
SECTION 248 NATURAL RESOURCES REPORT

VELCO Sandbar Station Smartvalve Project – Natural Resources Report

Town of Milton, Vermont.

PREPARED FOR



VT Transco LLC
366 Pinnacle Ridge Road
Rutland, Vermont 05701

PREPARED BY



40 IDX Drive
Building 100, Suite 200
South Burlington, Vermont 05403

May 27, 2025

Table of Contents

1	Introduction	4
	Project Description	5
	Study Area Description	6
2	Section 248 Natural Resources Criteria.....	8
	Outstanding Resource Waters (10 V.S.A. § 1424a (d)).....	8
	Primary Agricultural Soils (30 V.S.A. § 248(b)(5))	8
	Air Pollution and Greenhouse Gas Impacts (30 V.S.A. § 248(b)(5))	10
	Water Pollution (10 V.S.A. § 6086(a)(1))	10
	Headwaters (10 V.S.A § 6086(a)(1)(A))	11
	Waste Disposal (§ 6086(a)(1)(B))	12
	Water Conservation (§ 6086(a)(1)(C))	12
	Floodways (10 V.S.A § 6086(a)(1)(D)).....	13
	Streams (10 V.S.A § 6086(a)(1)(E)).....	14
	Shorelines (10 V.S.A § 6086(a)(1)(F)).....	14
	Wetlands (10 V.S.A § 6086(a)(1)(G))	15
	Water Supply (§ 6086(a)(2) and (3))	16
	Soil Erosion (10 V.S.A § 6086(a)(4))	16
	Rare and Irreplaceable Natural Areas (RINA) (10 V.S.A § 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (10 V.S.A § 6086(a)(8)(A))	17
	Rare and Irreplaceable Natural Areas ("RINA").....	17
	Necessary Wildlife Habitat ("NWH")	18
	Endangered Species	19
3	Summary.....	23
4	References	24

Appendices

- A. Natural Resource Mapping
- B. Primary Agricultural Soils Mapping
- C. Representative Site Photographs
- D. Wetland and Water Summary Table
- E. USACE Wetland Determination Data Forms
- F. Vermont Potential Rare, Threatened, and Endangered Species and Natural
Communities in the Project Region and Onsite Habitats Summary

G. IPaC Official Species List

H. Species Checklist: Rare, Threatened and Endangered Plant Survey



Introduction

At the request of VT Transco LLC ("VELCO"), VHB conducted natural resources assessments in support of the proposed Sandbar Station expansion in Milton, Vermont. This natural resources report ("Report") includes a general description of the proposed Project, the Project's Study Area, a description of individual methodologies for each resource assessment, the findings, and an evaluation of the Project with respect to each criterion per the applicable 30 V.S.A. §248 (b)(5) natural resource criteria reviewed by the Vermont Public Utility Commission ("PUC").

VHB's assessment includes review of public and privileged databases provided by:

- › VELCO, consisting of past project data collection and permitting efforts;
- › Publicly available Permits and information associated with Projects adjacent to or overlapping the Study Area.
- › Vermont Fish and Wildlife Department ("FWD") Natural Heritage Inventory ("NHI") – for known Elemental Occurrences ("EO") of rare, threatened or endangered ("RTE") species and significant natural communities;
- › U.S. Fish and Wildlife Service ("USFWS") Information, Planning, and Conservation ("IPaC") System – for potential occurrences of federally-listed threatened or endangered species;
- › Vermont Agency of Natural Resources ("ANR") – for mapped state-significant wetlands, surface and groundwater resources, surficial geology, and wildlife habitat;
- › Natural Resources Conservation Science ("NRCS") – for soils data and mapping; and,
- › Federal Emergency Management Agency ("FEMA") – for floodways/floodway fringe mapping.

In addition to desktop reviews of the above-described databases, VHB conducted field delineations and assessments of wetlands, streams, and vernal pools, as well as surveys for potential wildlife habitat, natural communities, and RTE plant and animal species in support of various Project components. Field delineations and assessments were conducted during the 2024 field season.

During natural resources assessments and Project planning, VHB conducted outreach and coordination with various ANR programs in coordination with VELCO, including:

- › Department of Environmental Conservation ("DEC") Wetlands – Tina Heath (ANR Wetland Ecologist) and Project representatives conducted wetland field review and pre-application meeting/coordination, and desktop review of wetland classifications and mapping; and
- › FWD – Grace Glynn (Vermont State Botanist), Bob Zaino (Vermont Natural Community Ecologist) and Project representatives met virtually and in-person to review potential impacts to rare, threatened, or endangered ("RTE") plants, and Significant Natural Communities.

The report includes an evaluation of the following Act 250 criteria as incorporated into 30 V.S.A. Section 248(b)(5) review, using both desktop and field data collected by VHB:

- › Outstanding Resource Waters (10 V.S.A. § 1424a(d))
- › Primary Agricultural Soils (30 V.S.A. § 248(b)(5))
- › Air Pollution and Greenhouse Gas Impacts (30 V.S.A. § 248(b)(5))
- › Water Pollution (10 V.S.A. § 6086(a)(1))
- › Headwaters (10 V.S.A. § 6086(a)(1)(A))
- › Waste Disposal (10 V.S.A. § 6086(a)(1)(B))
- › Water Conservation (10 V.S.A. § 6086(a)(1)(C))
- › Floodways (10 V.S.A. § 6086(a)(1)(D))
- › Streams (10 V.S.A. § 6086(a)(1)(E))
- › Shorelines (10 V.S.A. § 6086(a)(1)(F))
- › Wetlands (10 V.S.A. § 6086(a)(1)(G))
- › Water Supply (10 V.S.A. § 6086(a)(2) and (3))
- › Soil Erosion (10 V.S.A. § 6086(a)(4))
- › Rare and Irreplaceable Natural Areas (“RINA”) (10 V.S.A. § 6086(a)(8))
- › Necessary Wildlife Habitat and Endangered Species (10 V.S.A. § 6086 (a)(8)(A))

In making assessments of Project impacts or conformance with the applicable criteria, VHB relied substantially on Project plans and spatial data provided by VELCO between July 2024 and December 2024, and on impact analyses conducted by VHB with data collected in the field.

Project Description

The VELCO Sandbar SmartValve Station (“Project”) involves the installation of an Advanced Power Flow Controller (APFC), which is needed to maintain reliability of power in the region by extending the life of Sandbar Station Phase Shifting Transformer. The Project will install 12 APFC modules adjacent to the existing Sandbar Station in Milton. The APFC installation requires a yard expansion of the eastern fence line of the existing station to accommodate the APFC devices (SmartValves), bus work, instrument transformers, and connection of the APFC into the exiting Sandbar Station. The existing eastern fence line of the station will be moved approximately 187 feet to the east to accommodate the APFC, and this new fenced-in area will encompass approximately 41,240 square feet (a little less than one acre). There will be three new motor-operated load break switches installed within the existing Sandbar Station. The Project will require VELCO to relocate two sections of the existing K19 115kV transmission line for the expansion of the station and to provide access for construction and maintenance. Tree clearing and grading are required, to facilitate the station’s yard expansion, transmission line relocation, and the creation of RTE habitat area. The Project also includes constructing an access drive along the northern end of the existing fence line to create an access route for construction, and the creation of laydown yards adjacent to the

existing Station access road. The Project proposes approximately 2.61 acres of tree clearing within an 8.52-acre limits of work.

As part of the Project, VELCO acquired the residential and structures adjacent to the existing Station. Proposed work at this parcel includes demolition of the residential structure, retirements of the existing private well and septic system, installation of an access drive, and creation of a laydown area.

Study Area Description

The Project is located at 586 Bear Trap Road, Milton, Vermont. VHB conducted assessments in 2024 and 2025 on the 136-acre parcel that currently contains the Sandbar Station identified as SPAN 396-123-13662 and the 1-acre residential inholding parcel that VELCO recently acquired identified as SPAN 396-123-10213

The 137-acre Study Area includes approximately 14.8 acres of maintained right-of-way ("ROW"), 1-acre of the residential inholding, and the existing Station and associated infrastructure (*i.e.* roads and parking areas). The 22-acre portion surrounding the existing Station and where Project activities will occur was the core area assessed by VHB. The Natural Resources Map Series (Appendix A) and the Primary Agricultural Soils Mapping (Appendix B) depict the Study Area.

The Project is located within the Champlain Valley biophysical region of Vermont. This area is generally characterized as low, warm, and comparatively dry with clay soils deposited by post-glacial lakes and seas, sands from post-glacial rivers, and outcrops of limestone and other Ordovician rocks. The Study is within the Lamoille River sub-watershed (HU12: 043001050306). Elevations on-site range approximately 100 to 345 feet above mean sea level ("amsl") varying from nearly level to steep banks near riverine areas. The USDA Natural Resources Conservation Service ("NRCS") has numerous soil types mapped in the Study Area, of which the following are most dominant in terms of area:

- › Farmington extremely rocky loam, 20 to 60 percent slopes;
- › Adams and Windsor loamy sands, 0 to 5 percent slopes;
- › Rock land; and
- › Hinesburg fine sandy loam, 15 to 25 percent slopes.

Land cover types within the Study Area include upland hills of terraced Dunham Dolostone, hardwood dominated forests, wetlands (emergent, scrub-shrub, and forested), stream and river crossings, and maintained areas (such as residential lawn, roads, and overhead utility corridors). The 1-acre residential inholding parcel included in the Study Area is characterized by maintained lawn, a small area of forest, and a single-family residence. Further, the Study Area contains portions of the maintained K19, K20, and K22 ROW and the existing Sandbar Station, which are subject to routine vegetation management in accordance with VELCO's Transmission Vegetation Management Plan (TVMP). Vegetation management includes mowing, hand clearing, and herbicide application to maintain compatible vegetation beneath and adjacent to the high-voltage power lines, and outside of the station fence and associated stone apron.

Section 248 Natural Resources Criteria

The following sections detail the methodology and findings of field and desktop reviews and how the Project will avoid undue adverse impacts to natural resources as defined in each criterion described below.

Outstanding Resource Waters (10 V.S.A. § 1424a (d))

The Vermont Water Quality Standards ("VWQS", effective November 15, 2022) (ANR 2022), under section 1-03D, state that the Secretary of the Vermont Agency of Natural Resources ("ANR") may, under 10 V.S.A. Section 1424(a), designate Outstanding Resource Waters ("ORW"). The following waterways have been classified as ORWs:

1. Batten Kill River, Towns of Dorset and Arlington;
2. Pike's Falls/Ball Mountain, Town of Jamaica;
3. Poultney River, Towns of Poultney and Fair Haven; and
4. Great Falls, Ompompanoosuc River, Town of Thetford.

The Study Area does not cross any portions of the waters listed above, which all occur in southern Vermont counties. There are no ORWs which intersect Study Area; therefore, the Project will not result in any impacts to resources included for review under this criterion.

Primary Agricultural Soils (30 V.S.A. § 248(b)(5))

To satisfy this criteria, a project must be shown to have given due consideration to impacts on primary agricultural soils as defined in 10 V.S.A. § 6001.

Under 10 V.S.A. § 6001(15), Primary Agricultural Soils ("PAS") are defined as:

(A) An important farmland soils map unit that the Natural Resources Conservation Service of the U.S. Department of Agriculture ("NRCS") has identified and determined to have a rating of prime, statewide, or local importance, unless the (Act 250) District Commission determines that the soils within the unit have lost their agricultural potential. In determining that soils within an important farmland soils map unit have lost their agricultural potential, the Commission shall consider:

- (i) impacts to the soils relevant to the agricultural potential of the soil from previously constructed improvements;
 - (ii) the presence on the soils of a Class I or Class II wetland under chapter 37 of this title;
 - (iii) the existence of topographic or physical barriers that reduce the accessibility of the rated soils to cause their isolation and that cannot reasonably be overcome; and
 - (iv) other factors relevant to the agricultural potential of the soils, on a site-specific basis, as found by the Commission after considering the recommendation, if any, of the Secretary of Agriculture, Food and Markets.
- (B) Soils on the project tract that the District Commission finds to be of agricultural importance, due to their present or recent use for agricultural activities and that have not been identified by the NRCS as important farmland soil map units.

VHB's review is limited to the NRCS soil map unit designations where PAS soils are defined as those soils with a prime agricultural soil rating of 1 (most desirable) through 7 (least desirable) with some soils with a rating of 8 included. Soils of statewide importance have an agricultural value of 7 or less and soils of local importance consist of selected soil types with an agricultural value of 8 or less. VHB conducted a review of the NRCS soil map data to determine if PAS were present at the Project site. NRCS soil map units as well as soil information, including PAS designations, are included on natural resources maps included in the appendices for the Project. PAS soils within the Study Area are shown in Appendix B.

The Study Area contains a number of soil map units that meet the definition of as PAS and are listed in the table included with Appendix A. Collectively, these PAS constitute approximately 36.5 acres. PAS Soils within the Study Area consist of:

- Adams and Windsor loamy sands, 0 to 5 percent slopes
- Adams and Windsor loamy sands, 5 to 12 percent slopes
- Enosburg and Whately soils, 3 to 8 percent slopes
- Limerick silt loam
- Winooski very fine sandy loam
- Hinesburg fine sandy loam, 0 to 3 percent slopes
- Hinesburg fine sandy loam, 3 to 8 percent slopes
- Munson and Raynham silt loams, 2 to 6 percent slopes

Work within NRCS-mapped PAS will be limited to areas adjacent to previously impacted PAS soils by access roads, station development and managed ROWs. Proposed new development would impact approximately 2.43 acres of mapped PAS directly adjacent to the previously impacted 3.52 acres of PAS. While these areas are mapped as PAS, VHB opines they have lost their agricultural value based on surrounding land use consisting of electrical and adjacent transportation infrastructure, steep topography, and soils largely consisting of sand. While the area shows evidence of agricultural use prior to 1980, the construction of U.S. Route 2 and change in surrounding land use fragmented the previously used agricultural areas into

tracts that are not conducive to farming. Further, historic aerial photographs indicate earth extraction in the vicinity of the Project, further indicating loss of agricultural value at the Project location.

Based on absence of agricultural value of the soils mapped on-site, it is VHB's opinion that there will be no undue adverse effects to farming, farming potential, or PAS as a result of the Project based on existing land use and soil conditions.

Air Pollution and Greenhouse Gas Impacts (30 V.S.A. § 248(b)(5))

This criterion requires that the Project will not result in undue air pollution, sound, or greenhouse gas emissions. For the Project, VHB's consideration of this criterion is limited to the construction phase of the proposed work as the facility, when in operation, will not emit greenhouse gases (VELCO, personal communication) or other air pollution and will not require an air pollution control permit from ANR Air Quality and Climate Division. A description of the Project related to sound impacts is provided in a separate memorandum. Minor temporary emissions associated with vehicular traffic and construction equipment operations are expected during the construction phase, though they are not anticipated to be significant. Dust generated during the construction phase of the Project will be controlled by applying water or calcium chloride, as an alternate BMP, to work areas, as needed, in accordance with the VEGM and applicable BMPs. As a result, this Project will not result in undue air pollution or greenhouse gas emissions.

Water Pollution (10 V.S.A. § 6086(a)(1))

This criterion requires that the Project will result in no undue water pollution. The Project will address surface water pollution by implementing practices outlined in Vermont DEC's *Low-Risk Site Handbook for Erosion and Sediment Control* (ANR 2020) and VELCO's Environmental Guidance Manual (VELCO 2023) ("VEGM"). A site-specific Erosion Prevention and Sediment Control Plan and Best Management Practices ("BMPs"), which are described further in the Soil Erosion and Waste Disposal section of this memorandum, will be applied if the Project is considered moderate risk under the Vermont Construction Stormwater general permit. In addition, VELCO will implement the policies and procedures outlined in the VEGM, such as contractor trainings regarding permits and sensitive resource areas, signage and flagging for sensitive resources including receiving waters, and by clearly noting these areas on project plans. As such, the Project will not result in undue water pollution. Further, VHB understands that the Project will not generate any wastewater once in operation. The septic system and private water supply associated with the existing residential structure will be retired as part of the Project, and work will be completed in compliance with the Wastewater System and Potable Water Supply rules.

Through the use of applicable BMPs and adherence to the Project's ancillary environmental permit conditions, the Project will not generate undue water pollution.

Headwaters (10 V.S.A § 6086(a)(1)(A))

VHB conducted a field review and analyzed available information including soils data, topographic maps, and state-mapped public water supply source protection areas, to determine if the Study Area is located on any lands that meet the criteria of 10 V.S.A. § 6086(a)(1)(A) as incorporated in the Section 248(b)(5) review. If located in a headwater, a project is required to meet any applicable health and environmental conservation department regulations regarding reduction of the quality of the ground or surface waters flowing through or upon lands that are not devoted to intensive development. The criteria for headwaters are as follows:

- i) headwaters of watersheds characterized by steep slopes and shallow soils;
- ii) drainage areas of 20 square miles or less;
- iii) above 1,500 feet elevation;
- iv) watersheds of public water supplies designated by the Agency of Natural Resources;
- v) areas supplying significant amounts of recharge waters to aquifers.

It is VHB's opinion that the lands within the Study Area do not meet the character of the headwater criteria. While the Study Area contains areas of locally steep terrain (greater than 15 percent), with somewhat shallow soils, and unnamed tributaries with drainage areas of less than 20 miles, it does not exceed 1,500 feet elevation and does not cross a state-mapped groundwater or surface water Source Protection Area. The Study Area is also within the Lamoille River drainage area (HUC12), which has a drainage area of greater than 700 square miles.

The Project will not adversely affect groundwater or surface water because the Project will meet applicable health and DEC regulations regarding the quality of groundwater and surface waters. A site-specific Erosion Prevention and Sediment Control Plan and Best Management Practices ("BMPs"), which are described further in the Soil Erosion and Waste Disposal section of this memorandum, will be applied if the Project is considered moderate risk under the Vermont Construction Stormwater General Permit. In addition, VELCO will implement the policies and procedures outlined in the VEGM, such as contractor trainings regarding permits and sensitive resource areas, signage and flagging for sensitive resources including receiving waters, and by clearly noting these areas on project plans. The Project will follow BMPs for treated pole removal and installation as included in Appendix A of the "Pentachlorophenol Report" (ANR 2016). The Project will create approximately 0.02 acres of new impervious surface, which does not exceed the 0.5-acre threshold of new impervious or exceed the new and existing threshold of one-acre. As such, the Project does not require an operational stormwater management permit.

While the Project meets one or more of the statutory criteria for a headwaters area, the Study Area does not meet the character of the headwater criteria. Regardless, VELCO has designed the Project to avoid adversely affecting groundwater and surface water by meeting all applicable health and DEC regulations pertaining to the quality of groundwater and surface water. There will be no reduction in ground or surface water quality of headwaters or

non-headwater areas from the construction and/or operation of the proposed Project activities, and no undue adverse impacts to headwater areas.

Waste Disposal (§ 6086(a)(1)(B))

The Waste Disposal criterion requires that a project meet applicable health and environmental regulations regarding the disposal of waste and not involve injection of waste material or any harmful or toxic substances into groundwater or wells. For the Project, VHB's consideration of waste disposal involves sanitary wastewater, stormwater runoff, treated utility poles, and general construction debris.

VELCO will dispose of all construction debris that cannot be re-used or recycled in accordance with Vermont Department of Environmental Conservation ("DEC") waste management rules and BMPs. Management and disposal of wooden utility poles throughout the Project will follow BMPs for the use of Pentachlorophenol-treated utility poles (ANR 2016). In addition, the VEGM outlines spill response procedures for releases generated by construction equipment and requires all contractors to maintain spill response kits to respond to incidental spills associated with construction activities and equipment. Sanitary waste will be collected through portable toilets, and managed by a sanitation company, and the proposed expansion will not require additional bathrooms or potable water. As noted earlier in the headwaters section, disposal related to stormwater will be addressed through the construction stormwater permit and the practices outlined in the VEGM.

With regards to the demolition of the existing residential structure, the Project will test for the presence of hazardous materials, including lead paint and asbestos. If encountered, the materials will be demolished and disposed of in accordance with the Vermont Regulations for Asbestos Control and the Vermont Regulations for Lead Control. All other materials, if they cannot be recycled, will be disposed of in accordance with DEC waste management rules and BMPs.

Regarding stormwater, as the Project will generate 0.02 acres of new impervious at a site with 0.69 acres of existing impervious, an Operational Stormwater permit is not required. The Project also proposes removal of a portion of the existing impervious resulting in a reduction to 0.58 acres total impervious following Project completion. A description of construction-phase stormwater management is further described in the Soil Erosion section.

As described above, the Project will meet the applicable health and DEC regulations regarding the disposal of waste and does not involve the injection of waste materials into groundwater or wells and once constructed, the Project will not generate wastewater. Therefore, the Project will not have an undue adverse effect to the environment associated with waste disposal.

Water Conservation (§ 6086(a)(1)(C))

Under this criterion, the Project design must consider water conservation, incorporate multiple use or recycling where technically and economically practical, utilize the best available technology for such applications, and provide for continued efficient operation of

these systems. The Project will not use water for operational purposes, will not require new on-site water supplies, and will not involve expansion or redevelopment of existing water supplies. Only minor amounts of water may be needed for construction phase temporary dust suppression or to establish temporary or permanent vegetative coverage as needed. Therefore, the proposed Project will not have an undue adverse effect on water supplies.

Floodways (10 V.S.A § 6086(a)(1)(D))

The Act 250 Floodway criterion, as incorporated into Section 248 review, takes into consideration a project's effect on both floodways and floodway fringes. Per 10 V.S.A. § 6001(6), a "flood hazard area" is "the land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year" (44 CFR 59.1), where a one percent chance of flooding is synonymous with the 100-year floodplain. A project's impacts are considered with respect to both flood inundation and fluvial erosion hazards pursuant to the Flood Hazard Area and River Corridor ("FHARC") Protection Procedure (ANR 2017).

The Flood Hazard Area ("FHA") and River Corridor ("RC") Protection Procedure addresses both inundation risks as represented by FEMA-mapped flood information, and potential fluvial erosion risks associated with the geomorphic principles necessary to achieve stable fluvial processes. The River Corridor consists of the meander belt or fluvial erosion hazard area, which is defined as the lateral width of a stream corridor that may be subject to fluvial erosion from stream channel lateral migration as well as a 100-foot riparian buffer outside of this meander belt (ANR 2017b). The meander belt is typically determined by geomorphic assessments of channel bank full width, meander centerline, confining lateral topography, channel type, and current channel adjustments, which is then translated into the channel-width-to-belt-width ratio, dependent on stream sensitivity type and adjacent landform. For field-delineated perennial stream features without a state-mapped RC, a 50-foot-wide RC is assigned by VHB and measured from the limits of top-of-bank or top-of-slope.

To assess the presence/absence of FHA and RC and to evaluate impacts to both, VHB conducted desktop and field verifications. VHB relied on FEMA-mapped flood information, which required digitization to effectively evaluate Project impacts. VHB also reviewed state-mapped RC and relied on field-mapped stream features to assign a 50-foot RC to perennial streams where required. From this review, VHB found the Study Area to cross one occurrence of a Special Flood Hazard Area Zone AE, associated with the adjacent Lamoille River, as shown on the Natural Resources Map (Appendix A).

While the Study area does cross a FHA, the proposed work will occur well outside of this zone and therefore, not restrict or divert the flow of flood waters, and endanger the health, welfare or safety of the public or of riparian owners during flooding, therefore there will be no undue adverse effect on Floodways.

Streams (10 V.S.A § 6086(a)(1)(E))

This Act 250 criterion requires that projects will, when feasible, maintain natural stream channel condition, and will not endanger the health safety, or welfare of the public or adjoining landowners (10 V.S.A. § 6086(a)(1)(E)).

When applicable, VHB's stream delineation flagging is conducted pursuant to ANR Riparian Buffer Guidance (ANR 2005). Stream Top of Bank ("TOB") and Top of Slope ("TOS") are flagged in the field according to ANR Riparian Buffer Guidance. Stream TOB and TOS are flagged on larger channels and stream centerline ("SC") is flagged for smaller channels; all flagging is labeled with the stream ID and flag number. Stream determinations and Ordinary High Water ("OHW") width measurements follow guidance provided in the United States Army Corps of Engineers ("USACE") Regulatory Guidance Letter No. 05-05: Subject - Ordinary High-Water Identification (USACE 2005). OHW limits are flagged when applicable, typically on larger stream features. Stream flow regimes are preliminarily classified as ephemeral, intermittent, or perennial, and are determined based on qualitative observations of instream hydrology indicators at the time of observation, as well as geomorphic characteristics, and are subject to professional judgment.

During 2024 and 2025 fieldwork, VHB delineated or confirmed the presence of five intermittent streams and 13 ephemeral streams within the Study Area. All delineated streams occur south and east of the existing Station. Representative site photos are provided in Appendix C, and additional information for each stream is provided in the Wetland and Waters Summary Table (Appendix D).

There are several unnamed streams or brooks delineated within the Study Area. Unnamed streams generally consist of tributaries to the Lamoille River. For design planning, 50-foot riparian buffers are shown on the plans and extend outward from centerline, or TOB/TOS, of intermittent and perennial streams. A 100-foot riparian buffer is assigned to the Lamoille River. No work is proposed within any riparian buffers.

No construction activities are proposed within any delineated stream channels, and therefore no additional permitting is anticipated.

Based on proposed work practices and project design the Project will maintain the natural condition of streams, and will not endanger health, safety, or welfare of the public or of adjoining landowners.

Shorelines (10 V.S.A § 6086(a)(1)(F))

Shorelines are defined under Act 250 as the land adjacent to the waters of lakes, ponds, reservoirs, and rivers. Shorelines include the land between the mean high-water mark and the low-water mark of such waters (Argentine 2008). For projects that are within shoreline areas, the following shoreline management criteria are required to be met:

- (i) retain the shoreline and the waters in their natural condition;
- (ii) allow continued access to the waters and the recreational opportunities provided by the waters;

- (iii) retain or provide vegetation which will screen the development or subdivision from the waters, and;
- (iv) stabilize the bank from erosion as necessary with vegetation cover.

The Study Area borders the Lamoille River and no lakes or ponds. The shoreline associated with the Lamoille River will remain in its current condition as the Project work will not occur near the river. The shoreline and waters will maintain existing conditions, and no changes in access will result from the Project. Vegetative cover will remain the same and the banks will remain stabilized.

As no work is proposed between the land between mean high water and mean low water, and the management criteria associated with lands adjacent will be met, the Project will “preserve the shorelines of Vermont’s lakes and ponds and rivers and stream.”

Wetlands (10 V.S.A § 6086(a)(1)(G))

The wetlands criterion under Act 250, as reviewed under Section 248, requires that the proposed Project comply with the Vermont Wetland Rules (“VWR”) (ANR 2023). The VWR regulate significant wetlands (Class I and Class II wetlands) and their buffers. Impacts to Class III wetlands are not part of criterion 1(G) but are generally reviewed under section 248(b)(5) (no undue adverse impacts on the natural environment), and other criteria. In addition, proposed impacts to Class III wetlands are regulated by the USACE Section 404 permit program as well as the related DEC Section 401 Water Quality Certification review process.

The entirety of the Study Area was field reviewed for wetlands during the 2024 and 2025 growing seasons. Wetland delineations were made pursuant to the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method (USACE 2012). Attributes were noted to record information relative to wetland classifications under the VWR, general characteristics, potential functions and values of the wetland, and any unique characteristics observed during the site assessment, along with other considerations relevant to support site findings. Wetlands were classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Wetland functions criteria were qualitatively evaluated based on the field notes and observations according to the VWR Section 5 (ANR 2020). Wetland features were mapped in the field using sub-meter capable mobile data collection technology, which also allowed delineators to capture qualitative data including wetland type, functions and values, and notes related to unique aspects of features.

During the 2024 and 2025 growing seasons, VHB confirmed, modified, or mapped 19 wetland features within the Study Area, totaling approximately 17 acres. Eight wetlands are considered Class II and subject to DEC and USACE jurisdiction, and 11 are considered Class III and only subject to USACE jurisdiction. Features are depicted in the Natural Resources Map (Appendix A). Wetland boundaries and classifications proximal to proposed work were reviewed by DEC on October 31, 2024. The delineated wetlands vary in size, vegetative cover types, and functions and values, though the majority consist of hillside seeps that drain via intermittent and ephemeral streams to the Lamoille River. The dominant vegetative cover type is palustrine emergent or palustrine forested. Further details on wetlands, including the

functions and values provided, are included in the Summary of Delineated Wetlands Table (Appendix D). Delineated wetlands are also depicted in the spatial data provided to VELCO following fieldwork. USACE Wetland Determination Data Forms were completed for a subset of representative features (and approximately every mile) within the Study Area (Appendix E). Representative photographs are provided in Appendix C.

Impacts to Class II wetlands or their associated 50-foot buffer zones for uses other than those allowed under the VWR, require a Vermont Wetland Permit from DEC. It is VHB's understanding that there will be no Project impacts to any wetlands, or their associated buffers present within the Study Area, and therefore, no permitting is anticipated. As such, the Project will not result in any undue adverse impacts to wetlands.

Water Supply (§ 6086(a)(2) and (3))

In order to satisfy the Act 250 criterion for Water Supply, a project must have sufficient water available and not place unreasonable burden on existing water supplies. The Project design does not involve expansion or development of any additional water supplies, though as previously described, minimal amounts of water may be used during construction for dust control and vegetative establishment. Water used for these purposes will be acquired from the existing on-site water supplies associated with the private residence prior to its retirement and/or from the Station water supply. Additional water necessary for these purposes will be acquired in accordance with state and federal regulations and VELCO will work with appropriate officials to withdraw water from municipal or natural sources during construction. As such, there will be no undue adverse impacts to water supplies as a result of the Project.

Soil Erosion (10 V.S.A § 6086(a)(4))

In order to satisfy this Act 250 criterion, a project must not cause unreasonable soil erosion or significant drainage or runoff problems (Argentine 2008). Determination of compliance with this criterion involves two components: (1) preventing soil erosion, and (2) preventing a reduction in the land's capacity to hold water.

According to available Vermont Center for Geographic Information ("VCGI") data and soil descriptions from the Natural Resource Conservation Service ("NRCS"), the Study Area is dominated by the following soils:

- › Farmington extremely rocky loam, 5 to 20 percent slopes;
- › Farmington extremely rocky loam, 5 to 20 percent slopes;
- › Hinesburg fine sandy loam 15 to 25 percent slopes
- › Rock land.

In addition, soils within the Study Area range from a slope rating of 0 to 60 percent, and an erodibility ranking of not highly erodible to highly erodible. A complete list of soils present within the Study Area can be found in The Natural Resources Map Series (Appendix A).

The Project will result in greater than once acre of soil disturbance, thus requiring coverage under a Vermont Construction General Permit or an Individual Construction Stormwater Discharge Permit ("INDC"). While a percentage of the Study Area is characterized by steep slopes and/or highly erodible soils, the Project is sited in a topographically flat area comprised of sandy soils. The Project will implement measures in the Low Risk Site Handbook or develop a site-specific Erosion Prevention and Sediment Control Plan which will include mechanisms for temporary and permanent stabilization, as well as post-construction restoration, if required by its risk scoring. This handbook or plan will be used in conjunction with the VEGM to prevent the risk of soil erosion and runoff from the Project site.

Compliance with applicable stormwater permits, the Low Risk Site Handbook or site-specific EPSC Plan, and the VEGM will prevent any undue soil erosion from the areas of earth disturbance. There will also be no significant or measurable reduction of the land's capacity to hold water and the nature of this Project will not result in an appreciable change in landform or cover over existing and managed conditions. As such, there will be no dangerous or unhealthy conditions associated with soil erosion as a result of the Project, and there will be no undue adverse effect from soil erosion.

Rare and Irreplaceable Natural Areas (RINA) (10 V.S.A § 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (10 V.S.A § 6086(a)(8)(A))

To satisfy these criteria, a project must be shown to have no undue adverse effect on Rare and Irreplaceable Natural Areas ("RINA") (10 V.S.A. § 6086(a)(8)). Additionally, a project must not destroy or significantly imperil Necessary Wildlife Habitat ("NWH") or any Endangered Species (10 V.S.A. § 6086(a)(8)(A)).

Rare and Irreplaceable Natural Areas ("RINA")

Significant natural communities can be deemed RINA as part of the four-part test required by the Act 250 Criterion. Determinations of "Significance" are ultimately made after utilizing a combination of community ranking, current condition (age, degree of disturbance), and landscape context (size, degree of fragmentation) in order to determine an "Element (or Community) Occurrence Ranking." Rare (S1 and S2) natural communities can be considered significant when quality-ranked A, B, or C. Uncommon (S3) and common (S4) types require a quality rank of A or B to be considered significant. Very common (S5) types require an A-rank (ANR 2016). Significant natural communities can be deemed RINA under Criterion 8, based on the combination of the natural community rarity and quality ranking. Additional considerations for RINA include the presence of RTE species in these communities, as well as overall natural community associations.

As an initial step to screen the Project area for the potential presence of state-significant natural communities that could be considered RINA, VHB queried the Vermont NHI database

to locate all mapped state-significant natural community occurrences within a specified radius of each Project component and found the following to occur within the Project Area:

› Dry Oak-Hickory-Hophornbeam Forest (S3)

VHB used this list of natural communities to prepare targeted natural community field surveys under the assumption that the prevailing landscape conditions could produce similar natural community types within the Project area. Additionally, VHB used this list of natural community types to identify potential target RTE species known to occur within these natural communities (per Thompson, et. al. 2020). Additional details are provided in the *Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary* (Appendix F).

VHB identified or confirmed the presence and extents of previously mapped significant natural communities within the Study Area. VHB found the forested area north of the ROW to support two significant natural communities, a 33-acre mosaic of Dry Oak-Hickory-Hophornbeam Forest (S3) and Dry Oak-Maple Limestone Forest (S3). VHB proposes this occurrence to be classified as B-ranked. Additionally, VHB observed an additional 10-acre occurrence of Dry Oak-Hickory-Hophornbeam Forest in south of the ROW in the Study Area, also with a proposed ranked as B. Other forested areas south of the ROW and Station generally consist of non-significant natural communities such as a hemlock forest, a matrix hemlock-northern hardwood forest, multiple temperate calcareous cliffs, and a small mosaic of sensitive-fern and ostrich fern floodplain forests along the Lamoille River. A site visit with Natural Community Ecologist, Robert Zaino with Vermont Fish and Wildlife Department ("FWD"), occurred on November 7, 2024 to review potential impacts to identified communities.

Direct impacts to the potentially significant natural communities will be avoided, and indirect impacts including the introduction of non-native invasive species ("NNIS") will be limited by implementing VELCO's VEGM and insuring equipment and material brought to the site is clean of debris.

Necessary Wildlife Habitat ("NWH")

NWH is generally defined as deer wintering habitat, black bear forage habitat (beech mast or wetlands), black bear travel corridors, moose overwintering area, amphibian breeding habitat, or grassland bird habitat. There is no identified black bear forage habitat, black bear travel corridors, grassland bird habitat or moose overwintering area within the Study Area. There are no ANR-mapped Deer Wintering Areas ("DWAs") within the Study Area, however there are two ANR-mapped DWAs on the north side of Bear Trap Road. One of these ANR-mapped DWAs is located approximately 190-feet from the Project entrance. VHB identified a potential DWA in the eastern corner of the Study Area during the July 2024 field visit, though it is located over 500 feet from the Project. The forested area was dominated by eastern hemlock with evidence of concentrated use through browsing and scat. The proposed DWA has not been categorized or reviewed by FDW. The proposed project will have no direct impacts on the VHB- or state-identified DWA. Though proposed work, including road building, construction traffic, and project staging will occur within 190 feet of the state-

mapped occurrence it is not likely to indirectly impact wintering deer due to its proximity to U.S. Route 2, Bear Trap Road, and the existing Station facility.

VHB identified six potential vernal pools ("PVP"). As the 2024 fieldwork occurred outside of the vernal pool season, VHB identified, photographed, and mapped the location of PVPs, primarily based on physical characteristics using a combination of definitions from USACE, FWD, and *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Sorenson *et. al.* 2019). PVPs were identified and generally associated with wetland complexes in the east and southeast portions of the site. The nearest potential vernal pool is located over 750 feet northeast of the proposed work.

Through avoidance of direct impacts to NWH, the Project will not destroy or significantly imperil NWH.

Endangered Species

Endangered Species include those that are defined as "threatened" or "endangered" on the Vermont state endangered and threatened species list and are thus protected under the Vermont Endangered Species Rule (10 V.S.A. Chapter 123). Species protected under the federal Endangered Species Act (16 U.S.C. §1531 et seq. 1973) are included as well.

Rare, Threatened and Endangered Plants

Target Species and Habitats for Field Surveys

VHB conducted an initial endangered species review by querying the Vermont NHI database for EO's of threatened and endangered species within a one-mile radius of the Project. VHB Ecologists evaluated on-site habitats for each project component and determined whether there was potential habitat for any of the RTE species identified in the NHI query. In making determinations about the potential for the Project Study Area to provide habitat for an RTE species, VHB relied on a) published accounts of species distributions and habitat preferences; b) Geographic Information Systems ("GIS") mapping of soils, bedrock, and surficial deposits; c) habitat descriptions included in Element Occurrence reports; and d) institutional knowledge (VELCO, VHB and FWD) of the Project region. RTE species with potential habitat within the Project Study Area were considered "target species" for VHB Botanists and Ecologists conducting field work.

VHB also conducted an initial review for species protected under federal endangered species law using the U.S. Fish and Wildlife Service Information for Planning and Consultation ("IPaC") database portal (see Appendix G).

The area surrounding the existing Station has been extensively surveyed in the past for RTE plant species. In addition, VELCO received a Vermont Threatened and Endangered Species Takings Permit in May 2020 to take up to 12 plants of *Cyperus houghtonii* (Houghton's flatsedge) in connection with reconstruction of the perimeter fence of the Sandbar Station.

Based on the methods described above, VHB, VELCO and FWD developed a comprehensive list of target species, to survey for plants protected under the endangered species law or otherwise considered rare. In addition to targeting species, VHB conducted a general survey

within the Project Study Area focusing on naturalized areas. As such, maintained, lawns, roadways, and developed (i.e. paved) areas were excluded.

Field Surveys and Results

VHB botanists conducted field surveys in accordance with ANR's *Guidance for Conducting Rare, Threatened, and Endangered Plant Inventories in Connection with Section 248 Projects* (ANR 2016a) on July 23, 2024, August 5, 2024, and August 15, 2024. A list of identified species is provided in Appendix H. During those surveys, VHB identified or confirmed the presence and extent of previously mapped populations of the following occurrences of RTE plant species within the Study Area:

- *Calystegia spithamea* ssp. *spithamea* (low Bindweed) (S2, State-Threatened)
- *Crocanthemum canadense* (Canada frostweed) (S2S3)
- *Cyperus houghtonii* (Houghton's flatsedge) (S2, State-Threatened)
- *Desmodium cuspidatum* (large-bracted tick-trefoil) (S1, State-Rare)
- *Eutrochium purpureum* var. *purpureum* (Sweet Joe-pye weed) (S2S3)
- *Helianthus strumosus* (harsh sunflower) (S2S3)
- *Lythrum alatum* ssp. *alatum* (winged-loosestrife) (S1, State-Rare)
- *Polygala senega* (Seneca Snakeroot) (S2S3)

Previously identified species within the Study Area not observed during the 2024 surveys include:

- *Botrychium rugulosum* (rugulose grapefern) (S1, State-Rare)
- *Bromus kalmii* (wild chess) (S2, State-Threatened)
- *Hackelia deflexa* ssp. *americana* (nodding stickseed) (S2, State-Threatened)
- *Lactuca hirsuta* (hairy lettuce) (S1S2, State-Threatened)

On November 7, 2024, Vermont State Botanist, Grace Glynn, with Vermont Fish and Wildlife Department ("FWD") conducted a site visit to review areas of potential impact to these species. During the site visit, a potential occurrence of *Corallorhiza odontorhiza* (autumn coral-root) (S2, State-Threatened) was identified. While it is recommended an additional survey for this species occur in the fall to confirm presence/absence, the potential occurrence was outside of the Project limits.

Additionally, during field assessments, the previously recorded populations of *Botrychium rugulosum* were not identified however, *Botrychium multifidum* (S3, uncommon) was observed. While *Botrychium rugulosum* was not identified, Project activities will avoid impacts to the historic occurrence.

At the suggestion of the Vermont botanist, the Project will re-survey proposed RTE impact areas, the existing and proposed mitigation area, and the location of potential autumn coralroot, during the appropriate 2025 growing season survey window. In addition, the Project will concurrently survey the approximately one-acre residential property located west of the existing Station as the Project component was added after the 2024 growing season.

Project Avoidance, Minimization and Mitigation

While complete avoidance of all RTE plant species is not feasible given site constraints, the project has been designed to minimize impacts where practicable and mitigate any unavoidable impacts.

As proposed impacts to *Cyperus houghtonii* are unavoidable based on engineering constraints (i.e. electrical interconnection requirements and site topology), the Project will obtain a species-specific Takings Permit from FWD, and will follow all conditions associated with it, including the approved mitigation and monitoring plan. Through collaboration with FWD and the Flora Advisory Group, the mitigation plan is designed to create a habitat mitigation area to support future populations of the species.

Impacts to *Crocianthemum canadense* and *Eutrochium purpureum* var. *purpureum* are unavoidable, however these species are not listed as either Threatened or Endangered and will not require a Takings Permit, though they are located proximal to impacts occurrences of *Cyperus* and the seedbank of all species will be transported to the habitat mitigation area as part of the overall mitigation plan.

The Project will avoid any unpermitted impacts to RTE plant species to the greatest extent practicable by implementing the following practices:

- › Population boundaries will be depicted on Project compliance plans for use during construction activities. Additionally, high visibility boundary flagging and signage will be installed around each population to ensure avoidance during construction activities.
- › Project-specific training will be provided to all VELCO employees and contractors working on the Project that will include information on how to identify plants in the field, identify locations on Project plans, and to identify flagging, signage, and barriers intended to preclude access to known occurrences.

Where work is required within 25 feet of documented RTE populations, five years of post-construction NNIS monitoring of the adjacent work areas will be completed, with annual reporting to the VT ANR, as outlined in the NNIS Monitoring and Control Plan. If no NNIS plants are present where work occurs within 25 feet of these RTE occurrences after three years of post-construction monitoring, monitoring and reporting may be discontinued in consultation with ANR.

Though RTE plants are present within the Study Area, the Project will not destroy or significantly imperil endangered species as a result of the Project through avoidance, minimization, and mitigation. Work will be completed in accordance with the conditions presented in the Takings Permit

Rare, Threatened, and Endangered Animals

Based on the results of VHB's IPaC query, NHI database reviews, and coordination with the FWD, VHB identified RTE animals that occur within one-mile of the Study Area, in addition to the potential summer range of the northern long-eared bat (*Myotis septentrionalis* or "MYSE") and potential occurrences of the tricolored bat (*Perimyotis subflavus* or "PESU") (see Appendix F).

Surveys for RTE animal species were excluded from field work as VHB assumes Project components can avoid impacts to desktop-identified species by avoiding habitat (such as aquatic), conducting sweeps to remove individuals ahead of construction, or by mitigating construction-phase impacts.

Myotis septentrionalis (S1, State-Endangered, Federal-Endangered)

Although no critical habitat within or adjacent to the Project has been designated for this species by USFWS, the Project occurs within the potential summer range of the federally-threatened and Vermont-endangered northern long-eared bat (*Myotis septentrionalis*) ("MYSE"). Potential summer range is considered to be the entirety of Vermont by FWD. As there are no known occurrences of MYSE (including hibernacula) within one mile of the Project area, the Study Area constitutes "Potential MYSE Summer Habitat" under FWD *Regulatory Review Guidance for Protecting Northern Long-eared Bats and Their Habitats* (ANR 2017a). As such, if tree clearing occurs during the MYSE dormancy period or impacts less than one percent of suitable forested habitat within one mile, no additional conservation measures are required for MYSE.

Perimyotis subflavus (S1, State-Endangered, Federal-Proposed Endangered)

Although no critical habitat within or adjacent to the Project has been designated for this species by the USFWS, the Project occurs within the potential summer range of the federally-proposed endangered and Vermont-endangered tricolored bat (*Perimyotis subflavus*) ("PESU"). On September 13, 2022, the USFWS announced a proposal to list the tricolored bat (*Perimyotis subflavus*) as endangered under the Endangered Species Act, however no formal listing has been established. In the absence of published guidance from USFWS or FWD, VHB assumes adhering to MYSE time-of-year restrictions provides adequate conservation measures to protect PESU, resulting in no impact.

Further, a review against the USFWS *Northern Long-eared Bat and Tricolored Bat Range-Wide Determination* Key resulted in a preliminary determination of "may affect - not likely to adversely affect."

From desktop review, four Elemental Occurrences ("EO") for RTE animals intersect the Study Area include:

1. *Apalone spinifera* (spiny softshell) (S1, State-Rare)
2. *Myotis lucifugus* (little brown bat) (S1, State-Endangered)
3. *Pyganodon grandis* (giant floater) (S2S3, State-Threatened)
4. *Sternotherus odoratus* (eastern musk turtle) (S2, State-Threatened)

The three of the four occurrences identified above are aquatic species and occur in the Lamoille River. The Project is designed to avoid temporary or permanent impacts to the Lamoille River, thus avoiding direct impacts to aquatic species identified above. With regards to little brown bat, the Project will conduct a presence/absence survey prior to demolishing the residential property, or will demolish the residential structure during the hibernation period from December 1 to March 31, when bats are presumed to be in caves, thus avoiding incidental take of the species.

Based on the findings related to RTE animals and the proposed avoidance and minimization practices, the Project will not destroy or significantly imperil endangered animal species.

Summary

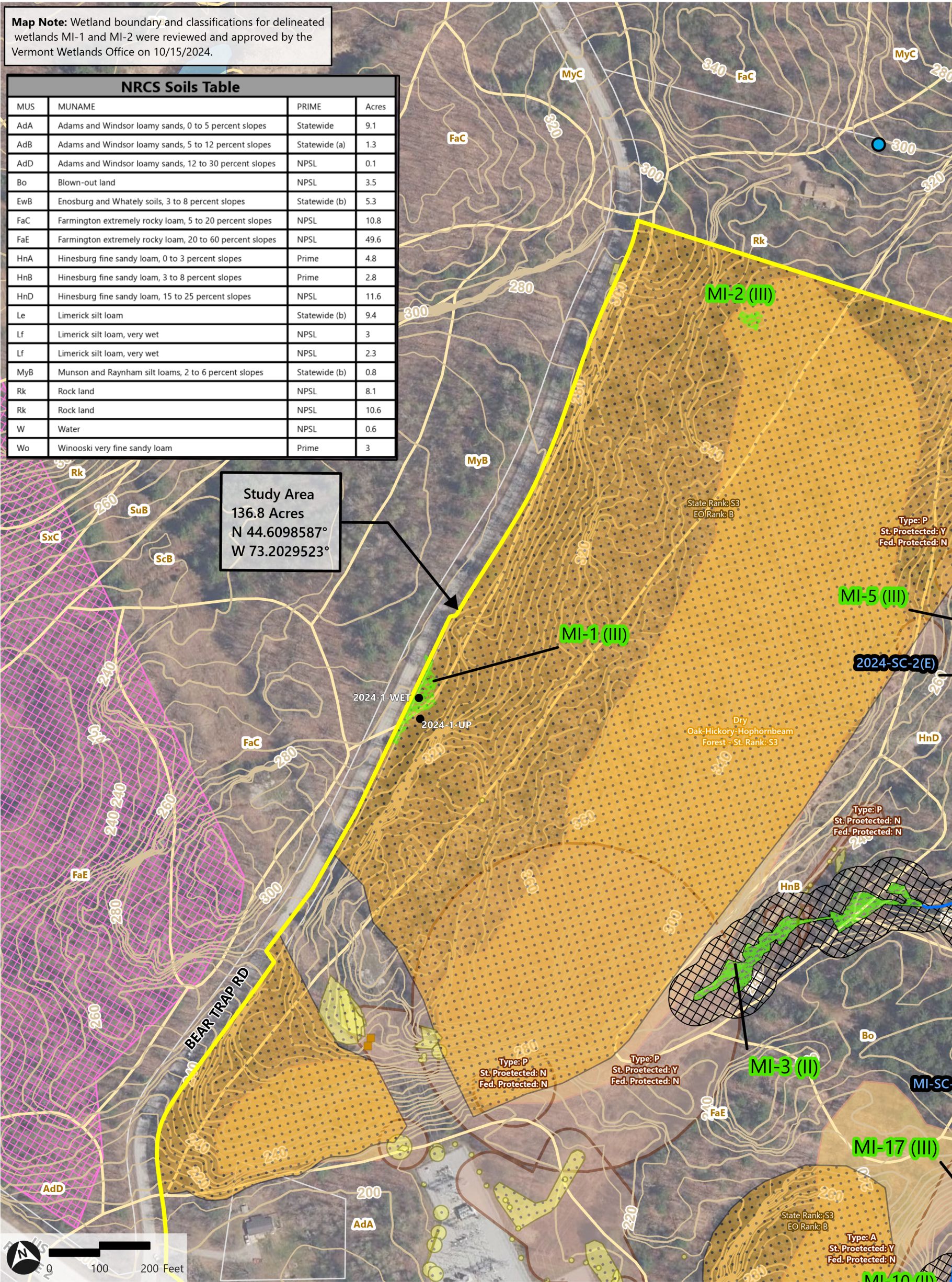
On behalf of VELCO, VHB conducted a natural resources assessment and documentation review of the Project Study Area in Milton, Vermont. The assessment was performed in support of an anticipated application to the Vermont Public Utility Commission for a CPG. The assessment included the evaluation of potential impacts to resources identified in Section 248 criteria including Outstanding Resource Waters (10 V.S.A. § 1424a(d)), Primary Agricultural Soils (30 V.S.A. § 258(b)(5)), Air Pollution and Greenhouse Gas Impacts (30 V.S.A. § 258(b)(5)), Water Pollution (10 V.S.A. § 6086(a)(1)), Headwaters (10 V.S.A. § 6086(a)(1)(A)), Water Conservation (10 V.S.A. § 6086(a)(1)(C)), Floodways (10 V.S.A. § 6086(a)(1)(D)), Streams (10 V.S.A. § 6086(a)(1)(E)), Shorelines (10 V.S.A. § 6086(a)(1)(F)), Wetlands (10 V.S.A. § 6086(a)(1)(G)), Water Supply (10 V.S.A. § 6086(a)(2) and (3)), Soil Erosion (10 V.S.A. § 6086(a)(4)), Rare and Irreplaceable Natural Areas (10 V.S.A. § 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (10 V.S.A. § 6086(a)(8)(A). Based on VHB's review, the proposed Project activities if undertaken and constructed as indicated herein and in the Project Plans, will not result in any undue adverse impacts to the above natural resources criteria reviewed under Section 248.

References

- Argentine, C.C. 2008. *Vermont Act 250 Handbook*. Putney Press, Brattleboro, VT.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitat of the United States*. U.S. Fish and Wildlife Service. FWS/OBD-79/31. 103pp.
- Thompson, E.S., E. Sorenson, R.J. Zaino. 2019. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. Published by The Nature Conservancy and Vermont Department of Fish and Wildlife, distributed by University Press of New England.
- USACE. 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05. Available online at:
<http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf>
- USACE. 2011. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- USDA-NRCS. 2003. *Vermont Soil Fact Sheet – Detailed Definitions and Explanations*. April 2003. Available online at:
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_010210.pdf
- USDA Web Soil Survey. 2024. Accessed online at:
<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>.
- USFWS. 2024. Information for Planning and Consultation. Available online at:
<https://ipac.ecosphere.fws.gov>
- Vermont Agency of Natural Resource. 2023. Vermont Wetland Rules. Available online at:
https://dec.vermont.gov/sites/dec/files/documents/wsmd_VermontWetlandRules.pdf
2022. Vermont Water Quality Standards Environmental Protection Rule Chapter 29A, Effective November 15, 2022.
- _____. 2021. Vermont Fish and Wildlife. *Guidance for Review and Mitigation of Impacts to Grassland Bird Habitat in Connection with Regulated Projects in Vermont*.
- _____. 2021. Vermont Fish and Wildlife. *Potential Roost Tree Survey Methods for Endangered Bats*.
- _____. 2020a. Vermont Wetland Rules. Effective January 21, 2020. Available online at:
https://dec.vermont.gov/sites/dec/files/documents/wsmd_VermontWetlandRules.pdf

- _____. 2020b. *The Low-Risk Site Handbook for Erosion Prevention and Soil Control*. Department of Environmental Conservation.
- _____. 2018. *Rare and Uncommon Native Vascular Plants of Vermont*. Fish and Wildlife Department. Effective August 9, 2018.
- _____. 2017b. *Flood Hazard Area and River Corridor Protection Procedure*. Environmental Protection Rule Chapter 29. Department of Environmental Conservation. Effective September 7, 2017.
- _____. 2017c. *Regulatory Review Guidance for Protecting Northern Long-eared Bats and Their Habitats*. Effective February 2017.
- _____. 2016. *Vermont Natural Community Ranking Specifications*. Fish and Wildlife Department. Effective January 2016.
- _____. 2009. *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont*. Fish and Wildlife Department.
- _____. 2005. *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers*. December 9, 2005. Available online at:
<http://www.anr.state.vt.us/site/html/buff/BufferGuidanceFINAL-120905.pdf>.

APPENDIX A



- Study Area (VHB) (1)

Potential Vernal Pools (VHB) (0)

Delineated Waters (VHB) (2)

Delineated Wetlands (VHB) (4)

Class II Wetlands Buffer (VHB) (2)

Riparian Buffer (VHB) (0)

USACE Data Point (VHB) (2)

Culvert Point (VHB) (2)

Significant Natural Communities (VHB) (2)

RTE (VHB/VELCO) (31)

NRCS Soil Boundary (VCGI)(20)

Public Water Sources (ANR) (0)

Private Wells (ANR) (1)

Stream (ANR) (0)

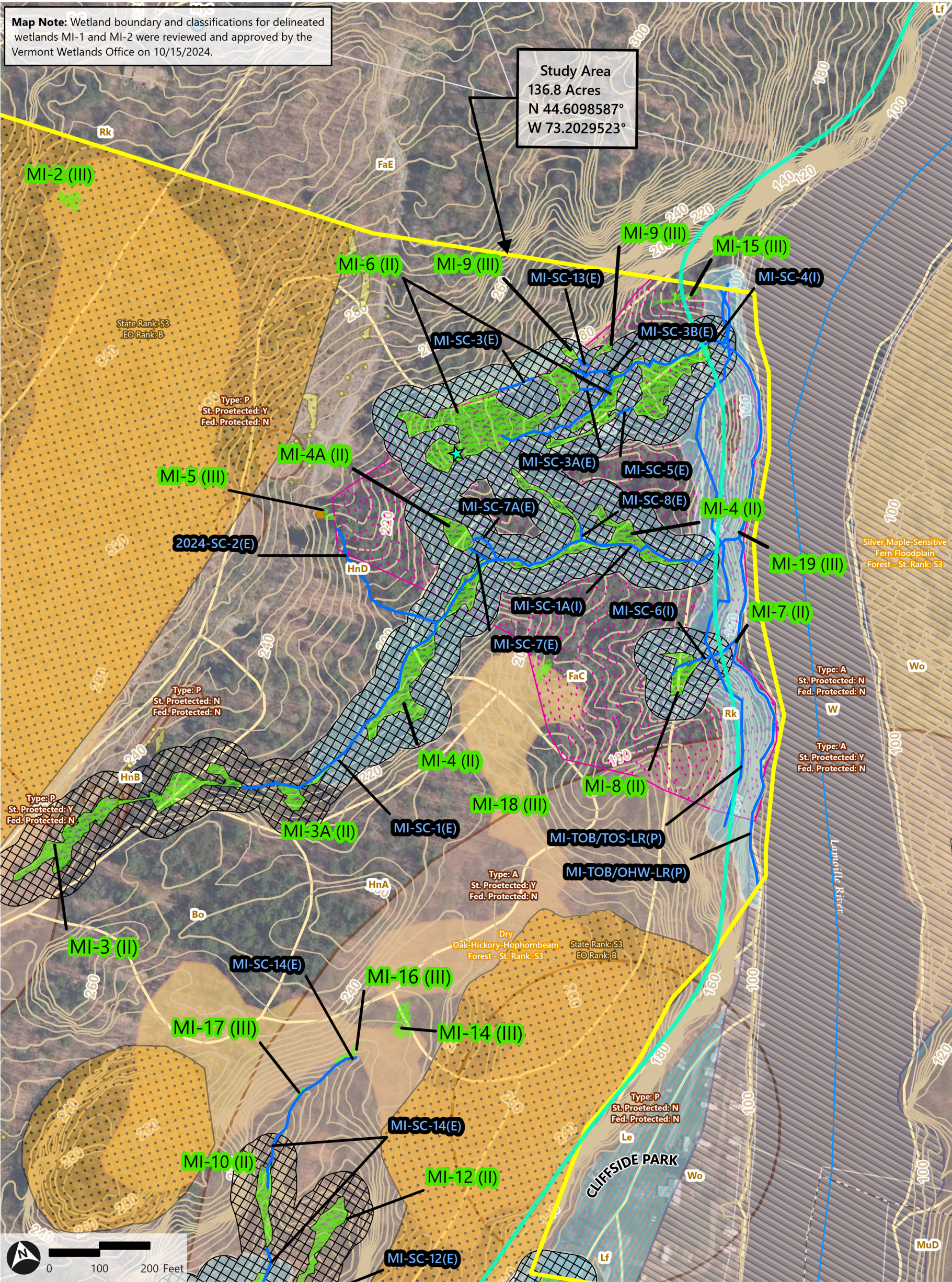
Deer Wintering Areas (ANR) (1)

Rare, Threatened, Endangered Species (ANR) (10)

Waterbody (ANR) (1)

VNHI Significant Natural Community (FWD) (1)

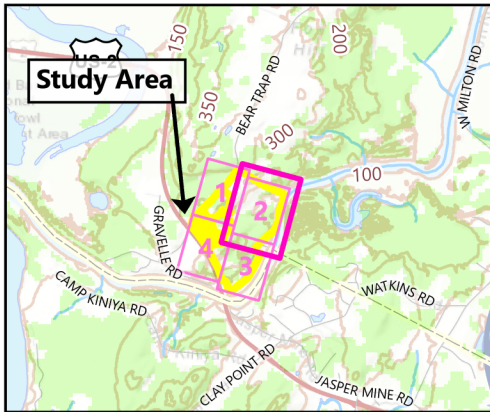
Parcel Boundary (VCGI) (8)
- NOTE:** Natural resource field assessments were conducted by VHB (A. Pierce, M. Jackman, W. Durkin) on various dates (July-August 2024 and April 2025).
- Sources: Background Imagery by VCGI (Vermont Center for Geographic Information - Various Dates); ANR (Vermont Agency of Natural Resources - Various Dates); FWD (Vermont Department of Fish & Wildlife - Various Dates); VTrans (Vermont Department of Transportation - 2015); VELCO (Vermont Electric Power Company - 2023-2024); VHB (Vanasse Hangen Brustlin, Inc. - 2023-2025).
-
- Path: \\vhb.com\gis\proj\S Burlington\85067.24 VELCO Sandbar-SmartValve\Project\VELCO Sandbar-SmartValve_NR_Mapping\VELCO Sandbar-SmartValve_NR_Mapping.aprx (User: JTherrien, Date: 5/21/2025)



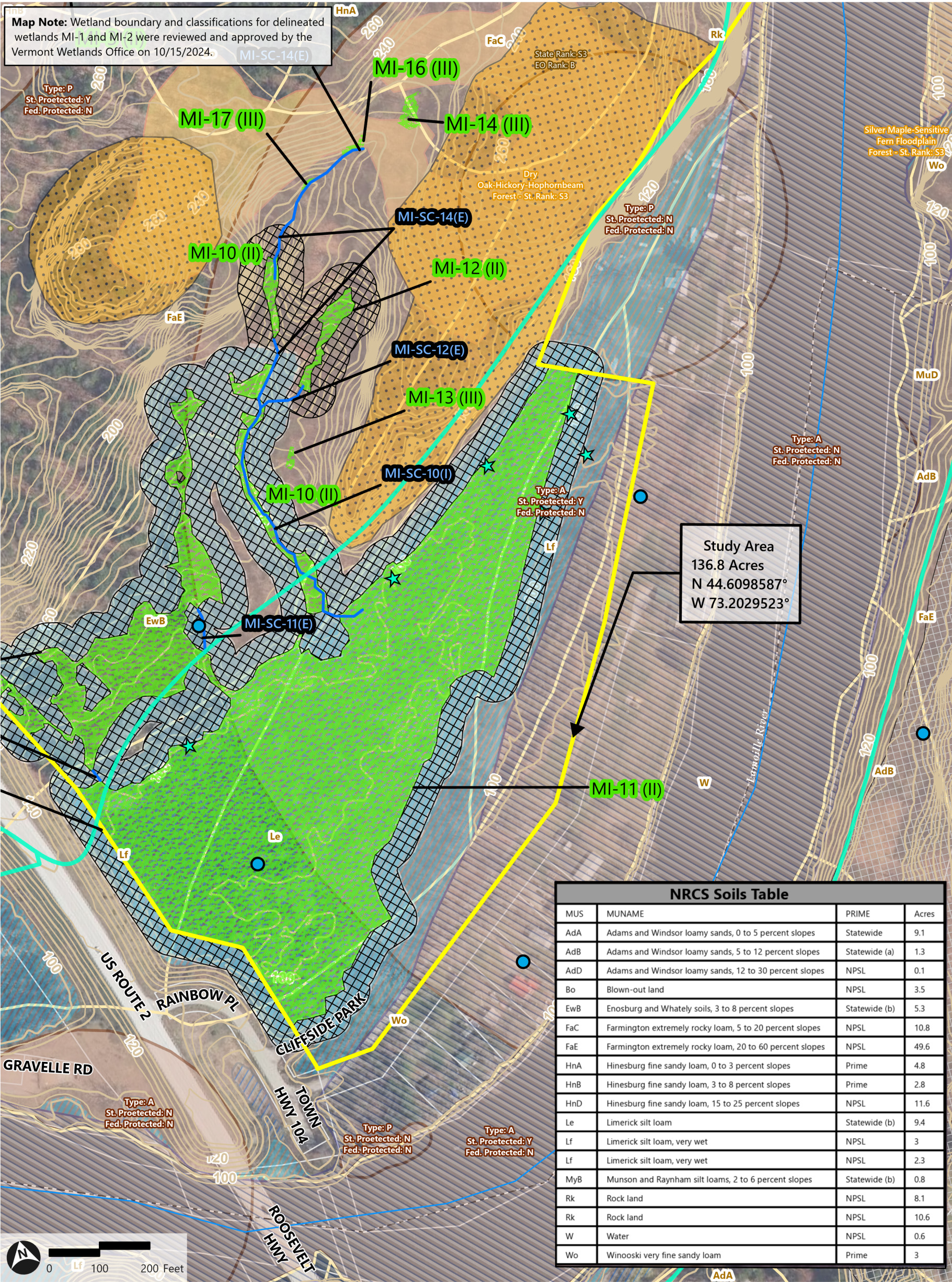
- | | | |
|------------------------------------|---|---|
| Study Area (VHB) (1) | Deer Wintering Area (VHB) (1) | Deer Wintering Areas (ANR) (0) |
| Potential Vernal Pools (VHB) (1) | Significant Natural Communities (VHB) (2) | Rare, Threatened, Endangered Species (ANR) (16) |
| Delineated Waters (VHB) (17) | RTE (VHB/VELCO) (35) | Waterbody (ANR) (0) |
| Delineated Wetlands (VHB) (19) | NRCS Soil Boundary (VCGI)(17) | VNHI Significant Natural Community (FWD) (2) |
| Class II Wetlands Buffer (VHB) (3) | Public Water Sources (ANR) (0) | 1% Annual Chance Flood Hazard (FEMA) (3) |
| Riparian Buffer (VHB) (2) | Private Wells (ANR) (1) | Regulatory Floodway (FEMA) (1) |
| USACE Data Point (VHB) (0) | Stream (ANR) (1) | Parcel Boundary (VCGI) (11) |
| Culvert Point (VHB) (1) | River Corridor (ANR) (1) | |

NOTE: Natural resource field assessments were conducted by VHB (A. Pierce, M. Jackman, W. Durkin) on various dates (July-August 2024 and April 2025).

Sources: Background Imagery by VCGI (Vermont Center for Geographic Information - Various Dates); ANR (Vermont Agency of Natural Resources - Various Dates); FWD (Vermont Department of Fish & Wildlife - Various Dates); VTTrans (Vermont Department of Transportation - 2015); VELCO (Vermont Electric Power Company - 2023-2024); VHB (Vanasse Hangen Brustlin, Inc. - 2023-2025).



Path: \\vhb.com\gis\prop\SBurlington\85067.24 VELCO Sandbar-SmartValve\Project\VELCO Sandbar-SmartValve_NR_Mapping\VELCO Sandbar-SmartValve_NR_Mapping.aprx (User: J.Therrien, Date: 5/21/2025)



- Study Area (VHB) (1)

Potential Vernal Pools (VHB) (6)

Delineated Waters (VHB) (6)

Delineated Wetlands (VHB) (7)

Class II Wetlands Buffer (VHB) (3)

Riparian Buffer (VHB) (2)

USACE Data Point (VHB) (0)

Culvert Point (VHB) (0)
- Significant Natural Communities (VHB) (1)

RTE (VHB/VELCO) (1)

NRCS Soil Boundary (VCGI)(20)

Public Water Sources (ANR) (0)

Private Wells (ANR) (7)

Stream (ANR) (1)

River Corridor (ANR) (2)

Deer Wintering Areas (ANR) (0)
- Rare, Threatened, Endangered Species (ANR) (15)

Waterbody (ANR) (0)

VNHI Significant Natural Community (FWD) (2)

1% Annual Chance Flood Hazard (FEMA) (8)

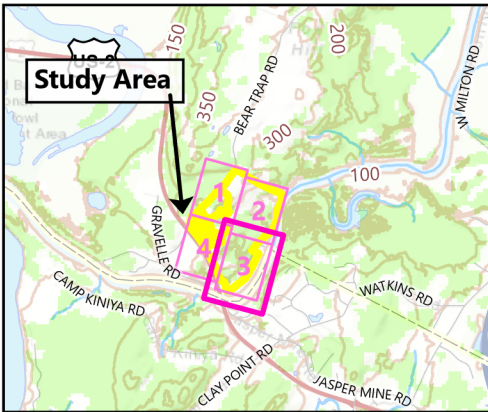
0.2% Annual Chance Flood Hazard (FEMA) (5)

Regulatory Floodway (FEMA) (1)

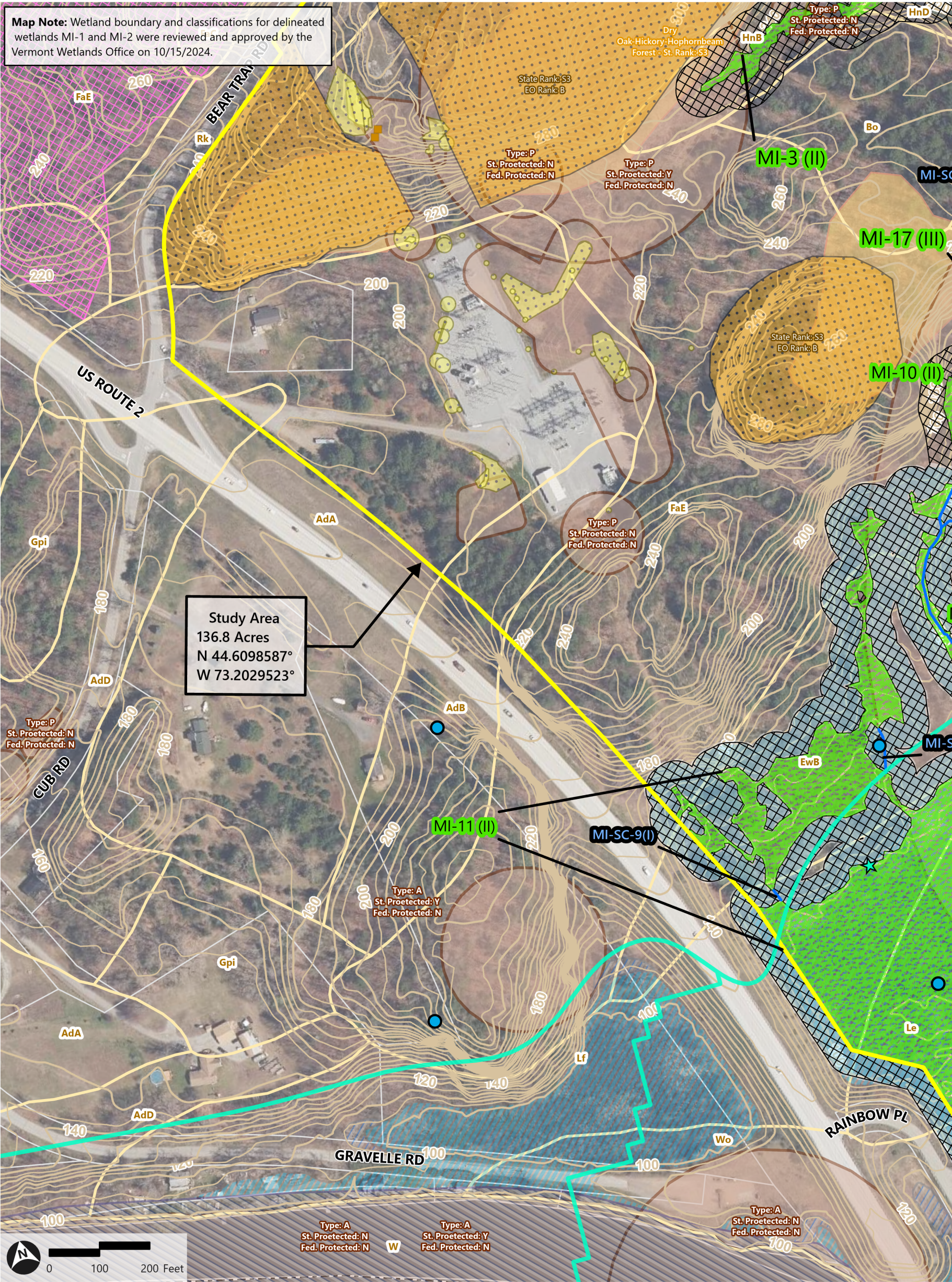
Parcel Boundary (VCGI) (44)

NOTE: Natural resource field assessments were conducted by VHB (A. Pierce, M. Jackman, W. Durkin) on various dates (July-August 2024 and April 2025).

Sources: Background Imagery by VCGI (Vermont Center for Geographic Information - Various Dates); ANR (Vermont Agency of Natural Resources - Various Dates); FWD (Vermont Department of Fish & Wildlife - Various Dates); VTrans (Vermont Department of Transportation - 2015); VELCO (Vermont Electric Power Company - 2023-2024); VHB (Vanasse Hangen Brustlin, Inc. - 2023-2025).



Path: \\vhb.com\gis\proj\SBurlington\85067.24 VELCO Sandbar-SmartValve\Project\VELCO Sandbar-SmartValve_NR_Mapping\VELCO Sandbar-SmartValve_NR_Mapping.aprx (User: JTherrien, Date: 5/21/2025)



- | | | |
|------------------------------------|---|---|
| Study Area (VHB) (1) | Significant Natural Communities (VHB) (2) | Rare, Threatened, Endangered Species (ANR) (22) |
| Potential Vernal Pools (VHB) (1) | RTE (VHB/VELCO) (26) | Waterbody (ANR) (0) |
| Delineated Waters (VHB) (6) | NRCS Soil Boundary (VCGI)(20) | VNHI Significant Natural Community (FWD) (1) |
| Delineated Wetlands (VHB) (3) | Public Water Sources (ANR) (0) | 1% Annual Chance Flood Hazard (FEMA) (5) |
| Class II Wetlands Buffer (VHB) (4) | Private Wells (ANR) (4) | 0.2% Annual Chance Flood Hazard (FEMA) (4) |
| Riparian Buffer (VHB) (2) | Stream (ANR) (0) | Regulatory Floodway (FEMA) (1) |
| USACE Data Point (VHB) (0) | River Corridor (ANR) (2) | Parcel Boundary (VCGI) (23) |
| Culvert Point (VHB) (2) | Deer Wintering Areas (ANR) (1) | |

NOTE: Natural resource field assessments were conducted by VHB (A. Pierce, M. Jackman, W. Durkin) on various dates (July-August 2024 and April 2025).

Sources: Background Imagery by VCGI (Vermont Center for Geographic Information - Various Dates); ANR (Vermont Agency of Natural Resources - Various Dates); FWD (Vermont Department of Fish & Wildlife - Various Dates); VTtrans (Vermont Department of Transportation - 2015); VELCO (Vermont Electric Power Company - 2023-2024); VHB (Vanasse Hangen Brustlin, Inc. - 2023-2025).

Path: \\vhb.com\gis\proj\SBurlington\85067.24 VELCO Sandbar-SmartValve\Project\VELCO Sandbar-SmartValve_NR_Mapping\VELCO Sandbar-SmartValve_NR_Mapping.aprx (User: JTherrien, Date: 5/21/2025)

APPENDIX B



PAS Impact Exhibit

Sandbar Substation

Milton, VT

Source: **VELCO**
Prepared for: **Permitting**
Date: **May 22, 2025**

LEGEND

- APPROXIMATE BOUNDARY LINE
- SUBSTATION FENCE
- TREE LINE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR

- EXISTING EDGE OF PAVEMENT/GRAVEL
- UTILITY POLE
- GUY ANCHOR
- LIGHTNING MAST
- POWER FLOW CONTROL DEVICE

- WETLAND
- WETLAND BUFFER
- DELINEATED WATERS
- NRCS SOIL AREA BOUNDARY

NOTES:

- BOUNDARY LINES OBTAINED FROM PARCEL DATASETS AVAILABLE ON THE VERMONT OPEN GEODATA PORTAL, THIS PLAN DOES NOT CONSTITUTE A BOUNDARY SURVEY.
- EXISTING TREE LINES PRODUCED FROM A COMBINATION OF GROUND SURVEY AND LIDAR BASED VEGETATION DATA.



PAS IMPACT LEGEND

Description	Symbol	Area (ACRES)
PROPOSED LIMITS OF WORK (LOW)		8.52
EXISTING DEVELOPMENT WITHIN MAPPED PAS		3.52
PERMANENT DISTURBANCE WITHIN MAPPED PAS		2.43

APPENDIX C



VELCO Sandbar SmartValve Substation

Photographs: 2024-2025 Natural Resources Assessment

PROJECT NUMBER

59175.00

586 Bear Trap Road
Milton, Vermont 05468

VT Transco, LLC
366 Pinnacle Ridge Road
Rutland, VT 05701



NO. 1 / 07.25.2024

DESCRIPTION

A representative photograph of an isolated depressional wetland located in the east and southeast portions of the Study Area.



NO. 2 / 07.25.2024

DESCRIPTION

A representative photograph of wetland MI-11, located in the southern portion of the Study Area.



NO. 3 / 07.25.2024

DESCRIPTION

A representative photograph of a seep, which are present in the east and southeast portions of the Study Area.



NO. 4 / 07.24.2024

DESCRIPTION

A representative photograph of ephemeral streams located in the east and southeastern portions of the Study Area.



NO. 5 / 09.26.2024

DESCRIPTION

A representative photograph of intermittent streams occurring within the Study Area.



NO. 6 / 09.26.2024

DESCRIPTION

A representative photograph of the Lamoille River along the eastern boundary of the Study Area.



NO. 7 / 07.19.2024

DESCRIPTION

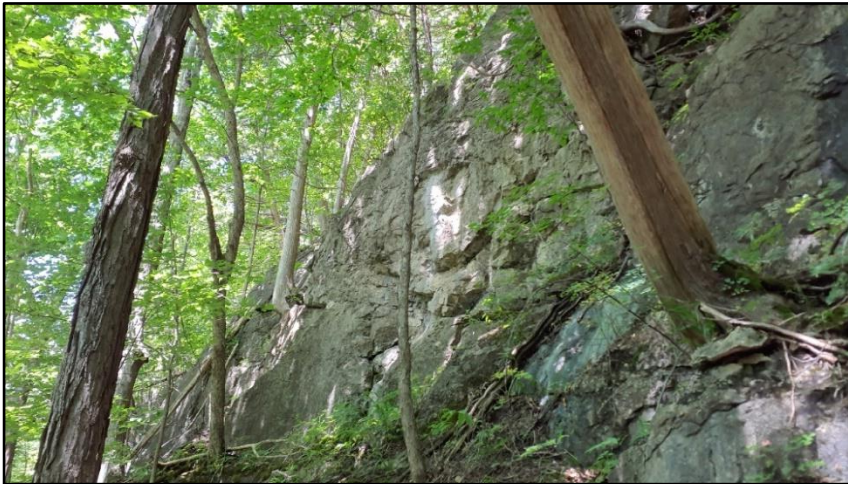
A representative photograph of the Dry-Oak-Hickory-Hophornbeam Forest located in the northern and southern portions of the Study Area.



NO. 8 / 07.19.2024

DESCRIPTION

A representative photograph of the Dry-Oak-Hickory-Hophornbeam Forest located in the northern and southern portions of the Study Area.



NO. 9 / 07.19.2024

DESCRIPTION

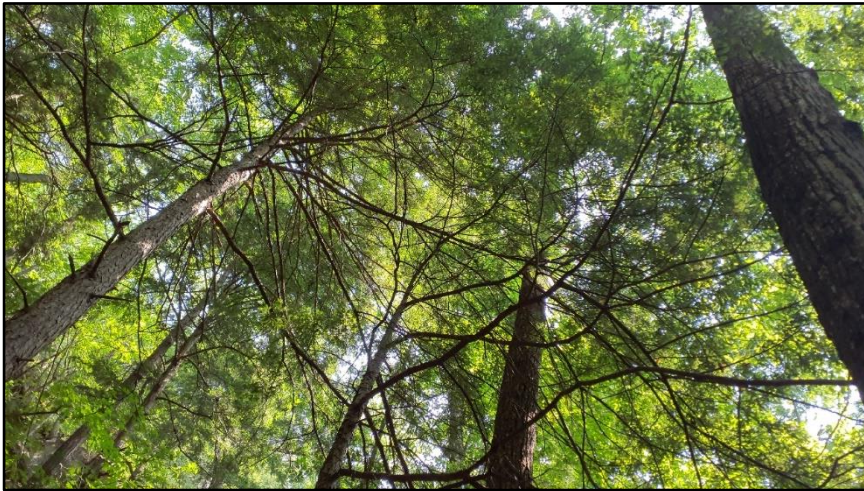
A representative photograph of Dunham Dolostone ledges in northern portion of the Study Area.



NO. 10 / 07.30.2024

DESCRIPTION

A representative photograph of the Deer Winter Area located in the northeastern portion of the Study Area.



NO. 11 / 07.30.2024

DESCRIPTION

A representative photograph of the canopy cover in the Deer Wintering Area located in the northeastern portion of the Study Area.



NO. 12 / 07.19.2024

DESCRIPTION

A representative photograph of the proposed Project site east of the current substation yard.



NO. 13 / 07.19.2024

DESCRIPTION

A representative photograph of the maintained ROW east of the substation yard.



NO. 14 / 07.24.2024

DESCRIPTION

A representative photograph of potential vernal pools located largely in eastern and southern portions of the Study Area.

NO. 15 / 07.23.2024

DESCRIPTION

A representative photograph of RTE plant species present within the Study Area.





NO. 16 / 04.25.2025

DESCRIPTION

A representative photograph of the forested conditions at the residential inholding parcel located to the west of the current substation.



NO. 17 / 04.15.2025

DESCRIPTION

A representative photograph of marinated yard at the residential inholding parcel.

APPENDIX D

Summary of Delineated Streams
Project: Sandbar Substation Smartvalve
Client: Vermont Electric Power Company (VELCO)
Location: Milton, VT
Prepared By: VHB (A. Pierce)
Delineation Date(s): 7/19/2024, 7/23-25/2024, 7/30/2024

VHB Delineated Streams													
Stream ID	Stream Name	Associated Wetlands	Average Ordinary High Water (OHW) Width (Feet) ¹	Dominant Substrate	Water Depth (Inches)	Bank Height (Feet)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	Watershed Size (Square Miles) ³	VWQS Classification (2022) ⁴	ANR-Mapped Stream/River (Yes/No)	ANR-Mapped River Corridor? (Yes/No) ⁵	VHB-Proposed Riparian Buffer ? (Yes/No) ⁶	Comments
MI-SC-1	-	MI-3, MI-4	1.5	Silt	1	0.50	Ephemeral	<0.5	B	No	No	No	Ephemeral channel in natural valley draining wetland MI-3
MI-SC-1A	-	MI-4, MI-19	4.0	Silt, Gravel	1	1.00	Intermittent	<0.5	B	No	No	Yes	Continuation of MI-SC-1 where additional inputs of hydrology results in presence of stream characteristics. Drains to Lamoille River
MI-SC-2	-	MI-4, MI-5	3.00	Silt	2	2.00	Ephemeral	<0.5	B	No	No	No	Ephemeral channel draining wetland MI-5 to intermittent stream MI-SC-1A. Drainage in incised, natural valley
MI-SC-3	-	MI-6	1.50	Cobble, Loam	0	1.00	Ephemeral	<0.5	B	No	No	No	Ephemeral drainage connecting two portions of wetland MI-6
MI-SC-3A	-	MI-6	2.50	Silt	1	1.00	Ephemeral	<0.5	B	No	No	No	Ephemeral drainage connecting a portion of wetland MI-4 to intermittent stream MI-SC-4
MI-SC-3B	-	MI-6	1.00	Silt	1	0.25	Ephemeral	<0.5	B	No	No	No	Ephemeral drainage connecting a portion of wetland MI-4 to intermittent stream MI-SC-4
MI-SC-4	-	MI-6	3.00	Silt, Gravel	1	2.00	Intermittent	<0.5	B	No	No	Yes	Intermittent stream draining wetland MI-6 to Lamoille River
MI-SC-5	-	MI-6	1.50	Loam	0	2.00	Ephemeral	<0.5	B	No	No	No	Short, weak, ephemeral channel connecting two portions of wetland 2024-6
MI-SC-6	-	MI-7, MI-8	3.00	Gravel	1	1.00	Intermittent	<0.5	B	No	No	Yes	Intermittent stream draining wetland MI-8 to Lamoille River
MI-SC-7	-	MI-4	1.5	Silt	1	3.00	Ephemeral	<0.5	B	No	No	No	Ephemeral channel draining lobe of wetland MI-4 to intermittent stream MI-SC-1A

VHB Delineated Streams													
Stream ID	Stream Name	Associated Wetlands	Average Ordinary High Water (OHW) Width (Feet) ¹	Dominant Substrate	Water Depth (Inches)	Bank Height (Feet)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	Watershed Size (Square Miles) ³	VWQS Classification (2022) ⁴	ANR-Mapped Stream/River (Yes/No)	ANR-Mapped River Corridor? (Yes/No) ⁵	VHB-Proposed Riparian Buffer ? (Yes/No) ⁶	Comments
MI-SC-7A	-	MI-4	1.0	Silt	0	1.50	Ephemeral	<0.5	B	No	No	No	Ephemeral channel draining lobe of wetland MI-4 to intermittent stream MI-SC-1A
MI-SC-8	-	MI-4	1.0	Silt	0	1.50	Ephemeral	<0.5	B	No	No	No	Ephemeral channel draining lobe of wetland MI-4 to intermittent stream MI-SC-1A
MI-SC-9	-	MI-11	3.0	Cobble	1	6.00	Intermittent	<0.5	B	No	No	Yes	Intermittent stream in deeply incised channel connection two portions of wetland 2024-11 adjacent to Route 2
MI-SC-10	-	MI-10, MI-11	1.0	Silt	1	1.00	Intermittent	<0.5	B	No	No	Yes	Intermittent stream in incised natural valley where ephemeral channel MI-SC-14 gains multiple new inputs of hydrology along with a headcut and change in substrate. Stream dissipates into MI-11
MI-SC-11	-	MI-11	1.5	Silt	0	3.00	Ephemeral	<0.5	B	No	No	No	Ephemeral channel in ROW connecting a portion of 2024-11 outside the ROW to a portion in the ROW
MI-SC-12	-	MI-12, MI-10	1.5	Silt	0	4.00	Ephemeral	<0.5	B	No	No	No	Ephemeral channel in incised drainage between wetland MI-12 and intermittent stream MI-SC-10
MI-SC-13	-	MI-9	1.5	Loam	0	0.50	Ephemeral	<0.5	B	No	No	No	Ephemeral channel in outcrop area connecting two lobes of wetland MI-9
MI-SC-14	-	MI-10, MI-16, MI-17	1.5	Loam	0	0.50	Ephemeral	<0.5	B	No	No	No	Ephemeral channel draining wetlands MI-16, MI-17, and MI-10 to intermittent stream MI-SC-10
MI-TOB/TOS-LR	-	MI-7, MI-15, MI-19	330.0	Silt	25	4.00	Perennial	720.0	B	Yes	Yes	Yes	Lamoille River

¹ U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification. No. 05-05.*

² Stream flow regime determined based on qualitative observations of in stream hydrology indicators and geomorphic characteristic and are subject to professional judgment.

³ Watershed size determined from Vermont Agency of Natural Resources ("ANR") Stream Alteration Regulatory Program mapping or USGS Stream Stats

⁴ From ANR. 2022. *Vermont Water Quality Standards. 303(d) Assessment of the Condition of Vermont Waters. Priority Listing of Vermont Waters. Vermont Department of Environmental Conservation.*

⁵ List of River Corridors from the ANR Atlas.

⁶ Determined through guidance from Vermont ANR (2005) *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers.*

Summary of Delineated Wetlands
Project: Sandbar Substation Smartvalve
Client: Vermont Electric Power Company (VELCO)
Location: Milton, VT
Prepared By: VHB (A. Pierce, W. Durkin)
Delineation Date(s): 7/19/2024, 7/23-25/2024



VHB Delineated Wetlands												
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	Vermont Wetland Rules Classification						Typical Vegetation	Comments
					Contiguous to a VSWI- mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Presumptions ⁴	VWR Section 5 Functional Criteria Presence / Significance		VHB-Proposed VWR Classification ⁶		
								Type ⁵	VHB-Proposed Significant?			
MI-1	4,117	PFO, PEM	Saturation (A3), Geomorphic Position (D2), FAC-Neutral (D5)	N/A, meets USACE definition of hydric soil	No	No	-	5.1(L), 5.2(L)	No	III	<i>Phragmites australis</i> , <i>Populus grandidentata</i> , <i>Salix bebbiana</i>	Inundated depression between Bear Trap Rd and rock outcrop
MI-2	1,222	PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Water- Stained Leaves (B9), Geomorphic Position (D2)	N/A, meets USACE definition of hydric soil	No	No	-	5.1(L), 5.2(L)	No	III	<i>Salix bebbiana</i> , <i>Fraxinus pennsylvanica</i> , <i>Onoclea sensibilis</i>	Small, isloated depression on forested outcrop.
MI-3	15,599	PSS, PEM, PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Geomorphic Position (D2), FAC- Neutral (D5)	Depleted Matrix (D3)	No	Yes(I)	b, e	5.1(P), 5.2(P), 5.6(P), 5.10(P)	Yes	II	<i>Salix discolor</i> , <i>Phalaris arundinacea</i> , <i>Urtica dioica</i> , <i>Onoclea sensibilis</i> , <i>Impatiens capensis</i>	Narrow, inundated depression within ROW. Wetland continues into the adjacent forest and is drained by an incised ephemeral channel
MI-4	25,204	PEM, PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Water- Stained Leaves (B9), Drainage Patterns (B10), Geomorphic Position (D2), Microtopographic Relief (D4), FAC-Neutral (D5)	Depletex Matrix (D3)	No	Yes(I)	a, b	5.1(P), 5.2(P), 5.10(P)	Yes	II	<i>Impatiens capensis</i> , <i>Fraxinus pennsylvanica</i> , <i>Tsuga canadensis</i> , <i>Betula alleghaniensis</i> ,	Seep complex associated with intermittent stream and ephemeral drainages within steep forest.
MI-5	491	PSS, PEM, PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), FAC- Neutral (D5)	Depletex Matrix (D3)	No	No	-	5.1(L), 5.2(L)	No	III	<i>Impatiens capensis</i> , <i>Ulmus americana</i> , <i>Betula alleghaniensis</i>	Small wetland at culvert outlet adjacent to ROW. Wetland drained by ephemeral channel to intermittent stream
MI-6	39,566	PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), FAC- Neutral (D5)	Depletex Matrix (D3)	No	Yes(I)	a, b	5.1(P), 5.2(P), 5.4(P), 5.10 (P)	Yes	II	<i>Tsuga canadensis</i> , <i>Fraxinus pennsylvanica</i> , <i>Lycopus uniflorus</i> , <i>Trillium cernuum</i> , <i>Scutellaria lateriflora</i>	Large seep in hemlock stand drained by intermittent stream to the Lamoille. VHB identified a Potential Vernal Pool within the wetland. VHB conservatively assumes 5.4 at a present level, although spring vernal pool surveys have not been conducted.
MI-7	116	PEM, PSS	High Water Table (A2), Saturation (A3), Drainage Patterns (B10)	Depletex Matrix (D3)	No	Yes(I)	-	5.1(L), 5.2(L)	No	III	<i>Equisetum arvense</i> , <i>Impatiens capensis</i> , <i>Solanum dulcamara</i>	Small wetland at confluence of intermittent stream into Lamoille River

VHB Delineated Wetlands												
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	Vermont Wetland Rules Classification						Typical Vegetation	Comments
					Contiguous to a VSWI- mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Presumptions ⁴	VWR Section 5 Functional Criteria Presence / Significance		VHB-Proposed VWR Classification ⁶		
								Type ⁵	VHB-Proposed Significant?			
MI-8	3,108	PFO, PSS, PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), FAC-Neutral (D5)	Depleted Matrix (F3), 2cm Muck (A10)	No	Yes(I)	b	5.1(P), 5.2(P), 5.10(P)	Yes	II	<i>Parthenocissus quinquefolia</i> , <i>Tsuga canadensis</i> , <i>Betula alleghaniensis</i> , <i>Impatiens capensis</i>	Hillside seep drained by intermittent stream to Lamoille River
MI-9	1,119	PFO, PSS, PEM	Saturation (A3), Water-Stained Leaves (B9), Geomorphic Position (D2), FAC-Neutral (D5)	Depleted Matrix (F3)	No	No	-	5.1(L), 5.2(L)	No	III	<i>Parthenocissus quinquefolia</i> , <i>Tsuga canadensis</i> , <i>Betula alleghaniensis</i> , <i>Impatiens capensis</i>	Seep wetland on steep outcrop and at toe of cliff
MI-10	16,445	PEM	High Water Table (A2), Saturation (A3), Sparsely Vegetated Concave Surface (B8), Drainage Patterns (B10), Geomorphic Position (D2), Microtopographic Relief (D4), FAC-Neutral Test (D5)	Depleted Matrix (F3)	Yes	Yes(I)	b	5.1(P), 5.2(P), 5.10(P)	Yes	II	<i>Parthenocissus quinquefolia</i> , <i>Fraxinus pennsylvanica</i> , <i>Betula alleghaniensis</i> , <i>Impatiens capensis</i>	Series of seeps adjacent to a ephemeral channel in a natural, incised channel. Becomes drained by intermittent stream MI-SC-11
MI-11	624,555	PFO, PSS, PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10), Geomorphic Position (D2), Microtopographic Relief (D4), FAC-Neutral (D5)	Depleted Matrix (F3)	Yes	Yes(I, P)	a, b	5.1(P), 5.2(P), 5.4(P), 5.10(P)	Yes	II	<i>Fraxinus pennsylvanica</i> , <i>Onoclea sensibilis</i> , <i>Lonicera morrowii</i> , <i>Acer saccharinum</i> , <i>Lysimachia nummularia</i>	Large wetland complex associated with Lamoille River. Wetland bisected by road and a portion within the Study Area is within a maintain ROW
MI-12	5,269	PEM	Water-Stained Leaves (B9), Geomorphic Position (D2), FAC-Neutral (D5)	Depleted Matrix (F3)	Yes	No	-	5.1(L), 5.2(L)	Yes	II	<i>Impatiens capensis</i> , <i>Amphicarpaea bracteata</i> , <i>Onoclea sensibilis</i> , <i>Persicaria virginiana</i>	Long, narrow seep in natural valley. Drained by ephmeral channel to intermittent stream
MI-13	570	PFO, PSS, PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), FAC-Neutral (D5)	Depleted Matrix (F3), 2cm Muck (A10)	No	No	-	5.1(L), 5.2(L)	No	III	<i>Parthenocissus quinquefolia</i> , <i>Tsuga canadensis</i> , <i>Betula alleghaniensis</i> , <i>Impatiens capensis</i>	Small isolated seep in natural valley of hardwood forest. Evidence of overland flow draining wetland at times of high water to ephemeral channel
MI-14	2,109	PFO	Sparsely Vegetated Concave Surface (B8), Saturation (A3), Geomorphic Position (D2), FAC-Neutral Test (D5)	Depleted Matrix (F3)	No	No	-	5.1(L), 5.2(L)	No	III	<i>Impatiens capensis</i> , <i>Onoclea sensibilis</i> , <i>Galium palustre</i> , <i>Fraxinus pennsylvanica</i>	Isolated forest depression
MI-15	1,027	PFO	Sparsely Vegetated Concave Surface (B8), Saturation (A3), Geomorphic Position (D2)	Depleted Matrix (F3)	No	Yes(P)	-	5.1(L), 5.2(L)	No	III	<i>Onoclea sensibilis</i> , <i>Acer saccharum</i> , <i>Dryopteris intermedia</i> , <i>Fraxinus pennsylvanica</i>	Narrow drainage fed by two ephemeral stream channels

VHB Delineated Wetlands												
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	Vermont Wetland Rules Classification						Typical Vegetation	Comments
					Contiguous to a VSWI- mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Presumptions ⁴	VWR Section 5 Functional Criteria Presence / Significance		VHB-Proposed VWR Classification ⁶		
								Type ⁵	VHB-Proposed Significant?			
MI-16	739	PEM	High Water Table (A2), Saturation (A3), Sparsely Vegetated Concave Surface (B8), Drainage Patterns (B10), Geomorphic Position (D2), Microtopographic Relief (D4), FAC-Neutral Test (D5)	Depleted Matrix (F3)	No	No	-	5.1(L), 5.2(L)	No	III	<i>Onoclea sensibilis</i>	Seep at headwaters of an ephemeral channel MI-SC-14 in a natural, incised channel.
MI-17	272	PEM	High Water Table (A2), Saturation (A3), Sparsely Vegetated Concave Surface (B8), Drainage Patterns (B10), Geomorphic Position (D2), Microtopographic Relief (D4), FAC-Neutral Test (D5)	Depleted Matrix (F3)	Yes	No	-	5.1(L), 5.2(L)	No	III	-	Small fringe/seep along ephemeral stream MI-SC-14 in a natural, incised channel.
MI-18	749	PFO, PSS, PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), FAC-Neutral (D5)	Depleted Matrix (F3), 2cm Muck (A10)	No	No	-	5.1(L), 5.2(L)	No	III	<i>Parthenocissus quinquefolia</i> , <i>Tsuga canadensis</i> , <i>Betula alleghaniensis</i> , <i>Impatiens capensis</i>	Small isolated forested wetland with marginal drainage to wetland MI-8
MI-19	85	PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), FAC-Neutral (D5)	Depletex Matrix (D3)	No	Yes(I)	-	5.1(L), 5.2(L)	No	III	<i>Eutrochium maculatum</i> , <i>Eupatorium perfoliatum</i> , <i>Thuja occidentalis</i> , <i>Solanum dulcamara</i>	Small wetland at confluence of intermittent stream into Lamoille River

¹All wetlands field delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2011; Delineated Wetlands that extend outside the Study Area are denoted with **bold** text.

²Classification follows Cowardin, L.M., Carter, V., Golet, F.C. and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitat of the United States. U.S. Fish and Wildlife Service. FWS/OBD-79/31. 103pp.

³Wetland contiguity to streams as defined in the Vermont ANR (2005) *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* and confirmed if a delineated perennial or intermittent stream channel inflows, through flows, and outflows from a delineated wetland (ephemeral channels not typically being subject to ANR Riparian Buffer Guidance). The vegetative assemblage or natural community type is used when determining riparian vegetation function. Flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment (P=perennial, I=intermittent, E=ephemeral).

⁴Alpha-numeric codes correspond with Section 4.6 Presumptions of the 2023 Vermont Wetland Rules.

⁵VWR Section 5: Functional Criteria for Evaluating a Wetland's Significance: 5.1=Water Storage for Flood Water and Storm Runoff, 5.2=Surface and Groundwater Protection, 5.3=Fish Habitat, 5.4=Wildlife Habitat, 5.5=Exemplary Wetland Natural Community, 5.6=Rare, Threatened or Endangered Species Habitat, 5.7=Education and Research in Natural Sciences, 5.8=Recreational Value and Economic Benefits, 5.9=Open Space and Aesthetics, 5.10=Erosion Control Through Binding and Stabilizing the Soil. (P)= Present, (H)=High, (L)=Low; Correspond to observed level of functionality.

⁶VHB-Proposed VWR Classification is based on review and application of the VWR, particularly VHB's interpretation of Section 4.6 Presumptions and is subject to final determinations by the ANR-DEC.

APPENDIX E



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-1-UPL

Project Site:	Sandbar Substation Smart Valve	City/County:	Milton	Samp. Date:	7/19/2024
Applicant/Owner:	VELCO	State:	VT	Sampling Point:	MI-1-UPL
Investigator(s):	VHB (AP, EM)	Section, Township, Range:	Chittenden		
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, convex, none):	None	Slope (%):	2- 6%
Subregion (LRR or MLRA):	LRR R	Lat:	44.612369	Datum:	NAD 83
		Long:	-73.205615	NWI Class:	UPL
Soil Map Unit:	Munson and Raynham silt loams 2 to 6 percent slopes.				
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	No	Normal Circumstances? Yes			
Are Vegetation, Soil, or Hydrology naturally problematic?	No	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	NO	Is This Sample Area Within a Wetland?	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	NO		
Remarks: Upland forest between bedrock outcrop and wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present? NO	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.21" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/20/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-12	10YR 4/2	100%					CLAY
12+	10YR 3/2	90%	7.5YR 2.5/3	10%			LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							
² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):				Hydric Soil Present? NO			
Type: _____							
Depth (inches): _____							
Remarks:							

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. Populus grandidentata		10	X	FACU	
2. Fraxinus americana		5	X	FACU	
3. Tilia americana		5	X	FACU	
4. Betula papyrifera		2		FACU	
5.					
6.					
7.					
		22		= Total Cover	
Sapling Stratum	(Plot size: <u>15' RAD</u>)				
1. Acer spicatum		20	X	FACU	
2. Cornus sericea		5		FACW	
3. Ostrya virginiana		5		FACU	
4. Rhus hirta		5		FACU	
5.					
6.					
7.					
		35		= Total Cover	
Shrub Stratum	(Plot size: <u>15' RAD</u>)				
1. Lonicera morrowii		20	X	FACU	
2. Rubus odoratus		15	X		
3. Salix bebbiana		5		FACW	
4.					
5.					
6.					
7.					
		40		= Total Cover	
Herb Stratum	(Plot size: <u>5' RAD</u>)				
1. Solidago canadensis		20	X	FACU	
2. Acer spicatum		10	X	FACU	
3. Maianthemum racemosum		10	X	FACU	
4. Lonicera morrowii		5		FACU	
5. Cornus sericea		5		FACW	
6. Rubus allegheniensis		5		FACU	
7.					
8.					
9.					
10.					
11.					
12.					
		55		= Total Cover	
Woody Vines	(Plot size: <u>15' RAD</u>)				
1. Vitis labrusca		10	X	FACU	
2. Fragaria virginiana		5	X	FACU	
3.					
4.					
5.					
		15		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: _____ (A)

Dominants across all strata: **11** (B)

% Dominants OBL, FACW, FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL _____	x 1 = _____	
FACW 15	x 2 = 30	
FAC _____	x 3 = _____	
FACU 137	x 4 = 548	
UPL _____	x 5 = _____	
Sum: 152 (A)		578 (B)

Prevalence Index = B/A = **3.80**

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

_____ Prevalence Index is <= 3.0

_____ Problematic Hydrophytic Vegetation¹ (explain)

_____ Rapid Test for Hydrophytic Vegetation

_____ Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? **NO**

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-1-WET

Project Site:	Sandbar Substation Smart Valve	City/County:	Milton	Samp. Date:	7/19/2024
Applicant/Owner:	VELCO	State:	VT	Sampling Point:	MI-1-WET
Investigator(s):	VHB (AP, EM)	Section, Township, Range:	Chittenden		
Landform (hillslope, terrace, etc.):	Basin	Local relief (concave, convex, none):	None	Slope (%):	2- 6%
Subregion (LRR or MLRA):	LRR R	Lat:	44.61248	Long:	-73.205585
Soil Map Unit:	Munson and Raynham silt loams 2 to 6 percent slopes.			Datum:	NAD 83
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)		NWI Class:	PEM/PFO
Are Vegetation, Soil, or Hydrology significantly disturbed?	No			Normal Circumstances?	Yes
Are Vegetation, Soil, or Hydrology naturally problematic?	No			(If needed, explain any answers in Remarks.)	

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland?	YES
Hydric Soil Present?	YES		
Wetland Hydrology Present?	YES		
Remarks: Roadside depression near base of rocky outcrop			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<input type="checkbox"/>	Depth (inches):	<input type="checkbox"/>
Water Table Present?	<input type="checkbox"/>	Depth (inches):	<input type="checkbox"/>
Saturation Present?	<input checked="" type="checkbox"/>	Depth (inches):	10
		Wetland Hydrology Present?	YES
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.21" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/20/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-10	10YR 4/2	100%					SANDY LOAM
10-13	2.5Y 5/3	100%					SAND
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							
² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input checked="" type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed):				Hydric Soil Present?			
Type: Rock Refusal				YES			
Depth (inches): 13+							
Remarks: As a sandy soil, Chapter 5 applies. Soil meets the National Technical Committee of Hydric Soils definition of a hydric soil as defined in Chapter 3 of the Northeast Regional Supplement to the USACE Wetland Delineation Manual. This conclusion is supported by the presence of saturation within the upper part at the time of delineation (7/19), normal climatic/hydrologic conditions, secondary hydrology indicators including geomorphic position, and the presence of multiple hydrophytes.							

Tree Stratum	Absolute % Cover	Dom. Sp?	Indicator Status	
(Plot size: <u>30' RAD</u>)				
1. Populus grandidentata	20	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>38%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	20			
Sapling Stratum				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW 100 x 2 = 200 FAC 20 x 3 = 60 FACU 50 x 4 = 200 UPL _____ x 5 = _____ Sum: 170 (A) 460 (B) Prevalence Index = B/A = 2.71
(Plot size: <u>15' RAD</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
Shrub Stratum				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% X Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation X Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
(Plot size: <u>15' RAD</u>)				
1. Salix bebbiana	25	X	FACW	
2. Rhus hirta	10	X	FACU	
3. Lonicera morrowii	10	X	FACU	
4. Fraxinus pennsylvanica	5		FACW	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	50			
Herb Stratum				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
(Plot size: <u>5' RAD</u>)				
1. Phragmites australis	60	X	FACW	
2. _____	25	X		
3. Onoclea sensibilis	10		FACW	
4. Rhamnus cathartica	5		FAC	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	100			
Woody Vines				Hydrophytic Vegetation Present? <u>YES</u>
(Plot size: <u>15' RAD</u>)				
1. Vitis riparia	15	X	FAC	
2. Fragaria virginiana	10	X	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	25			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-3-UPL

Project Site:	Sandbar Substation Smart Valve	City/County:	Milton	Samp. Date:	7/24/2024
Applicant/Owner:	VELCO	State:	VT	Sampling Point:	MI-3-UPL
Investigator(s):	VHB (AP)	Section, Township, Range:	Chittenden		
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, convex, none):	Convex	Slope (%):	3- 8%
Subregion (LRR or MLRA):	LRR R	Lat:	44.610661	Long:	-73.20444
Soil Map Unit:	Hinesburg fine sandy loam, 3 to 8 percent slopes			Datum:	NAD 83
				NWI Class:	Upland
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	No	Normal Circumstances?	Yes		
Are Vegetation, Soil, or Hydrology naturally problematic?	No	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	NO	Is This Sample Area Within a Wetland?	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	YES		
Remarks: Narrow inundated wetland present within ROW and continuing into adjacent forest. Drained by incised ephemeral channel.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present?	YES
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches): 9		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.08" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/27/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-9	10YR 4/3	100%					FINE SANDY LOAM
9-16	2.5Y 4/2	100%					FINE SAND
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)						<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)						<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)						<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)						<input type="checkbox"/> Other (Explain in Remarks)	
				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):				Hydric Soil Present?			
Type: _____				NO			
Depth (inches): _____							
Remarks:							

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: _____ (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: _____ (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>5</u> x 2 = <u>10</u> FAC _____ x 3 = _____ FACU <u>127</u> x 4 = <u>508</u> UPL _____ x 5 = _____ Sum: <u>132</u> (A) <u>518</u> (B) Prevalence Index = B/A = <u>3.92</u>
Sapling Stratum	(Plot size: <u>15' RAD</u>)				
1.	<u>Rhus hirta</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Tilia americana</u>	<u>2</u>	<u>X</u>	<u>FACU</u>	
3.					
4.					
5.					
6.					
7.					
		<u>7</u>	= Total Cover		Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum	(Plot size: <u>15' RAD</u>)				
1.	<u>Lonicera morrowii</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	
2.					
3.					
4.					
5.					
6.					
7.					
		<u>20</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Herb Stratum	(Plot size: <u>5' RAD</u>)				
1.	<u>Solidago canadensis</u>	<u>95</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Rubus idaeus</u>	<u>5</u>		<u>FACU</u>	
3.	<u>Phalaris arundinacea</u>	<u>5</u>		<u>FACW</u>	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>105</u>	= Total Cover		
Woody Vines	(Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Present? <u>NO</u>
1.					
2.					
3.					
4.					
5.					
			= Total Cover		
Remarks: (If observed, list morphological adaptations below).					



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-3-WET

Project Site:	Sandbar Substation Smart Valve	City/County:	Milton	Samp. Date:	7/24/2024
Applicant/Owner:	VELCO	State:	VT	Sampling Point:	MI-3-WET
Investigator(s):	VHB (AP)	Section, Township, Range:	Chittenden		
Landform (hillslope, terrace, etc.):	Basin	Local relief (concave, convex, none):	Concave	Slope (%):	3- 8%
Subregion (LRR or MLRA):	LRR R	Lat:	44.61069	Long:	-73.203490
Soil Map Unit:	Hinesburg fine sandy loam, 3 to 8 percent slopes			Datum:	NAD 83
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)		NWI Class:	PEM/PSS
Are Vegetation, Soil, or Hydrology significantly disturbed?	No	Normal Circumstances?	Yes		
Are Vegetation, Soil, or Hydrology naturally problematic?	No	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland?	YES
Hydric Soil Present?	YES		
Wetland Hydrology Present?	YES		
Remarks: Narrow wetland starting in ROW and continuing into adjacent forest. Drained by incised ephemeral channel.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<input checked="" type="checkbox"/> Depth (inches): 3	Wetland Hydrology Present?	YES
Water Table Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Saturation Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.08" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/27/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0+	2.5Y 5/2	92%	10YR 6/8	8%	C	M	FINE SANDY LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):				Hydric Soil Present?			
Type: _____				YES			
Depth (inches): _____							
Remarks:							

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>86%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			Prevalence Index Worksheet: Total % Cover of: OBL <u>17</u> x 1 = <u>17</u> FACW <u>105</u> x 2 = <u>210</u> FAC <u>25</u> x 3 = <u>75</u> FACU <u>20</u> x 4 = <u>80</u> UPL <u> </u> x 5 = <u> </u> Sum: <u>167</u> (A) <u>382</u> (B) Prevalence Index = B/A = <u>2.29</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: <u>15' RAD</u>)					
1.	<u>Salix discolor</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
2.	<u>Cornus sericea</u>	<u>10</u>	<u>X</u>	<u>FACW</u>	
3.	<u>Salix bebbiana</u>	<u>10</u>	<u>X</u>	<u>FACW</u>	
4.					
5.					
6.					
7.					
		<u>50</u> = Total Cover			Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Herb Stratum (Plot size: <u>5' RAD</u>)					
1.	<u>Urtica dioica</u>	<u>25</u>	<u>X</u>	<u>FAC</u>	
2.	<u>Phalaris arundinacea</u>	<u>25</u>	<u>X</u>	<u>FACW</u>	
3.	<u>Onoclea sensibilis</u>	<u>20</u>	<u>X</u>	<u>FACW</u>	
4.	<u>Lythrum salicaria</u>	<u>15</u>		<u>OBL</u>	
5.	<u>Thelypteris palustris</u>	<u>10</u>		<u>FACW</u>	
6.	<u>Solidago canadensis</u>	<u>10</u>		<u>FACU</u>	
7.	<u>Typha latifolia</u>	<u>2</u>		<u>OBL</u>	
8.					
9.					
10.					
11.					
12.					
		<u>107</u> = Total Cover			
Woody Vines (Plot size: <u>15' RAD</u>)					
1.	<u>Vitis labrusca</u>	<u>10</u>	<u>X</u>	<u>FACU</u>	
2.					
3.					
4.					
5.					
		<u>10</u> = Total Cover			
Remarks: (If observed, list morphological adaptations below).					Hydrophytic Vegetation Present? <u>YES</u>



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-6-UPL

Project Site:	<u>Sandbar Substation Smart Valve</u>	City/County:	<u>Milton</u>	Samp. Date:	<u>7/24/2024</u>
Applicant/Owner:	<u>VELCO</u>	State:	<u>VT</u>	Sampling Point:	<u>MI-6-UPL</u>
Investigator(s):	<u>VHB (AP)</u>	Section, Township, Range:	<u>Chittenden</u>		
Landform (hillslope, terrace, etc.):	<u>Hillslope</u>	Local relief (concave, convex, none):	<u>None</u>	Slope (%):	<u>20- 60%</u>
Subregion (LRR or MLRA):	<u>LRR R</u>	Lat:	<u>44.612096</u>	Datum:	<u>NAD 83</u>
		Long:	<u>-73.199558</u>	NWI Class:	<u>Upland</u>
Soil Map Unit:	<u>Farmington extremely rocky loam, 20 to 60 percent slopes</u>				
Are climatic/hydrologic conditions on the site typical for this time of year?	<u>Yes</u>	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	<u>No</u>	Normal Circumstances? <u>Yes</u>			
Are Vegetation, Soil, or Hydrology naturally problematic?	<u>No</u>	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>NO</u>	Is This Sample Area Within a Wetland? <u>NO</u>
Hydric Soil Present?	<u>NO</u>	
Wetland Hydrology Present?	<u>NO</u>	
Remarks: Data collected on terraced upland hillslope adjacent to wetland.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u> </u>	Depth (inches): <u> </u>	Wetland Hydrology Present? <u>NO</u>	
Water Table Present? <u> </u>	Depth (inches): <u> </u>		
Saturation Present? <u> </u>	Depth (inches): <u> </u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.08" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/27/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-11	2.5Y 5/3	65%	2.5Y 5/1	30%			SILT LOAM
			7.5YR 4/4	5%			
11-16	2.5Y 5/4	90%	2.5Y 5/1	10%			SILT LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed): Type: <u> </u> Depth (inches): <u> </u>				Hydric Soil Present? <u>NO</u>			
Remarks:							

Tree Stratum (Plot size: <u>30' RAD</u>)		Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>50%</u> (A/B)
1.	<u>Tsuga canadensis</u>	<u>40</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Betula alleghaniensis</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
3.	<u>Betula papyrifera</u>	<u>10</u>		<u>FACU</u>	
4.	<u>Quercus rubra</u>	<u>5</u>		<u>FACU</u>	
5.	<u>Acer saccharum</u>	<u>2</u>		<u>FACU</u>	
6.					
7.		<u>72</u>		= Total Cover	Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC <u>85</u> x 3 = <u>255</u> FACU <u>90</u> x 4 = <u>360</u> UPL <u>2</u> x 5 = <u>10</u> Sum: <u>177</u> (A) <u>625</u> (B) Prevalence Index = B/A = <u>3.53</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.	<u>Tsuga canadensis</u>	<u>10</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Fagus grandifolia</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	
3.	<u>Betula alleghaniensis</u>	<u>5</u>	<u>X</u>	<u>FAC</u>	
4.					
5.					
6.					
7.					Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: <u>15' RAD</u>)		<u>20</u>		= Total Cover	
1.					
2.					
3.					
4.					
5.					
6.					
7.					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Herb Stratum (Plot size: <u>5' RAD</u>)					
1.	<u>Dryopteris intermedia</u>	<u>60</u>	<u>X</u>	<u>FAC</u>	
2.	<u>Phegopteris connectilis</u>	<u>8</u>		<u>FACU</u>	
3.	<u>Polystichum acrostichoides</u>	<u>5</u>		<u>FACU</u>	
4.	<u>Arisaema triphyllum</u>	<u>5</u>		<u>FAC</u>	
5.	<u>Tussilago farfara</u>	<u>5</u>		<u>FACU</u>	
6.	<u>Epipactis helleborine</u>	<u>2</u>		<u>UPL</u>	
7.					Hydrophytic Vegetation Present? <u>NO</u>
8.					
9.					
10.					
11.					
12.		<u>85</u>		= Total Cover	
Woody Vines (Plot size: <u>15' RAD</u>)					
1.					
2.					
3.					
4.					
5.					
				= Total Cover	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-6-WET

Project Site:	Sandbar Substation Smart Valve	City/County:	Milton	Samp. Date:	7/24/2024
Applicant/Owner:	VELCO	State:	VT	Sampling Point:	MI-6-WET
Investigator(s):	VHB (AP)	Section, Township, Range:	Chittenden		
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	None	Slope (%):	20- 60%
Subregion (LRR or MLRA):	LRR R	Lat:	44.612217	Datum:	NAD 83
		Long:	-73.199588	NWI Class:	PFO/PEM
Soil Map Unit:	Farmington extremely rocky loam, 20 to 60 percent slopes				
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	No	Normal Circumstances? Yes			
Are Vegetation, Soil, or Hydrology naturally problematic?	No	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland? YES
Hydric Soil Present?	YES	
Wetland Hydrology Present?	YES	
Remarks: Large forested seep in hemlock stand. Drained by intermittent stream.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present? YES	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.08" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/27/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-7	2.5Y 4/1	90%	7.5YR 3/4	10%			SILT LOAM
7-16	5GY 4/1	92%	7.5YR 4/6	8%			SILT LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):				Hydric Soil Present? YES			
Type: _____							
Depth (inches): _____							
Remarks:							

Tree Stratum (Plot size: <u>30' RAD</u>)		Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>75%</u> (A/B)
1.	<u>Tsuga canadensis</u>	<u>40</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Betula alleghaniensis</u>	<u>35</u>	<u>X</u>	<u>FAC</u>	
3.	<u>Ulmus americana</u>	<u>2</u>		<u>FACW</u>	
4.	<u>Acer saccharum</u>	<u>2</u>		<u>FACU</u>	
5.					
6.					
7.					
		<u>79</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: OBL <u>5</u> x 1 = <u>5</u> FACW <u>67</u> x 2 = <u>134</u> FAC <u>65</u> x 3 = <u>195</u> FACU <u>52</u> x 4 = <u>208</u> UPL <u> </u> x 5 = <u> </u> Sum: <u>189</u> (A) <u>542</u> (B) Prevalence Index = B/A = <u>2.87</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.	<u>Betula alleghaniensis</u>	<u>10</u>	<u>X</u>	<u>FAC</u>	
2.					
3.					
4.					
5.					
6.					
7.					
		<u>10</u>	= Total Cover		
Shrub Stratum (Plot size: <u>15' RAD</u>)					Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is <= 3.0 <u> </u> Problematic Hydrophytic Vegetation ¹ (explain) <u> </u> Rapid Test for Hydrophytic Vegetation <u>X</u> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Herb Stratum (Plot size: <u>5' RAD</u>)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height. Hydrophytic Vegetation Present? <u>YES</u>
1.	<u>Impatiens capensis</u>	<u>60</u>	<u>X</u>	<u>FACW</u>	
2.	<u>Prunella vulgaris</u>	<u>20</u>		<u>FAC</u>	
3.	<u>Circaea canadensis</u>	<u>10</u>		<u>FACU</u>	
4.	<u>Fraxinus pennsylvanica</u>	<u>5</u>		<u>FACW</u>	
5.	<u>Carex flava</u>	<u>5</u>		<u>OBL</u>	
6.	<u>Trillium sp.</u>	<u>2</u>			
7.					
8.					
9.					
10.					
11.					
12.					
		<u>102</u>	= Total Cover		
Woody Vines (Plot size: <u>15' RAD</u>)					
1.					
2.					
3.					
4.					
5.					
			= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-11-UPL

Project Site:	<u>Sandbar Substation Smart Valve</u>	City/County:	<u>Milton</u>	Samp. Date:	<u>7/25/2024</u>
Applicant/Owner:	<u>VELCO</u>	State:	<u>VT</u>	Sampling Point:	<u>MI-11-UPL</u>
Investigator(s):	<u>VHB (AP)</u>	Section, Township, Range:	<u>Chittenden</u>		
Landform (hillslope, terrace, etc.):	<u>Hillslope</u>	Local relief (concave, convex, none):	<u>None</u>	Slope (%):	<u>0-3%</u>
Subregion (LRR or MLRA):	<u>LRR R</u>	Lat:	<u>44.606457</u>	Long:	<u>-73.203821</u>
Soil Map Unit:	<u>Limerick silt loam</u>			Datum:	<u>NAD 83</u>
				NWI Class:	<u>Upland</u>
Are climatic/hydrologic conditions on the site typical for this time of year?	<u>Yes</u>	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	<u>No</u>	Normal Circumstances?	<u>Yes</u>		
Are Vegetation, Soil, or Hydrology naturally problematic?	<u>No</u>	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>NO</u>	Is This Sample Area Within a Wetland?	<u>NO</u>
Hydric Soil Present?	<u>NO</u>		
Wetland Hydrology Present?	<u>NO</u>		
Remarks: Hillslope upgradient of wetland in maintained utility ROW.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present?	<u>NO</u>
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.08" of rain in 5 days prior in Burlington, VT (NWS 2024); PDSI 0.95 (Near Normal) for week ending 7/27/2024			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-12	2.5Y 4/3	100%					SILT LOAM
12-16	2.5Y 5/4	100%					SILT LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):				Hydric Soil Present?			
Type: _____				<u>NO</u>			
Depth (inches): _____							
Remarks:							

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			
Shrub Stratum (Plot size: <u>15' RAD</u>)					
1.	<u>Lonicera morrowii</u>	<u>40</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Rhus hirta</u>	<u>10</u>		<u>FACU</u>	
3.	<u>Rubus allegheniensis</u>	<u>5</u>		<u>FACU</u>	
4.	<u>Ilex verticillata</u>	<u>5</u>		<u>FACW</u>	
5.					
6.					
7.					
		<u>60</u> = Total Cover			
Herb Stratum (Plot size: <u>5' RAD</u>)					
1.	<u>Solidago canadensis</u>	<u>85</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Onoclea sensibilis</u>	<u>5</u>		<u>FACW</u>	
3.	<u>Impatiens capensis</u>	<u>5</u>		<u>FACW</u>	
4.	<u>Lonicera morrowii</u>	<u>5</u>		<u>FACU</u>	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>100</u> = Total Cover			
Woody Vines (Plot size: <u>15' RAD</u>)					
1.	<u>Vitis labrusca</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	
2.					
3.					
4.					
5.					
		<u>5</u> = Total Cover			

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: _____ (A)

Dominants across all strata: 3 (B)

% Dominants OBL, FACW, FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of: _____ Multiply By: _____

OBL _____ x 1 = _____

FACW 15 x 2 = 30

FAC _____ x 3 = _____

FACU 150 x 4 = 600

UPL _____ x 5 = _____

Sum: 165 (A) 630 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

_____ Prevalence Index is <= 3.0

_____ Problematic Hydrophytic Vegetation¹ (explain)

_____ Rapid Test for Hydrophytic Vegetation

_____ Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

Remarks: (If observed, list morphological adaptations below).

Tree Stratum (Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <u>Fraxinus pennsylvanica</u>	<u>10</u>	<u>X</u>	<u>FACW</u>	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>8</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2. <u>Salix nigra</u>	<u>5</u>	<u>X</u>	<u>OBL</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>15</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL <u>83</u> x 1 = <u>83</u> FACW <u>45</u> x 2 = <u>90</u> FAC <u>15</u> x 3 = <u>45</u> FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>143</u> (A) <u>218</u> (B) Prevalence Index = B/A = <u>1.52</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)				
1. <u>Salix nigra</u>	<u>5</u>	<u>X</u>	<u>OBL</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>5</u>	= Total Cover		
Shrub Stratum (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <u>Alnus incana</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	
2. <u>Salix bebbiana</u>	<u>5</u>	<u>X</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>20</u>	= Total Cover		
Herb Stratum (Plot size: <u>5' RAD</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <u>Leersia oryzoides</u>	<u>50</u>	<u>X</u>	<u>OBL</u>	
2. <u>Equisetum arvense</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
3. <u>Eutrochium maculatum</u>	<u>15</u>	<u>X</u>	<u>OBL</u>	
4. <u>Impatiens capensis</u>	<u>10</u>		<u>FACW</u>	
5. <u>Typha latifolia</u>	<u>8</u>		<u>OBL</u>	
6. <u>Onoclea sensibilis</u>	<u>5</u>		<u>FACW</u>	
7. <u>Rumex palustris</u>	<u>5</u>			
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>108</u>	= Total Cover		
Woody Vines (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Present? <u>YES</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		= Total Cover		
Remarks: (If observed, list morphological adaptations below).				



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

MI-11-2UPL

Project Site:	Sandbar Substation Smart Valve	City/County:	Milton	Samp. Date:	7/30/2024
Applicant/Owner:	VELCO	State:	VT	Sampling Point:	MI-11-2UPL
Investigator(s):	VHB (AP)	Section, Township, Range:	Chittenden		
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	None	Slope (%):	0-3%
Subregion (LRR or MLRA):	LRR R	Lat:	44.604768	Long:	-73.203755
Soil Map Unit:	Winooski very fine sandy loam			Datum:	NAD 83
				NWI Class:	Upland
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	No	Normal Circumstances?	Yes		
Are Vegetation, Soil, or Hydrology naturally problematic?	No	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland?	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	NO		
Remarks: Forested upland located upgradient from large wetland complex.			

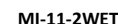
HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present?	NO
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Not available yet			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features				
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-13	2.5Y 3/2	95%	10YR 3/6	5%	C	M	FINE SANDY LOAM
13-16	2.5YR 4/2	84%	7.5YR 3/4	8%	C	M	FINE SANDY LOAM
			5YR 5/1	8%	C	M	
				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Hydric Soil Indicators:							
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
Restrictive Layer (if observed):							
Type:				Hydric Soil Present?			
Depth (inches):				NO			
Remarks:							

Tree Stratum (Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <u>Fraxinus pennsylvanica</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>5</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>71%</u> (A/B)
2. <u>Acer saccharinum</u>	<u>10</u>	<u>X</u>	<u>FACW</u>	
3. <u>Tilia americana</u>	<u>5</u>		<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
<u>45</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>63</u> x 2 = <u>126</u> FAC <u>10</u> x 3 = <u>30</u> FACU <u>135</u> x 4 = <u>540</u> UPL _____ x 5 = _____ Sum: <u>208</u> (A) <u>696</u> (B) Prevalence Index = B/A = <u>3.35</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)				
1. <u>Ulmus americana</u>	<u>8</u>	<u>X</u>	<u>FACW</u>	
2. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>X</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
<u>13</u> = Total Cover				
Shrub Stratum (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <u>Lonicera morrowii</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	
2. <u>Rhamnus cathartica</u>	<u>10</u>	<u>X</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
<u>30</u> = Total Cover				
Herb Stratum (Plot size: <u>5' RAD</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <u>Solidago canadensis</u>	<u>95</u>	<u>X</u>	<u>FACU</u>	
2. <u>Impatiens capensis</u>	<u>10</u>		<u>FACW</u>	
3. <u>Lonicera morrowii</u>	<u>5</u>		<u>FACU</u>	
4. <u>Oxalis stricta</u>	<u>5</u>		<u>FACU</u>	
5. <u>Carex sp.</u>	<u>5</u>			
6. <u>Fragaria virginiana</u>	<u>5</u>		<u>FACU</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>125</u> = Total Cover				
Woody Vines (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Present? <u>YES</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).				



Tree Stratum (Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <u>Fraxinus pennsylvanica</u>	<u>60</u>	<u>X</u>	<u>FACW</u>	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>7</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>88%</u> (A/B)
2. <u>Acer saccharinum</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>90</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>177</u> x 2 = <u>354</u> FAC <u>35</u> x 3 = <u>105</u> FACU <u>55</u> x 4 = <u>220</u> UPL _____ x 5 = _____ Sum: <u>267</u> (A) <u>679</u> (B) Prevalence Index = B/A = <u>2.54</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)				
1. <u>Ulmus americana</u>	<u>5</u>	<u>X</u>	<u>FACW</u>	
2. <u>Fraxinus pennsylvanica</u>	<u>2</u>	<u>X</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>7</u>	= Total Cover		
Shrub Stratum (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <u>Lonicera morrowii</u>	<u>50</u>	<u>X</u>	<u>FACU</u>	
2. <u>Rhamnus cathartica</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>65</u>	= Total Cover		
Herb Stratum (Plot size: <u>5' RAD</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <u>Onoclea sensibilis</u>	<u>50</u>	<u>X</u>	<u>FACW</u>	
2. <u>Lysimachia nummularia</u>	<u>25</u>	<u>X</u>	<u>FACW</u>	
3. <u>Matteuccia struthiopteris</u>	<u>15</u>	_____	<u>FAC</u>	
4. <u>Impatiens capensis</u>	<u>5</u>	_____	<u>FACW</u>	
5. <u>Lonicera morrowii</u>	<u>5</u>	_____	<u>FACU</u>	
6. <u>Rhamnus cathartica</u>	<u>5</u>	_____	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>105</u>	= Total Cover		
Woody Vines (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Present? <u>YES</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	_____	= Total Cover		
Remarks: (If observed, list morphological adaptations below).				

APPENDIX F

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO
Project: Sandbar Station Smartvalve
Prepared by: VHB (A. Peirce) July 17, 2024
Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
<i>Acipenser fulvescens</i>	Lake Sturgeon	Animal	S1	G3G4	E	UR	2016	Temperate waters; bottom of river beds or lakes. Clear sand or gravel substrate.	Lamoille River between Peterson Dam and Bear Trap Road bridge.	Summer-Fall	No	No	No	The Project will avoid impacts to aquatic habitat.
<i>Agalinis paupercula</i>	Smooth Agalinis	Plant	S2	G5	-	-	2019	Fields, roadsides, open ROW, clearings and trail edges.	Edges of mowed access road along old river channel in Lamoille River Delta.	Late Spring-Summer	No	Yes	No	Species is not state or federally listed and occurrence is not within the Study Area.
<i>Ammocrypta pellucida</i>	Eastern Sand Darter	Animal	S1	G4	T	-	2019	Sandy- bottomed streams and lake shoals. Clean sand substrates.	Lamoille River Mouth to Dam by West Milton.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.
<i>Apalone spinifera</i>	Spiny Softshell	Animal	S1	G5	T	-	2022	Rivers, lakes, marshes, ponds. Sandy raised areas used for nesting habitat. Open habitats with little vegetation.	Two occurrences. Lamoille River Delta, upstream of fishing access area. And Camp Kiniya Road.	Summer	No	Yes	Yes	Species is state threatened and Study Area contains potential habitat in northeast quadrant bordering river.
<i>Ardea herodias</i>	Great Blue Heron	Animal	S3S4B	G5	-	-	2015	Rivers, lake edges, marshes. Require tall trees for nesting sites.	Lamoille River Delta-Sandbar WMA.	Summer	No	No	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Bidens tripartita ssp. Comosa</i>	Tufted Beggar-ticks	Plant	SU	G5T5	-	-	2019	Shorelines, margins of wetlands, wet depressions and ditches.	East of Sandbar causeway. South side of the road; emergent on lake shore.	Summer	No	Yes	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Botrychium rugulosm</i>	Rugulose grapefern	Plant	S1	G3	-	-	2013	Open fields, second growth forests. Typically found in sandy soils.	Undeveloped knoll underneath powerlines, Milton, VT.	Spring-Summer	Yes	Yes	Yes	Species is not state or federally protected, however the EO intersects the Study Area.
<i>Bromus kalmii</i>	Wild chess	Plant	S2	G5	-	-	2020	Common in dry-mesic soils of outcrops, open forests, and woodlands.	Sandbar Substation ROW.	Summer	Yes	Yes	Yes	Species is not state or federally protected, however EO does intersect the Study Area.
<i>Calystegia spithamaea ssp. Spithamaea</i>	Low Bindweed	Plant	S2	G4G5T4T5	T	-	2015	Sandy fields, roadsides and clearings; railroads, woodlands and sandplains.	Two occurrences. Powerline ROW between Bear Trap Road and VELCO substation. And Camp Kiniya Flats.	Summer	Yes	Yes	Yes	Species is state threatened and EO intersects the Study Area.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO
Project: Sandbar Station Smartvalve
Prepared by: VHB (A. Peirce) July 17, 2024
Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
<i>Carex merritt-fernaldii</i>	Fernald's Sedge	Plant	S1	G5	-	-	2020	Well drained sandy and rocky soils of fields, cliff-sides, cliffs and woodlands.	End of cut through road at the edge of a pine plantation Milton, VT.	Spring-Fall	No	Yes	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Carpoides cyprinus</i>	Quillback	Animal	S1	G5	-	-	1989	Temperate, freshwater habitats; streams, lakes, river channels.	Approximately 4 miles above the mouth of the Lamoille River.	Spring- Fall	No	No	No	The Project will avoid impacts to aquatic habitat.
<i>Corallorhiza odontorhiza</i> var. <i>odontorhiza</i>	Autumn Coral-root	Plant	S2	G5T5	T	-	2020	Dry-mesic to mesic deciduous or mixed deciduous-coniferous forests. Typically open understory.	Slopes east of Crockett Swamp. Found in Limestone Hardwood Forest.	Summer	No	Yes	Yes	Species is state threatened and Study Area contains potential habitat.
<i>Cottus bairdii</i>	Mottled sculpin	Animal	S2	G5	-	-	1998	Small headwaters, streams, small rivers; gravel bottoms and sandy riffles.	Lamoille River- below West Milton Dam.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.
<i>Crocianthemum canadense</i>	Canada Frostweed	Plant	S2S3	G5	-	-	2020	Open, sandy soils of woodlands, roadsides, clearings and sandplains.	Eastern substation Milton, VT.	Summer	Yes	Yes	Yes	Species is not state or federally protected, however EO does intersect the Study Area.
<i>Cyperus engelmannii</i>	Engelmann's Flatsedge	Plant	S2S3	G4Q	-	-	2019	Shorelines, muddy depressions, wet sandy areas, meadows.	Lamoille River Delta-Sandbar Refuge South.	Summer	No	No	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Cyperus houghtonii</i>	Houghton's Flatsedge	Plant	S2	G4?	T	-	2020	Dry- mesic to xeric soils and ledges, including roadsides, woodlands and sandplains.	Two occurrences. Under powerlines adjacent to Sandbar Substation, Milton VT. And Headquarters field.	Summer	Yes	Yes	Yes	Species is state threatened and EO intersects the Study Area.
<i>Cypripedium arietinum</i>	Rams-head Lady-slipper	Plant	S1	G3	T	-	2011	Deciduous and mixed evergreen- deciduous forests. Often found in enriched soils due to bedrock influence.	Camp Kiniya Flats, Colchester VT.	May-June	No	Yes	Yes	Species is state protected and Study Area contains potential habitat.
<i>Desmodium cuspidatum</i>	Large-bracted Trick-trefoil	Plant	S1	G5	E	-	2020	Dry to mesic forests and woodlands. Usually on rocky slopes or ROW areas.	Along north side of ROW; 600 meters northeast of Sandbar Substation.	Summer	Yes	Yes	Yes	Species is state endangered and EO intersects the Study Area.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO
Project: Sandbar Station Smartvalve
Prepared by: VHB (A. Peirce) July 17, 2024
Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



	Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
														(yes/no)	Comments
Species	<i>Desmodium perplexum</i>	Perplexed Trick-trefoil	Plant	S2	G5	-	-	2019	Dry-mesic forests and woodlands, forest borders.	100 meters west of WMA headquarters.	Summer	No	Yes	No	Species is not state or federally protected and EO does not intersect the Study Area.
	<i>Eutrochium purpureum</i> var. <i>purpureum</i>	Sweet Joe-pye Weed	Plant	S2S3	G5T5	-	-	2020	Woodlands, forests, pastures and fields.	Hills on the northside of Lamoille River. Milton, VT.	Spring-Summer	Yes	Yes	Yes	Species is not state or federally protected, however EO does intersect the Study Area.
	<i>Gomphaeschna furcillata</i>	Harlequin Darner	Animal	S2S3	G5	-	-	2020	Peatlands, bogs, hardwood swamps and fens.	Sandbar WMA, Milton. Fields between US 2 and Lamoille River.	Summer	No	No	No	Species is not state or federally protected and EO does not intersect the Study Area.
	<i>Hackelia deflexa</i> ssp. <i>Americana</i>	Nodding Stickseed	Plant	S2	G5T5	T	-	1990	Rocky forests and cliff bases. Regions with high pH bedrock.	Hills on the northside of Lamoille River. Milton, VT.	Summer	Yes	Yes	Yes	Species is state threatened and EO intersects the Study Area.
	<i>Ichthyomyzon unicuspis</i>	Silver lamprey	Animal	S2	G5	-	-	2019	Large, clear rivers and lakes. Spawning grounds found in medium sized rivers with gravel substrate.	Lower extent of Lamoille River; Sandbar WMA.	Summer-Fall	No	No	No	The Project will avoid impacts to aquatic habitat.
	<i>Ixobrychus exilis</i>	Least bittern	Animal	S2B	G4G5	-	-	1994	Stream banks, marshes, wetland areas with thick vegetation for nesting and feeding.	Lower Lamoille River Oxbow area.	Summer	No	No	No	Species is not state or federally protected and EO does not intersect the Study Area.
	<i>Lampsilis ovata</i>	Pocketbook	Animal	S2	G5	E	-	2019	Found in larger rivers with loose to firmly packed sand, gravel sand or silty sand substrates.	Lower extent of Lamoille River; Delta Island, Peterson Dam Impoundment.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.
	<i>Lemna turionifera</i>	Turion Duckweed	Plant	SU	G5	-	-	1967	Mesotrophic and/or eutrophic waters of lakes, ponds and rivers.	Sandbar Waterfowl Area, West Milton.	Summer	No	No	No	Species is not state or federally protected and EO does not intersect the Study Area.
	<i>Leptodea fragilis</i>	Fragile Papershell	Animal	S2	G5	E	-	2003	Various sized water bodies; substrates preferred include mud, gravel and sand. Wooded/ riparian bank areas.	Lamoille River adjacent to delta island within main channel.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.
	<i>Lythrum alatum</i> ssp. <i>alatum</i>	Winged-loosestrife	Plant	S1	G5T5	T	-	2020	Low fields and meadows; river banks, marshes, open swamps.	Along powerline access road northeast of Sandbar Substation.	Summer	Yes	Yes	Yes	Species is state threatened and EO intersects the Study Area.
	<i>Moxostoma macrolepidotum</i>	Shorthead Redhorse	Animal	S2	G5	-	-	2001	Streams, lakes and rivers; loose substrate such as gravel or sand.	Lower section of the Lamoille River.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO
Project: Sandbar Station Smartvalve
Prepared by: VHB (A. Peirce) July 17, 2024
Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



Element Occurrences- 1 Mile Radit

Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
<i>Myotis lucifugus</i>	Little Brown bat	Animal	S1	G3G4	E	UR	2015	Forested lands near water. Often roost in buildings, trees, under rocks and wood piles.	Sandbar WMA Lamoille River Delta.	Spring-Summer	No	Yes	No	The Project will avoid impacts to this species.
<i>Necturus maculosus</i>	Mudpuppy	Animal	S2	G5	-	-	2022	Streams, lakes and ponds. Use cover such as logs and rocks within substrate.	Lamoille River, proximal to Peterson Dam, Milton.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.
<i>Piptatheropsis pungens</i>	Slender Mountain-rice	Plant	S2	G5	T	-	2001	Deciduous or mixed evergreen woodlands and barrens. Dry mesic to xeric openings.	Sandbar WMA on slope leading down to wetland area.	Summer	No	Yes	Yes	Species is state threatened and Study Area contains potential habitat.
<i>Podilymbus podiceps</i>	Pied-billed Grebe	Animal	S2S3B	G5	-	-	2002	Freshwater ponds or lakes with emergent vegetation providing nesting habitat.	Lamoille River Delta- Sandbar WMA.	Summer	No	No	No	Species is not state or federally listed and Study Area does not include potential habitat.
<i>Potamilus alatus</i>	Pink Heelsplitter	Animal	S2	G5	T	-	2013	Various substrate types within slow moving water habitats.	Lamoille River, upstream of US 2 bridge overpass.	Summer	No	No	No	The Project will avoid impacts to aquatic habitat.
<i>Pterospora andromedea</i>	Pinedrops	Plant	S1	G5	E	-	1915	Deciduous to mixed evergreen- deciduous forests.	A hill in Colchester that was worked by a marble company.	Spring-Summer	No	Yes	Yes	Species is state endangered and the Study Area contains potential habitat.
<i>Pyganodon grandis</i>	Giant Floater	Animal	S2S3	G5	T	-	2013	Lakes or slower moving waters. Found in substrates of mud or sand.	Lower Lamoille River, Peterson Dam and West Milton Bridge areas.	Spring- Fall	Yes	Yes	No	The Project will avoid impacts to aquatic habitat.
<i>Schoenoplectiella smithii</i> var. <i>smithii</i>	Smith's bulrush	Plant	S2	G5?TNR	-	-	2019	Areas with fluctuating water levels; tidal river shores, pond shores.	Camp Kiniya Beach, Lamoille River Delta	Summer	No	No	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Setophaga cerulea</i>	Cerulean Warbler	Animal	S1S2B	G4	-	-	1994	Deciduous floodplain forests. Breed in wooded swamps, mesic uplands and wet bottomlands.	Along Lamoille River within Sandbar WMA. Floodplain forest of cottonwood and elm.	Summer	No	No	No	The Project will avoid impacts to habitat.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO
Project: Sandbar Station Smartvalve
Prepared by: VHB (A. Peirce) July 17, 2024
Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
<i>Solidago squarrosa</i>	Squarrose Goldenrod	Plant	S2S3	G4G5	-	-	2019	Roadsides, forest edges, open banks, fields and clearings.	Two occurrences. Roadcut into sandplains bank in openings above Cub Road. Headquarters Northwest building.	Summer	No	Yes	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Sternotherus odoratus</i>	Eastern Musk Turtle	Animal	S2	G5	-	-	2013	Permanent wetlands such as lakes, ponds, rivers and swamps. Shallow water dwelling.	Two occurrences. Face of island at Lamoille River Delta. And Camp Dudley off Kiniya Flats Road.	Summer	No	Yes	No	Species is not state or federally protected and EO does not intersect the Study Area.
<i>Thalictrum venulosm</i>	Border Meadow-rue	Plant	S2S3	G5	-	-	1982	Lakeshores and northern river shores with high-pH bedrock.	Dry, rocky ridge located northwest of Clay Point Road, Colchester VT.	Summer	No	Yes	No	Species is not state or federally protected and EO does not intersect the Study Area.
Alder Swamp		Natural Community	S4	-	-	-	2002	Speckled alder is the dominant tall shrub of this low lying complex. Saturated and experience seasonal flooding. Soils range from high organic to deep muck or peat.	On Sandbar WMA, north of Lamoille River Access Area	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
Deep Bulrush Marsh		Natural Community	S4	-	-	-	1983	Permanently inundated with water depths from 1-3 feet. Coarse mineral soils with tall slender stems of soft and hard stem bulrush.	Sandbar WMA at the Lamoille River Delta	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
Dry Oak-Maple Limestone Forest		Natural Community	S3	-	-	-	2015	Dominant tree species include red oak, white pine, shagbark hickory and basswood. Soils consist of shallow organic layer over bedrock.	Throughout Niquette Bay State Park. Steeper ledgy slopes with exposed bedrock in many places.	Spring-Fall	No	Yes	Yes	Check northwestern upland quadrant of Study Area.
Dry Oak-Hickory-Hophornbeam Forest		Natural Community	S3	-	-	-	1992	Red oak, shagbark hickory and hophornbeam are common canopy dominants. Sugar maple, white ash, white oak abundant. Hilltops, gentle ridgelines, shallow soils with various bedrock conditions.	Hills on north side of the Lamoille River; upstream of US 2 bridge.	Spring-Fall	Yes	Yes	Yes	Check forested portions of Study Area- northwest and eastern quadrants.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO
Project: Sandbar Station Smartvalve
Prepared by: VHB (A. Peirce) July 17, 2024
Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
	Dry Pine- Oak- Heath Sandplain Forest	Natural Community	S1	-	-	-	2018	Well drained sand soils that are acidic and nutrient poor. Dominant canopy tree species include pitch pine, white pine, red maple and red oak. Blueberry and hazel species are abundant in the understory.	Inland from lakeshore at southernmost portion of the Lamoille Delta. Adjacent to Kiniya Beach	Spring- Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Lake Sand Beach	Natural Community	S2	-	-	-	2019	A relatively flat area that receives wave action and a beach berm above it. Requires a supply of sand and a force to move it. Annual herbs such as nodding bur marigold and clammyweed are present.	Small sliver extending into Study Area from Camp Kiniya lakeshore on the Lamoille River Delta.	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Lakeside Floodplain Forest	Natural Community	S3	-	-	-	2019	Occurring in former lake coves, this system sits on silt or clay loams. Dominant canopy species are typically silver maple and green ash. Very few shrubs or saplings grow in these annually flooded areas.	Located at the mouth of the Lamoille River within the Sandbar WMA; Colchester and Milton.	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Maple Green Ash Swamp	Natural Community	S3	-	-	-	2002	Deep, decomposed organic soil deposits with hummocks and water-filled hollows. Canopy dominated by green ash and red maple. Dogwood and holly species fill in the understory.	On Sandbar WMA, north of Lamoille River Access Area	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Mesic Clayplain Forest	Natural Community	S2	-	-	-	1991	White oak, red oak, red maple, white pine are often dominant canopy species with hemlock, beech, basswood and green ash as abundant understory species. Soil fertility is high and soils are generally dense and seasonally wet.	South side of the Lamoille River, north of Walnut Ledge; east of the Lower Lamoille Oxbow.	Spring- Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Mesic Maple-Ash-Hickory-Oak Forest	Natural Community	S3	-	-	-	2015	This community occurs in warmer climate areas where hickories are common in the forest canopy. Its ground vegetation also shows its southern affinities, but in many respects it is similar to Northern Hardwood Forest, with beech, sugar maple, and red maple common in the canopy	Throughout lower lying slopes of Niquette Bay State Park area.	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: VELCO

Project: Sandbar Station Smartvalve

Prepared by: VHB (A. Peirce) July 17, 2024

Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)



Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
													(yes/no)	Comments
	Oak- Maple Limestone Talus Woodland	Natural Community	S3	-	-	-	2009	Found on rock fall slopes beneath cliffs. Soils are nutrient poor due to the accumulation of shale and slate. Sugar maple, red oak, basswood and northern white cedar commonly dominate the canopy.	Below west facing ledge area adjacent to sandy wet flats south of Camp Kiniya, Colchester.	Spring- Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Sand-Over-Clay Forest	Natural Community	S2	-	-	-	2007	Acidic sand layer is found on top of a nutrient rich clay. Red maple or hemlock tend to dominate closed canopies with interspersed red oak and white pine. Witch hazel and prickly ash are common shrub species.	Sandy wet flats south of Camp Kiniya in Colchester.	Spring-Fall	No	No	No	Study Area does not contain suitable conditions for this Natural Community.
	Silver Maple- Sensitive Fern Floodplain Forest	Natural Community	S3	-	-	-	1191	Silver maple dominant floodplain forest. Abundance of green ash, swamp white oak and elm. Sensitive herb and winterberry holly are abundant understory species. Sit on alluvial soils that annually receive overbank flooding.	South side of the Lamoille River, north of Walnut Ledge.	Spring-Fall	No	Yes	Yes	Check forested portions of Study Area- northeastern quadrant, adjacent to river.

¹Potential sources for habitat description listed below
Ahles, Harry E. and Magee, Dennis W. 2007. *Flora of the Northeast* . A Manual of the Vascular Flora of New England and Adjacent New York
Animal Diversity Web. Retrieved from: <https://animaldiversity.org/accounts>
Cornell Lab of Ornithology Bird Guide. Retrieved from: <https://www.allaboutbirds.org/guide/>
Gilman, Arthur V. 2015. *New Flora of Vermont* . The New York Botanical Garden.
Gleason, Henry A. and Cronquist, Arthur. 1991. *Manual of Vascular Plants of Northeast United States and Adjacent Canada* . The New York Botanical Garden.
Haines, Arthur. 2011. *Flora Novae Angliae* . New England Wildflower Society/Yale University Press, New Haven, CT . 973 Pp.
Langdon, Richard W., Ferguson, Mark T. and Cox, Kenneth M. 2006. *Fishes of Vermont* . Vermont Department of Fish and Wildlife.
Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide* . Little, Brown, and Company, Boston
Northern Prairie Wildlife Research Center. <http://www.npwrc.usgs.gov/resource/distr/insects/tigb/usa/49.htm>
Seymour, Frank Conkling. 1982. *The Flora of New England* . 2d ed. Phytologia Memoirs 5. Plainfield, NJ: Harold N. Moldenke and Alma L. Moldenke. 611 p. [7604]
Thompson, Elizabeth H., Sorenson, Eric R. and Zaino, Robert J. 2019. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* . Vermont Department of Fish and Wildlife and The Nature Conservancy.
Vermont Natural Resources Atlas, Accessed July 2024. Element Occurrence Reports
²Sources for occurrence description listed below:
Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department - Element Occurrence Reports.
³Flowering Time: Spring (April-May), Summer (June-July), Late Summer (August-September), Fall (October-November)

APPENDIX G



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

12/10/2024 18:55:46 UTC

Project Code: 2024-0141068

Project Name: VELCO Sandbar Smartvalve

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the “**New England Field Office Endangered Species Project Review and Consultation**” website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

<https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review>

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (Updated 4/12/2023) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act

Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/service/section-7-consultations>

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

<https://www.fws.gov/program/migratory-bird-permit>

<https://www.fws.gov/library/collections/bald-and-golden-eagle-management>

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

PROJECT SUMMARY

Project Code: 2024-0141068

Project Name: VELCO Sandbar Smartvalve

Project Type: Operations and Maintenance - Electric Power Transmission and Distribution Facilities

Project Description: Proposed substation expansion

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.609697350000005,-73.20356219081634,14z>



Counties: Chittenden County, Vermont

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: VHB

Name: Nicole Fenton

Address: 40 Idx Dr. Building 100 Suite 200

City: South Burlington

State: VT

Zip: 05403

Email: nfenton@vhb.com

Phone: 8024976107

APPENDIX H

Partial Floristic Inventory

Client: VELCO

Project: Sandbar Station Smartvalve

Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)

Prepared by: VHB (W. Durkin) May 15, 2025

Scientific Name ¹	Common Name	Family	Observed Habitat			VT Rarity Rank ^{2,3}	Non-Native Invasive Species ⁴
			Natural Communities / Forested Area	Disturbed (ROW, Substation, or Residence)	Wetlands		
<i>Acer rubrum</i> L.	red maple	Aceraceae	X	X	X		
<i>Acer saccharinum</i> L.	silver maple	Aceraceae			X		
<i>Acer saccharum</i> Marshall	sugar maple	Aceraceae	X				
<i>Acer spicatum</i> Lam.	mountain maple	Aceraceae	X				
<i>Achillea millefolium</i> L.	common yarrow	Asteraceae		X			
<i>Acorus calamus</i> L.	calamus	Acoraceae			X		
<i>Actaea rubra</i> (Aiton) Willd.	red baneberry	Ranunculaceae	X				
<i>Adiantum pedatum</i> L.	northern maidenhair	Pteridaceae	X		X		
<i>Alisma subcordatum</i> Raf.	American water plantain	Alismataceae		X	X		
<i>Allium tricoccum</i> Aiton	ramp	Liliaceae	X				
<i>Alnus incana</i> (L.) Moench	gray alder	Betulaceae			X		
<i>Ambrosia artemisiifolia</i> L.	annual ragweed	Asteraceae		X			
<i>Amphicarpaea bracteata</i> (L.) Fernald	American hogpeanut	Fabaceae	X	X			
<i>Anemone canadensis</i> L.	Canadian anemone	Ranunculaceae	X				
<i>Anemone virginiana</i> L.	tall thimbleweed	Ranunculaceae	X				
<i>Antennaria neglecta</i> Greene	field pussytoes	Asteraceae		X			
<i>Apios americana</i> Medik.	groundnut	Fabaceae	X		X		
<i>Aquilegia canadensis</i> L.	red columbine	Ranunculaceae	X				
<i>Aralia nudicaulis</i> L.	wild sarsaparilla	Araliaceae	X				
<i>Aralia racemosa</i> L.	American spikenard	Araliaceae	X				
<i>Arisaema triphyllum</i> (L.) Schott	Jack in the pulpit	Araceae	X				
<i>Artemisia vulgaris</i> L.	common wormwood	Asteraceae		X			
<i>Asarum canadense</i> L.	Canadian wildginger	Aristolochiaceae	X				
<i>Asclepias quadrifolia</i> Jacq.	fourleaf milkweed	Asclepiadaceae	X				
<i>Asclepias syriaca</i> L.	common milkweed	Asclepiadaceae		X			
<i>Asplenium platyneuron</i> (L.) Britton, Sterns & Poggenb.	ebony spleenwort	Aspleniaceae	X				
<i>Asplenium rhizophyllum</i> L.	walking fern	Aspleniaceae	X				
<i>Asplenium ruta-muraria</i> L.	wallrue	Aspleniaceae	X				
<i>Asplenium trichomanes</i> L.	maidenhair spleenwort	Aspleniaceae	X				
<i>Athyrium filix-femina</i> (L.) Roth	common ladyfern	Dryopteridaceae	X				
<i>Berberis vulgaris</i> L.	common barberry	Berberidaceae	X	X	X		B
<i>Betula alleghaniensis</i> Britton	yellow birch	Betulaceae	X				
<i>Betula papyrifera</i> Marshall	paper birch	Betulaceae	X				
<i>Betula populifolia</i> Marshall	gray birch	Betulaceae		X			
<i>Bidens frondosa</i> L.	devil's beggartick	Asteraceae	X		X		
<i>Boehmeria cylindrica</i> (L.) Sw.	smallspike false nettle	Urticaceae	X		X		
<i>Botrychium dissectum</i> Spreng.	cutleaf grapefern	Ophioglossaceae		X			
<i>Botrychium multifidum</i> (S.G. Gmel.) Trevis.	leathery grapefern	Ophioglossaceae		X		S3	
<i>Bromus inermis</i> Leyss.	smooth brome	Poaceae		X			
<i>Bromus pubescens</i> Muhl. ex Willd.	hairy woodland brome	Poaceae	X	X			
<i>Calystegia spithamea</i> (L.) Pursh ssp. <i>spithamea</i>	low false bindweed	Convolvulaceae		X		S2 (T)	
<i>Campanula rotundifolia</i> L.	bluebell bellflower	Campanulaceae	X	X			
<i>Carex cephalophora</i> Muhl. ex Willd.	oval-leaf sedge	Cyperaceae	X				
<i>Carex communis</i> L.H. Bailey	fibrousroot sedge	Cyperaceae	X				
<i>Carex deweyana</i> Schwein.	Dewey sedge	Cyperaceae	X				
<i>Carex eburnea</i> Boott	bristleleaf sedge	Cyperaceae	X				
<i>Carex flava</i> L.	yellow sedge	Cyperaceae			X		
<i>Carex gracillima</i> Schwein.	graceful sedge	Cyperaceae	X				
<i>Carex grayi</i> Carey	Gray's sedge	Cyperaceae			X	S3	
<i>Carex gynandra</i> Schwein.	nodding sedge	Cyperaceae	X		X		
<i>Carex lupulina</i> Muhl. ex Willd.	hop sedge	Cyperaceae	X		X		
<i>Carex lurida</i> Wahlenb.	shallow sedge	Cyperaceae			X		
<i>Carex pellita</i> Muhl. ex Willd.	woolly sedge	Cyperaceae		X			
<i>Carex pensylvanica</i> Lam.	Pennsylvania sedge	Cyperaceae	X				
<i>Carex plantaginea</i> Lam.	plantainleaf sedge	Cyperaceae	X		X		
<i>Carex platyphylla</i> Carey	broadleaf sedge	Cyperaceae	X				
<i>Carex rosea</i> Schkuhr ex Willd.	rosy sedge	Cyperaceae	X				
<i>Carex scoparia</i> Schkuhr ex Willd.	broom sedge	Cyperaceae		X			
<i>Carex tuckermanii</i> Dewey	Tuckerman's sedge	Cyperaceae			X		
<i>Carpinus caroliniana</i> Walter	American hornbeam	Betulaceae	X				
<i>Carya cordiformis</i> (Wangenh.) K. Koch	bitternut hickory	Juglandaceae	X				
<i>Carya ovata</i> (Mill.) K. Koch	shagbark hickory	Juglandaceae	X				
<i>Caulophyllum thalictroides</i> (Farw.) Loconte & Blackwell	giant blue cohosh	Berberidaceae	X				
<i>Ceanothus americanus</i> L.	New Jersey tea	Rhamnaceae		X			
<i>Centaurea stoebe</i> L.	spotted knapweed	Asteraceae		X			
<i>Chelidonium majus</i> L.	celandine	Papaveraceae		X			
<i>Chelone glabra</i> L.	white turtlehead	Scrophulariaceae			X		
<i>Cicuta maculata</i> L.	spotted water hemlock	Apiaceae			X		
<i>Cinna arundinacea</i> L.	sweet woodreed	Poaceae			X		
<i>Circaea ×intermedia</i> Ehrh. (pro sp.) [<i>alpina</i> × <i>lutetiana</i>]	enchanter's nightshade	Onagraceae	X		X		
<i>Claytonia caroliniana</i> Michx.	Carolina springbeauty	Portulacaceae	X				
<i>Comptonia peregrina</i> (L.) J.M. Coult.	sweet fern	Myricaceae		X			
<i>Conopholis americana</i> (L.) Wallr.	American cancer-root	Orobanchaceae	X			S3	
<i>Coryza canadensis</i> (L.) Cronquist var. <i>canadensis</i>	Canadian horseweed	Asteraceae		X			
<i>Coptis trifolia</i> (L.) Salisb.	threeleaf goldthread	Ranunculaceae	X				
<i>Corallorhiza maculata</i> (Raf.) Raf.	summer coralroot	Orchidaceae	X				
<i>Cornus alternifolia</i> L. f.	alternatelyleaf dogwood	Cornaceae	X				
<i>Cornus rugosa</i> Lam.	roundleaf dogwood	Cornaceae	X	X			
<i>Cornus sericea</i> L.	redosier dogwood	Cornaceae		X	X		
<i>Crocanthemum canadense</i>	Canada Frostweed	Cistaceae		X		S2S3	
<i>Cryptotaenia canadensis</i> (L.) DC.	Canadian honewort	Apiaceae	X				
<i>Cuscuta gronovii</i> Willd. ex Schult.	scaldweed	Cuscutaceae		X			
<i>Cyperus bipartitus</i> Torr.	slender flatsedge	Cyperaceae		X			
<i>Cyperus esculentus</i> L.	yellow nutsedge	Cyperaceae		X			
<i>Cyperus houghtonii</i> Torr.	Houghton's flatsedge	Cyperaceae		X		S2 (T)	
<i>Cyperus lupulinus</i> (Spreng.) Marks	Great Plains flatsedge	Cyperaceae		X			
<i>Cystopteris bulbifera</i> (L.) Bernh.	bulblet bladderfern	Dryopteridaceae	X				
<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae		X			
<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae		X			

Partial Floristic Inventory

Client: VELCO

Project: Sandbar Station Smartvalve

Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)

Prepared by: VHB (W. Durkin) May 15, 2025

Scientific Name ¹	Common Name	Family	Observed Habitat			VT Rarity Rank ^{2,3}	Non-Native Invasive Species ⁴
			Natural Communities / Forested Area	Disturbed (ROW, Substation, or Residence)	Wetlands		
<i>Deschampsia P. Beauv.</i>	hairgrass	Poaceae	X	X			
<i>Desmodium canadense (L.) DC.</i>	showy ticktrefoil	Fabaceae		X			
<i>Desmodium cuspidatum (Muhl. ex Willd.) DC. ex D. Don</i>	largebract ticktrefoil	Fabaceae		X		S1 (E)	
<i>Desmodium glutinosum (Muhl. ex Willd.) Alph. Wood</i>	pointedleaf ticktrefoil	Fabaceae		X			
<i>Dianthus armeria L.</i>	Deptford pink	Caryophyllaceae		X			
<i>Dichanthelium clandestinum (L.) Gould</i>	deertongue	Poaceae		X			
<i>Diervilla lonicera Mill.</i>	northern bush honeysuckle	Caprifoliaceae	X	X			
<i>Digitalis grandiflora Mill.</i>	yellow foxglove	Scrophulariaceae		X			
<i>Dryopteris intermedia (Muhl. ex Willd.) A. Gray</i>	intermediate woodfern	Dryopteridaceae	X				
<i>Dryopteris marginalis (L.) A. Gray</i>	marginal woodfern	Dryopteridaceae	X				
<i>Echinochloa crus-galli (L.) P. Beauv.</i>	barnyardgrass	Poaceae		X			
<i>Eleocharis obtusa (Willd.) Schult.</i>	blunt spikerush	Cyperaceae		X	X		
<i>Elymus hystrix L.</i>	eastern bottlebrush grass	Poaceae	X				
<i>Epifagus virginiana (L.) W.P.C. Barton</i>	beechdrops	Orobanchaceae	X				
<i>Epilobium hirsutum L.</i>	codlins and cream	Onagraceae		X	X		
<i>Epipactis helleborine (L.) Crantz</i>	broadleaf helleborine	Orchidaceae	X				
<i>Equisetum arvense L.</i>	field horsetail	Equisetaceae	X	X			
<i>Equisetum hyemale L.</i>	scouringrush horsetail	Equisetaceae	X				
<i>Eragrostis spectabilis (Pursh) Steud.</i>	purple lovegrass	Poaceae		X			
<i>Erigeron annuus (L.) Pers.</i>	eastern daisy fleabane	Asteraceae		X			
<i>Erigeron strigosus Muhl. ex Willd.</i>	prairie fleabane	Asteraceae		X			
<i>Euonymus alatus (Thunb.) Siebold</i>	burningbush	Celastraceae		X			
<i>Eupatorium perfoliatum L.</i>	common boneset	Asteraceae		X	X		
<i>Euphorbia L.</i>	spurge	Euphorbiaceae		X			
<i>Eurybia divaricata (L.) G.L. Nesom</i>	white wood aster	Asteraceae	X				
<i>Euthamia graminifolia (L.) Nutt.</i>	flat-top goldenrod	Asteraceae		X	X		
<i>Eutrochium maculatum (L.) E.E. Lamont</i>	spotted joe pye weed	Asteraceae		X	X		
<i>Eutrochium purpureum (L.) E.E. Lamont</i>	sweetscented joe pye weed	Asteraceae		X		S2S3	
<i>Fagus grandifolia Ehrh.</i>	American beech	Fagaceae	X		X		
<i>Fragaria virginiana Duchesne</i>	Virginia strawberry	Rosaceae		X			
<i>Frangula alnus Mill.</i>	glossy buckthorn	Rhamnaceae	X	X			
<i>Fraxinus americana L.</i>	white ash	Oleaceae	X				B
<i>Fraxinus nigra Marshall</i>	black ash	Oleaceae			X		
<i>Fraxinus pennsylvanica Marshall</i>	green ash	Oleaceae			X		
<i>Galeopsis bifida Boenn.</i>	splitlip hempenettle	Lamiaceae		X			
<i>Galium circaezans Michx.</i>	licorice bedstraw	Rubiaceae	X				
<i>Galium mollugo L.</i>	false baby's breath	Rubiaceae		X			
<i>Gaylussacia baccata (Wangenh.) K. Koch</i>	black huckleberry	Ericaceae		X			
<i>Geranium robertianum L.</i>	Robert geranium	Geraniaceae	X				
<i>Geum canadense Jacq.</i>	white avens	Rosaceae	X				
<i>Glyceria grandis S. Watson</i>	American mannagrass	Poaceae	X		X		
<i>Glyceria melicaria (Michx.) F.T. Hubbard</i>	melic mannagrass	Poaceae	X		X		
<i>Glyceria striata (Lam.) Hitchc.</i>	fowl mannagrass	Poaceae	X		X		
<i>Gymnocarpium dryopteris (L.) Newman</i>	western oakfern	Dryopteridaceae	X				
<i>Hackelia virginiana (L.) I.M. Johnst.</i>	beggarslice	Boraginaceae	X				
<i>Hamamelis virginiana L.</i>	American witchhazel	Hamamelidaceae	X				
<i>Helianthus decapetalus L.</i>	thinleaf sunflower	Asteraceae	X				
<i>Helianthus divaricatus L.</i>	woodland sunflower	Asteraceae	X				
<i>Helianthus strumosus L.</i>	paleleaf woodland sunflower	Asteraceae		X		S2S3 (T)	
<i>Hepatica nobilis Schreb. var. acuta (Pursh) Steyer.</i>	sharplobe hepatica	Ranunculaceae	X				
<i>Hepatica nobilis Schreb. var. obtusa (Pursh) Steyer.</i>	roundlobe hepatica	Ranunculaceae	X				
<i>Hieracium paniculatum L.</i>	Allegheny hawkweed	Asteraceae	X				
<i>Hieracium scabrum Michx.</i>	rough hawkweed	Asteraceae	X				
<i>Houstonia coerulea L.</i>	azure bluet	Rubiaceae	X				
<i>Humulus lupulus L.</i>	common hop	Cannabaceae		X			
<i>Hydrocotyle americana L.</i>	American marshpennywort	Apiaceae		X	X		
<i>Hydrophyllum virginianum L.</i>	eastern waterleaf	Hydrophyllaceae	X				
<i>Hypericum mutilum L.</i>	dwarf St. Johnswort	Clusiaceae	X				
<i>Hypericum perforatum L.</i>	common St. Johnswort	Clusiaceae		X			
<i>Ilex verticillata (L.) A. Gray</i>	common winterberry	Aquifoliaceae	X		X		
<i>Impatiens capensis Meerb.</i>	jewelweed	Balsaminaceae		X	X		
<i>Impatiens pallida Nutt.</i>	pale touch-me-not	Balsaminaceae			X		
<i>Ionactis linariifolius (L.) Greene</i>	flaxleaf whitetop aster	Asteraceae		X			
<i>Juglans cinerea L.</i>	butternut	Juglandaceae	X				
<i>Juncus effusus L.</i>	common rush	Juncaceae		X	X		
<i>Juncus nodosus L.</i>	knotted rush	Juncaceae		X	X		
<i>Juniperus communis L.</i>	common juniper	Cupressaceae		X			
<i>Juniperus virginiana L.</i>	eastern redcedar	Cupressaceae		X			
<i>Lactuca biennis (Moench) Fernald</i>	tall blue lettuce	Asteraceae		X			
<i>Lactuca canadensis L.</i>	Canada lettuce	Asteraceae		X			
<i>Laportea canadensis (L.) Weddell</i>	Canadian woodnettle	Urticaceae	X		X		
<i>Leersia oryzoides (L.) Sw.</i>	rice cutgrass	Poaceae		X	X		
<i>Leersia virginica Willd.</i>	whitegrass	Poaceae	X				
<i>Lilium L.</i>	lily	Liliaceae		X			
<i>Linaria vulgaris Mill.</i>	butter and eggs	Scrophulariaceae		X			
<i>Lobelia cardinalis L.</i>	cardinalflower	Campanulaceae			X		
<i>Lonicera morrowii A. Gray</i>	Morrow's honeysuckle	Caprifoliaceae		X			B
<i>Lycopodium clavatum L.</i>	running clubmoss	Lycopodiaceae		X			
<i>Lycopodium dendroideum Michx.</i>	tree groundpine	Lycopodiaceae	X				
<i>Lycopodium digitatum Dill. ex A. Braun</i>	fan clubmoss	Lycopodiaceae	X				
<i>Lycopus uniflorus Michx.</i>	northern bugleweed	Lamiaceae	X		X		
<i>Lysimachia ciliata L.</i>	fringed loosestrife	Primulaceae		X			
<i>Lysimachia nummularia L.</i>	creeping jenny	Primulaceae	X		X		
<i>Lysimachia quadrifolia L.</i>	whorled yellow loosestrife	Primulaceae		X			
<i>Lythrum alatum Pursh var. alatum</i>	winged lythrum	Lythraceae		X	X	S1	
<i>Lythrum salicaria L.</i>	purple loosestrife	Lythraceae		X	X		B
<i>Maianthemum canadense Desf</i>	Canada mayflower	Liliaceae	X				
<i>Maianthemum racemosum (L.) Link</i>	feathery false lily of the valley	Liliaceae	X				

Partial Floristic Inventory

Client: VELCO

Project: Sandbar Station Smartvalve

Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)

Prepared by: VHB (W. Durkin) May 15, 2025

Scientific Name ¹	Common Name	Family	Observed Habitat			VT Rarity Rank ^{2,3}	Non-Native Invasive Species ⁴
			Natural Communities / Forested Area	Disturbed (ROW, Substation, or Residence)	Wetlands		
<i>Malus Mill.</i>	apple	Rosaceae		X			
<i>Matteuccia struthiopteris (L.) Todaro</i>	ostrich fern	Dryopteridaceae	X		X		
<i>Melilotus albus Medik.</i>	white sweetclover	Fabaceae		X			
<i>Menispermum canadense L.</i>	common moonseed	Menispermaceae	X		X		
<i>Mimulus ringens L.</i>	Allegheny monkeyflower	Scrophulariaceae			X		
<i>Mitchella repens L.</i>	partridgeberry	Rubiaceae	X				
<i>Mitella diphylla L.</i>	twoleaf miterwort	Saxifragaceae	X				
<i>Mollugo verticillata L.</i>	green carpetweed	Molluginaceae		X			
<i>Monarda fistulosa L.</i>	wild bergamot	Lamiaceae		X			
<i>Monotropa uniflora L.</i>	Indianpipe	Monotropaceae	X				
<i>Myosotis scorpioides L.</i>	true forget-me-not	Boraginaceae	X		X		
<i>Nepeta cataria L.</i>	catnip	Lamiaceae	X				
<i>Oclemena acuminata (Michx.) Greene</i>	whorled wood aster	Asteraceae	X				
<i>Oenothera biennis L.</i>	common evening primrose	Onagraceae		X			
<i>Onclea sensibilis L.</i>	sensitive fern	Dryopteridaceae	X	X	X		
<i>Oryzopsis asperifolia Michx.</i>	roughleaf ricegrass	Poaceae	X				
<i>Osmorhiza claytonii (Michx.) C.B. Clarke</i>	Clayton's sweetroot	Apiaceae					
<i>Osmunda claytoniana L.</i>	interrupted fern	Osmundaceae	X				
<i>Osmunda regalis L.</i>	royal fern	Osmundaceae	X		X		
<i>Ostrya virginiana (Mill.) K. Koch</i>	hophornbeam	Betulaceae	X				
<i>Oxalis stricta L.</i>	common yellow oxalis	Oxalidaceae	X	X	X		
<i>Panax quinquefolius L.</i>	American ginseng	Araliaceae	X			S3	
<i>Panax trifolius L.</i>	dwarf ginseng	Araliaceae	X				
<i>Parthenocissus quinquefolia (L.) Planch.</i>	Virginia creeper	Vitaceae	X				
<i>Pastinaca sativa L.</i>	wild parsnip	Apiaceae		X			WL
<i>Patis racemosa (Sm.) Ramasch., P.M. Peterson & R. J. Soreng</i>	blackseed ricegrass	Poaceae	X				
<i>Pellaea atropurpurea (L.) Link</i>	purple cliffbrake	Pteridaceae	X	X		S3	
<i>Pellaea glabella Mett. ex Kuhn</i>	smooth cliffbrake	Pteridaceae		X		S3	
<i>Penthorum sedoides L.</i>	ditch stonewort	Crassulaceae			X		
<i>Phalaris arundinacea L.</i>	reed canarygrass	Poaceae		X	X		WL
<i>Phleum pratense L.</i>	timothy	Poaceae		X			
<i>Phragmites australis (Cav.) Trin. ex Steud.</i>	common reed	Poaceae		X	X		B
<i>Phryma leptostachya L.</i>	American lopseed	Verbenaceae	X				
<i>Physalis heterophylla Nees</i>	clammy groundcherry	Solanaceae		X			
<i>Pilea pumila (L.) A. Gray</i>	Canadian clearweed	Urticaceae	X		X		
<i>Pinus resinosa Aiton</i>	red pine	Pinaceae	X	X			
<i>Pinus strobus L.</i>	eastern white pine	Pinaceae	X	X			
<i>Pinus sylvestris L.</i>	Scots pine	Pinaceae	X	X			
<i>Plantago major L.</i>	common plantain	Plantaginaceae		X			
<i>Poa annua L.</i>	annual bluegrass	Poaceae		X			
<i>Poa compressa L.</i>	Canada bluegrass	Poaceae		X			
<i>Poa L.</i>	bluegrass	Poaceae		X			
<i>Polygala paucifolia Willd.</i>	gaywings	Polygalaceae	X	X			
<i>Polygala senega L.</i>	Seneca snakeroot	Polygalaceae	X			S2S3	
<i>Polygonatum pubescens (Willd.) Pursh</i>	hairy Solomon's seal	Liliaceae	X		X		
<i>Polygonum amphibium L. var. stipulaceum Coleman</i>	water smartweed	Polygonaceae			X		
<i>Polygonum pensylvanicum L.</i>	Pennsylvania smartweed	Polygonaceae			X		
<i>Polygonum virginianum L.</i>	jumpseed	Polygonaceae	X				
<i>Polypodium virginianum L.</i>	rock polypody	Polypodiaceae	X				
<i>Polystichum acrostichoides (Michx.) Schott</i>	Christmas fern	Dryopteridaceae	X				
<i>Populus deltoides W. Bartram ex Marshall</i>	eastern cottonwood	Salicaceae		X			
<i>Populus grandidentata Michx.</i>	bigtooth aspen	Salicaceae	X				
<i>Populus tremuloides Michx.</i>	quaking aspen	Salicaceae		X			
<i>Prenanthes alba L.</i>	white rattlesnakeroot	Asteraceae	X				
<i>Prunella vulgaris L.</i>	common selfheal	Lamiaceae		X			
<i>Prunus serotina Ehrh.</i>	black cherry	Rosaceae	X	X			
<i>Pteridium aquilinum (L.) Kuhn</i>	western brackenfern	Dennstaedtiaceae		X			
<i>Pyrola elliptica Nutt.</i>	waxflower shinleaf	Pyrolaceae	X				
<i>Quercus alba L.</i>	white oak	Fagaceae	X				
<i>Quercus muehlenbergii Engelm.</i>	chinkapin oak	Fagaceae		X		S3	
<i>Quercus rubra L.</i>	northern red oak	Fagaceae	X				
<i>Quercus velutina Lam.</i>	black oak	Fagaceae		X			
<i>Rhamnus cathartica L.</i>	common buckthorn	Rhamnaceae	X	X			B
<i>Rhus copallinum L.</i>	winged sumac	Anacardiaceae		X			
<i>Rhus typhina L.</i>	staghorn sumac	Anacardiaceae		X			
<i>Ribes cynosbati L.</i>	eastern prickly gooseberry	Grossulariaceae	X				
<i>Robinia pseudoacacia L.</i>	black locust	Fabaceae		X			
<i>Rorippa palustris (L.) Besser</i>	bog yellowcress	Brassicaceae		X	X		
<i>Rosa multiflora Thunb.</i>	multiflora rose	Rosaceae		X			WL
<i>Rubus allegheniensis Porter</i>	Allegheny blackberry	Rosaceae		X			
<i>Rubus canadensis L.</i>	smooth blackberry	Rosaceae	X				
<i>Rubus flagellaris Willd.</i>	northern dewberry	Rosaceae		X			
<i>Rubus idaeus L.</i>	American red raspberry	Rosaceae		X			
<i>Rubus occidentalis L.</i>	black raspberry	Rosaceae	X	X			
<i>Rubus odoratus L.</i>	purpleflowering raspberry	Rosaceae	X				
<i>Rudbeckia hirta L.</i>	blackeyed Susan	Asteraceae		X			
<i>Salix bebbiana Sarg.</i>	Bebb willow	Salicaceae		X	X		
<i>Salix discolor Muhl.</i>	pussy willow	Salicaceae		X	X		
<i>Salix eriocephala Michx.</i>	Missouri River willow	Salicaceae		X	X		
<i>Salix nigra Marshall</i>	black willow	Salicaceae		X	X		
<i>Sambucus racemosa L.</i>	red elderberry	Caprifoliaceae	X				
<i>Sanguinaria canadensis L.</i>	bloodroot	Papaveraceae	X				
<i>Scirpus atrovirens Willd.</i>	green bulrush	Cyperaceae		X	X		
<i>Scirpus cyperinus (L.) Kunth</i>	woolgrass	Cyperaceae		X	X		
<i>Scirpus hattorianus Makino</i>	mosquito bulrush	Cyperaceae		X	X		
<i>Scirpus L.</i>	bulrush	Cyperaceae		X	X		
<i>Scutellaria lateriflora L.</i>	blue skullcap	Lamiaceae	X		X		
<i>Securigera varia (L.) Lassen</i>	crownvetch	Fabaceae		X			
<i>Solanum dulcamara L.</i>	climbing nightshade	Solanaceae		X			
<i>Solidago altissima L.</i>	Canada goldenrod	Asteraceae		X			

Partial Floristic Inventory

Client: VELCO

Project: Sandbar Station Smartvalve

Survey Date(s): July 23-25, 30; August 21, 2024; April 15, 2025 (M. Jackman & W. Durkin)

Prepared by: VHB (W. Durkin) May 15, 2025

Scientific Name ¹	Common Name	Family	Observed Habitat			VT Rarity Rank ^{2,3}	Non-Native Invasive Species ⁴
			Natural Communities / Forested Area	Disturbed (ROW, Substation, or Residence)	Wetlands		
<i>Solidago caesia</i> L.	wreath goldenrod	Asteraceae	X				
<i>Solidago canadensis</i> L.	Canada goldenrod	Asteraceae		X			
<i>Solidago flexicaulis</i> L.	zigzag goldenrod	Asteraceae	X				
<i>Solidago gigantea</i> Aiton	giant goldenrod	Asteraceae		X	X		
<i>Solidago nemoralis</i> Aiton	gray goldenrod	Asteraceae		X			
<i>Solidago rugosa</i> Mill.	wrinkleleaf goldenrod	Asteraceae		X	X		
<i>Sorbaria sorbifolia</i> (L.) A. Braun	false spiraea	Rosaceae	X				WL
<i>Spiraea alba</i> Du Roi	white meadowsweet	Rosaceae		X	X		
<i>Staphylea trifolia</i> L.	American bladdernut	Staphyleaceae	X				
<i>Streptopus amplexifolius</i> (L.) DC.	clasp leaf twistedstalk	Liliaceae	X				
<i>Symphotrichum cordifolium</i> (L.) G.L. Nesom	common blue wood aster	Asteraceae	X				
<i>Symphotrichum lateriflorum</i> (L.) Å. Löve & D. Löve	calico aster	Asteraceae	X	X			
<i>Symphotrichum novae-angliae</i> (L.) G.L. Nesom	New England aster	Asteraceae		X	X		
<i>Taraxacum officinale</i> F.H. Wigg.	common dandelion	Asteraceae		X			
<i>Thalictrum dioicum</i> L.	early meadow-rue	Ranunculaceae	X				
<i>Thelypteris palustris</i> Schott	eastern marsh fern	Thelypteridaceae		X	X		
<i>Thuja occidentalis</i> L.	arborvitae	Cupressaceae	X				
<i>Tilia americana</i> L.	American basswood	Tiliaceae	X				
<i>Toxicodendron radicans</i> (L.) Kuntze	eastern poison ivy	Anacardiaceae	X				
<i>Tragopogon dubius</i> Scop.	yellow salsify	Asteraceae		X			
<i>Trientalis borealis</i> Raf.	starflower	Primulaceae	X				
<i>Trifolium aureum</i> Pollich	golden clover	Fabaceae		X			
<i>Trifolium pratense</i> L.	red clover	Fabaceae		X			
<i>Trifolium repens</i> L.	white clover	Fabaceae		X			
<i>Trillium cernuum</i> L.	whip-poor-will flower	Liliaceae	X			S3	
<i>Trillium erectum</i> L.	red trillium	Liliaceae	X				
<i>Trillium grandiflorum</i> (Michx.) Salisb.	white trillium	Liliaceae	X				
<i>Triosteum aurantiacum</i> E.P. Bicknell var. <i>aurantiacum</i>	orange fruit horse-gentian	Caprifoliaceae		X		S3	
<i>Tsuga canadensis</i> (L.) Carrière	eastern hemlock	Pinaceae	X				
<i>Tussilago farfara</i> L.	coltsfoot	Asteraceae		X			
<i>Typha latifolia</i> L.	broadleaf cattail	Typhaceae		X	X		
<i>Ulmus americana</i> L.	American elm	Ulmaceae	X	X			
<i>Urtica dioica</i> L.	stinging nettle	Urticaceae	X				
<i>Uvularia sessilifolia</i> L.	sessile leaf bellwort	Liliaceae	X				
<i>Vaccinium angustifolium</i> Aiton	lowbush blueberry	Ericaceae		X			
<i>Verbascum thapsus</i> L.	common mullein	Scrophulariaceae		X			
<i>Verbena urticifolia</i> L.	white vervain	Verbenaceae		X			
<i>Veronica officinalis</i> L.	common gypsyweed	Scrophulariaceae	X	X			
<i>Viburnum acerifolium</i> L.	maple leaf viburnum	Caprifoliaceae	X				
<i>Viburnum nudum</i> L.	possumhaw	Caprifoliaceae	X		X		
<i>Viburnum opulus</i> L.	European cranberrybush	Caprifoliaceae		X	X		
<i>Vicia cracca</i> L.	bird vetch	Fabaceae		X			
<i>Viola</i> L.	violet	Violaceae	X		X		
<i>Vitis aestivalis</i> Michx.	summer grape	Vitaceae		X			
<i>Vitis labrusca</i> L.	fox grape	Vitaceae	X	X	X		
<i>Vitis riparia</i> Michx.	riverbank grape	Vitaceae	X	X			

X - Plant species was found in this community type.

¹ Nomenclature follows USDA-NRCS PLANTS database (plants.usda.gov/) (2025).

² The Vermont Rarity Rank from the "Rare and Uncommon Native Vascular Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated June 10, 2024.

³ The Vermont Rarity Rank from the "Endangered and Threatened Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated February 10, 2022.

⁴ **Class B Noxious Weeds Species (B)** from: Quarantine #3 - Noxious Weeds (2012).

Watch List Species (WL) from: Vermont Invasive Exotic Plant Committee. 2017. Quarantine and Watch List Update.