as very rare, rare, uncommon, common, or very common) are not part of Vermont's natural environment?

RESPONSE:

No, that is not my position.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-22. Do you agree with the following statement? “Plant species which presently occur in and are native to Vermont are part of the natural environment of Vermont.”

RESPONSE:

Yes, I agree.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

Q.ANR:OCS.2-23. If you do not agree with the statement in 2-22 provide the basis for your disagreement.

RESPONSE:

See response to 2-22.

Person Responsible for Response: Jim McClammer

Title: Environmental Consultant, President of Connecticut Valley Environmental Services, Inc.

Date: November 17, 2020

I declare that the above Responses are true and accurate to the best of my knowledge and belief. I understand that if the above Responses are false, I may be subject to sanctions by the Commission pursuant to 30 V.S.A. § 30.

Dated at Charlestown, New Hampshire this 17th of November, 2020.

/s/ Jim McClammer
Jim McClammer
Environmental Consultant
President of Connecticut Valley
Environmental Services, Inc.