

**Natural Resources Assessment Report  
St. Johnsbury Substation Project**

**St. Johnsbury, Vermont**

*Prepared for:  
VELCO*

*Prepared by:  
Arrowwood Environmental, LLC*

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**ARROWWOOD ENVIRONMENTAL**

950 BERT WHITE ROAD  
HUNTINGTON, VT 05462  
(802) 434-7276 FAX: (802) 329-2253

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## 1.0 Summary Findings

This Natural Resource Assessment Report and the enclosed attachments describe the results of Arrowwood Environmental LLCs (AE) natural resource investigation on behalf of Vermont Transco, LLC and Vermont Electric Power Company (collectively referred to as “VELCO”) for its proposed St. Johnsbury Substation improvement project (Project) in St. Johnsbury, Vermont. This report addresses each of the criteria specified in 30 V.S.A. § 248(b): 10 V.S.A. §1424a(d) and §6086(a)(1) through (9) and greenhouse gas impacts. AE concludes that the Project will not have an undue adverse effect upon Section 248(b)(5) criteria with implementation of avoidance and minimization measures, application of VELCO’s Environmental Best Management Practices (BMPs), and compliance with ancillary environmental permit conditions. Summary findings are provided for each criteria:

- Outstanding Resource Waters (ORW) (10 V.S.A. § 1424a(d)): There are no waters which intersect the Project area (area of potential impact, or Project footprint) or are near the Project area that have been designated as an ORW.
- Greenhouse Gas Impacts (30 V.S.A. § 248(b)(5)): The Project is not anticipated to have any impact on greenhouse gas emissions. The limited, temporary emissions associated with construction-related vehicles and equipment are not anticipated to have any impact on greenhouse gas emissions.
- Water and Air Pollution (10 V.S.A. § 6086(a)(1)): The Project does not propose any facilities that will generate air pollution. Temporary dust resulting from construction activities will be managed in accordance with VELCO’s Environmental Guidance Manual (VEGM), and the Vermont Standards & Specifications for Erosion Prevention & Sediment Control, and any associated permits.
- Headwaters (10 V.S.A. § 6086(a)(1)(A)): The Project is not located in a headwaters. The Project will be constructed in accordance with the practices and standards outlined in the VEGM, VELCO’s Transmission Vegetation Management Plan, a Project-specific Erosion and Sediment Control Plan (EPSC) (as part of Construction Stormwater Discharge Permit coverage), and VELCO’s site-specific Spill Prevention, Control, and Countermeasures Plan (SPCC Plan).
- Waste Disposal (10 V.S.A. § 6086(a)(1)(B)): The Project is expected to involve limited waste disposal and hazardous waste storage and disposal and will comply with all state and federal regulations regarding the handling and disposal of waste. The Project will be constructed in accordance with the practices and standards outlined in VELCO’s site-specific Spill Prevention, Control, and Countermeasures Plan (SPCC Plan).
- Water Conservation (10 V.S.A. § 6086 (a)(1)(C)): Water use associated with the Project is expected to be minimal. The new control building will utilize low flow toilet and fixtures for water conservation.
- Floodways (10 V.S.A. § 6086(a)(1)(D)): The Project area is not located within a 100-year Flood Zone Area and will not restrict or divert the flow of floodwaters or significantly increase the peak discharge of a river or stream within or downstream from the area of development. The Project area is not located within a river corridor.
- Streams (10 V.S.A. § 6086 (a)(1)(E)): The Project access is the existing substation gravel road. Improvements to the existing road will involve upgrading and widening, and culvert replacement. The proposed design, which given the existing site constraints, avoids and minimizes impacts to streams and riparian zone resources to the extent practicable.

- Shorelines (10 V.S.A. § 6086 (a)(1)(F)): There are no rivers, lakes, reservoirs, or large, permanent ponds that are located within the Project area. The closest shoreline to the Project area is that of the Moose River, several hundred feet distant.
- Wetlands (10 V.S.A. § 6086 (a)(1)(G)): The Project involves impacts to a Class 2 wetland and associated 50' buffer. VELCO will obtain a Vermont Wetlands Individual Permit. The proposed design, which given the existing site constraints, avoids and minimizes impacts to wetland resources to the extent practicable.
- Water Supply (10 V.S.A. § 6086 (a)(2) and (3)): VELCO is currently in the evaluation and design phase of its water and wastewater system connections for the new control building and will obtain and comply with a Wastewater System and Potable Water Supply permit from the VT ANR for the Project's engineered design and associated connections. It is expected that the existing municipal water supply will continue to meet the limited water supply demand associated with the operation of the Project without causing a burden on existing water supplies.
- Soil Erosion (10 V.S.A. § 6086 (a)(4)): The Project will require a VT DEC Construction Stormwater Discharge Permit. VELCO will develop and adhere to a detailed EPSC plan for the Project to facilitate compliance and proper implementation of stormwater BMPs during construction.
- Rare and Irreplaceable Natural Areas (10 V.S.A § 6086 (a)(8)): The Project area does not contain significant natural communities and is not considered a rare and irreplaceable natural area (RINA).
- Necessary Wildlife Habitat and Endangered Species (10 V.S.A. § 6086 (a)(8)(A)): The Project area was assessed for Deer Wintering Areas (DWA), Black Bear Habitat and Grassland bird habitat. Likely deer wintering habitat was identified to the north of the Project area. The proposed Project is not expected to result in any direct or indirect impacts to the identified DWA at the site, as there is an adequate buffer distance both horizontally and vertically between the Project activities and DWA. There are no rare, threatened or endangered (RTE) or uncommon plant species within the Project area. This Project involves a Federal nexus with the Section 404 US Army Corps of Engineers permit. VELCO will develop appropriate avoidance, minimization or mitigation measures during the wetland permitting process as necessary to avoid and/or mitigate significant adverse impacts to the federally endangered Northern Long Eared Bat.
- Primary Agricultural Soils (10 V.S.A. § 6086 (a)(9)(B)): There are Statewide (b) Primary Agricultural Soils ("PAS") within the Project area. There are no areas within the mapped PAS currently used for agriculture, and the surrounding slope and proximity to dense utility infrastructure largely precludes agricultural use of the land. There will be both temporary and permanent impacts to PAS as a result of the Project. The Agency of Agriculture Food and Markets ("AAFM") generally requires mitigation for permanent impacts to PAS when mitigation totals exceed two acres. VELCO will coordinate with AAFM to implement any necessary mitigation.

## **2.0 Introduction**

On behalf of VELCO, AE has prepared this Natural Resources Assessment Report for the Project. This report summarizes the results of AE's natural resource review of the Project Assessment Area (PAA) as depicted in Figure 1 below.



As part of the review, AE evaluated the potential effect of the Project on water quality and the natural environment in accordance with Section 248(b)(5) of Title 30, Vermont Statutes Annotated (V.S.A), which provides in relevant part that a transmission facility should not have an undue adverse effect on air and water purity, the natural environment, the use of natural resources, or public health and safety, with due consideration having been given to, but not limited to, the following environmental criteria:

- Outstanding Resource Waters (10 V.S.A. § 1424a(d))
- Greenhouse Gas Impacts (30 V.S.A. § 248(b)(5))
- Water and Air 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 (10 V.S.A § 6086 (a)(8))
- Necessary Wildlife Habitat and Endangered Species (10 V.S.A. § 6086 (a)(8)(A))
- Primary Agricultural Soils (10 V.S.A. § 6086 (a)(9)(B))

The development of this natural resource assessment was based on review of applicable Vermont environmental standards and geographic information system (GIS) data available from the Vermont Center for Geographic Information (VCGI) and the Vermont Natural Resources Atlas. In addition, field data collected during natural resource field surveys in May and June 2023 were evaluated and incorporated into this report. AE has also consulted with personnel from the ANR and the U.S. Army Corps of Engineers related to the identification of wetland and stream resources within the PAA.

The following sections describe the natural resources identified in the Project Assessment Area and address potential effects of the Project on those environmental criteria listed above.

### **3.0 Project Description**

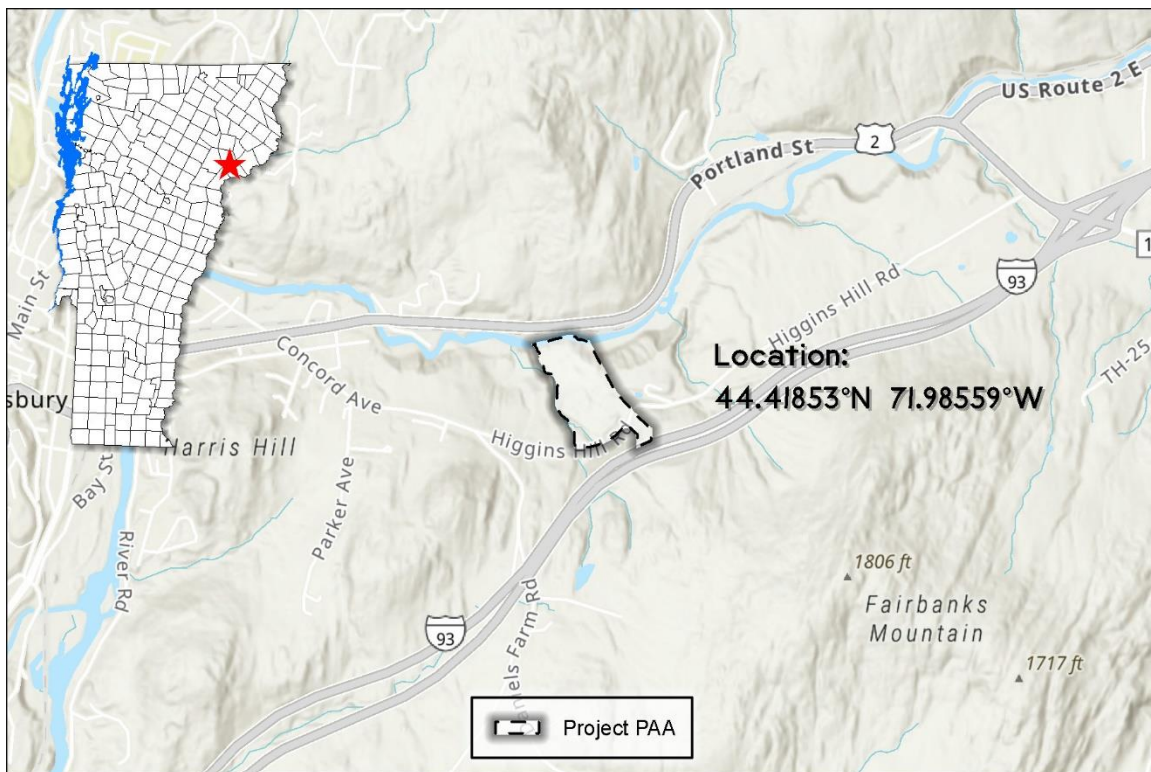
The VELCO St. Johnsbury Substation was originally built in 1972, with various modifications and improvements occurring over the subsequent nearly fifty years of service. VELCO conducted a condition assessment of the Substation and identified the need to replace some of the equipment due to condition. VELCO proposes to construct and operate the following major components at the St. Johnsbury Substation:

- Replace the existing 220 circuit switcher with a new K220 SF gas circuit breaker.
- Replace the existing control building with a new larger control building that can accommodate the protection and control system, redundant AC and DC station services, communication equipment, and security systems. The new control building will be located on the southwest side of the substation.

- Expand the fence to accommodate the new control building, facilitate construction, and to improve access to equipment for maintenance.
- Reconstruct and widen driveway to 20 feet with turn-around.
- Improve site drainage.
- Perform tree clearing to accommodate the temporary infrastructure, temporary substation/construction area support area, expanded substation yard and driveway improvements.
- Install landscape mitigation.
- Install a temporary substation and associated temporary driveway, poles and conductors, to maintain electrical transmission for the Project's duration.

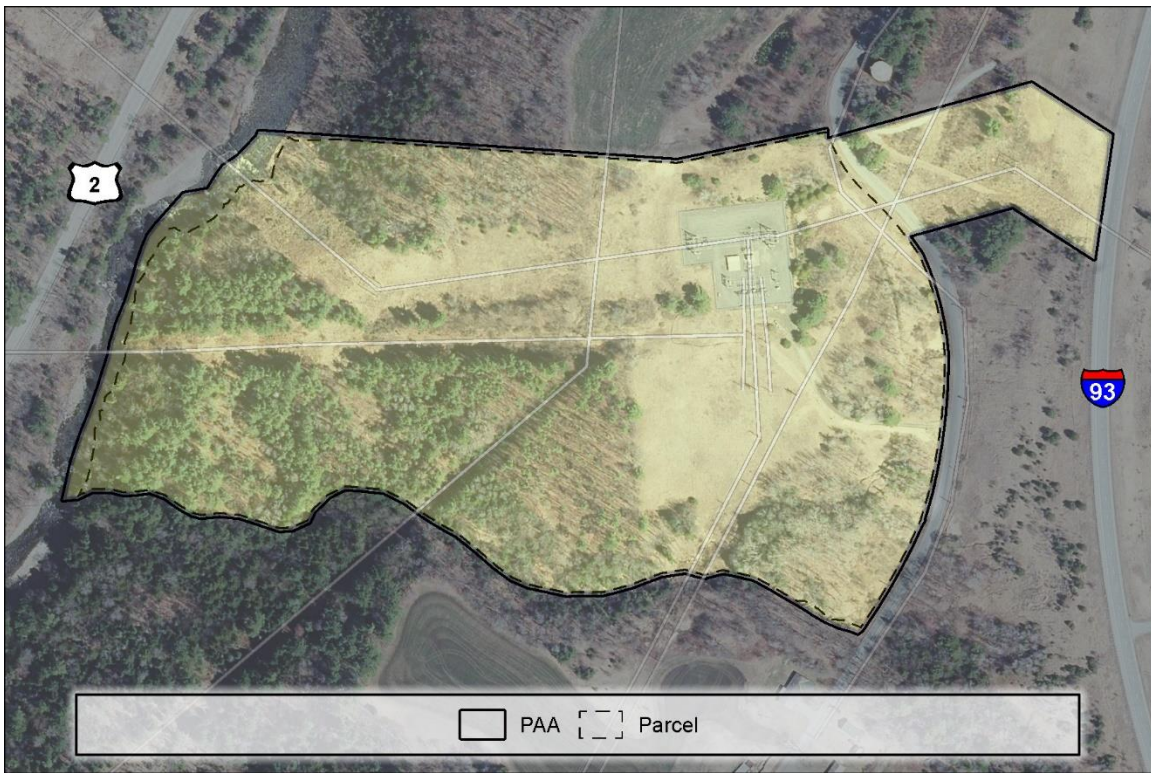
### 3.1 Project Assessment Area

The Project is located at 397 Higgins Hill Road in St. Johnsbury, Vermont.



**Figure 1. Site Location and Project Assessment Area (PAA)**

The PAA includes approximately 40 acres, including the Project parcel and additional lands as depicted in Figure 2 below. The PAA was reviewed for the natural resources assessment.



**Figure 2. Project Parcel and PAA**

### **3.2 Construction Activity**

The Project will be constructed in compliance with applicable state and federal regulations, guidelines, and standards, and the specific requirements of any necessary permits. The general construction sequence and procedures for the substation construction include:

Substation Construction Sequence:

- Site survey
- Vegetation clearing, where necessary
- Access road construction and/or maintenance
- Site grading and foundation construction
- Assemble and erect substation equipment
- Connect conductors to equipment
- Restoration and re-vegetation
- Testing and commissioning

### **3.3 Permits and Approvals**

Construction of the Project will require the following ancillary environmental permits:

- State of Vermont Wetlands Permit
- Construction Stormwater Discharge Permit
- Section 404 US Army Corps of Engineers permit
- Wastewater and Potable Water Supply Permit

## **4.0 Landscape Context**

Ecologically, the PAA is within the Northern Vermont Piedmont biophysical region of the state (Thompson, Sorenson and Zaino, 2019). The PAA is located at approximately 850 feet above mean sea level according to U.S. Geologic Survey (“USGS”) topographic data with the PAA generally draining to the north toward the Moose River. The mapped bedrock that is underlying the PAA is of the metasedimentary rock class with quartzite and phyllite rock types from the Gile Mountain Formation. (Ratcliffe et al. 2011). Soils within the PAA are characterized as silt and sandy loams (NRCS Soil Survey). The PAA consists of open field vegetation, mixed forests and numerous wetlands. The forests consist of White Pine-Northern Hardwood and Hemlock-Northern Hardwood Forests. The wetlands consist of Northern Hardwood Seepage Forests and Hemlock-Balsam Fir-Black Ash Seepage Swamps.

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

The Vermont Water Resources Panel designates ORWs. Four waterways have been listed as ORWs: Batten Kill River in towns of East Dorset and Arlington; Pike’s Falls/Ball Mountain in the town of Jamaica; Poultney River in the towns of Poultney and Fair Haven; and Great Falls, Ompompanoosuc in the town of Thetford.

There are no waters which intersect the PAA or are near the PAA that have been designated as an ORW. Therefore, the Project will have no undue, adverse impacts on ORWs.

## **6.0 Greenhouse Gas Impacts (30 V.S.A. § 248(b)(5))**

The Project is not anticipated to have any impact on greenhouse gas emissions. Beyond the limited, temporary emissions associated with construction-related gasoline- and diesel-powered vehicles and equipment, the Project is not anticipated to have any impact on greenhouse gas emissions. In addition, the new sulfur hexafluoride (SF6) circuit breaker to be installed at the substation is a sealed unit that is not anticipated to result in the emission of SF6 gas. As such, there will be no undue, adverse effect associated with greenhouse gas emissions associated with the proposed Project.

## **7.0 Water and Air Pollution (§ 6086) (a)(1))**

The Project will not contribute to water pollution. Sections 7 through 15 discuss specific water resources.

The proposed Project does not propose any facilities that will generate air pollution and will not be subject to an air pollution permit. During the Project’s construction phase, work will result in minor air emissions involving brief discharges of dust generated by general construction activities. Persistent dust resulting from construction activities associated with the Project will be managed as necessary in accordance with VELCO’s VEGM and the Vermont Standards & Specifications for Erosion Prevention & Sediment Control, such as watering access roads or applying calcium chloride. The Project will not contribute to air pollution or result in any undue air pollution as a result of construction or post-construction activities.



## **8.0 Headwaters (§ 6086) (a)(1)(A)**

Vermont Act 250 Criterion 1(A) (Headwaters) defines headwaters as land not devoted to intensive development and that are:

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

The PAA is characterized by deep soils, moderate slopes averaging less than 20% across the PAA, and is situated below 1500' adjacent to the Moose River with a watershed area greater than 20 square miles. Based on review of the ANR Atlas, there are no public water supplies or associated source protection areas (SPA) within or adjacent to the PAA. There are no ground water SPA within or adjacent to the PAA. The closest SPA is the St Johnsbury Water System surface water SPA approximately 1.5 miles to the southeast. Therefore, the PAA is not located within headwaters as defined above.

The Project will be constructed in accordance with the practices and standards outlined in VELCO's VEGM, VELCO's Transmission Vegetation Management Plan, a Project-specific EPSC Plan (as part of Construction Stormwater Discharge Permit coverage), and VELCO's site-specific SPCC Plan.

The proposed Project will not result in a reduction of the quality of ground or surface waters in the area. For these reasons, we conclude that the Project will have no undue, adverse impact on headwater areas.

## **9.0 Waste Disposal (§ 6086)(a)(1)(B))**

The Project will not require nor involve the injection of any waste materials or any harmful or toxic substances into groundwater or wells. The Project is expected to involve limited waste disposal and hazardous waste storage and disposal and will comply with all state and federal regulations regarding the handling and disposal of waste. Specifically, VELCO will dispose of solid waste, construction debris, or waste that cannot be reused or recycled in accordance with the applicable VT Department of Environmental Conservation (DEC) waste management rules, BMPs, and VELCO's substation decommissioning plan, where applicable. The site-specific SPCC Plan includes spill control and response measures in the event of a release of oil and/or hazardous material and specifies secondary containment systems that are available. Spill response plans are also outlined in the VEGM to ensure the contractor is properly trained in spill response, clean up and containment, environmental quality sampling, and disposal.

Metal equipment such as structure steel, chain link fence, disconnect switches, and the control building will be recycled as scrap metal. Decommissioned materials from the control building will be disposed of as standard construction and demolition debris. The protection and control systems generally consist of microprocessor, solid state, or electric mechanical relays, which constitute recyclable material and/or e-waste. Replaced or decommissioned relays will be disposed of according to their material makeup in compliance with applicable waste disposal

rules and regulations. Smaller oil-filled equipment, such as instrument voltage transformers and bushings, will be handled by a licensed commercial entity. The Project will involve limited hazardous material storage for equipment refueling during construction and will comply with all state and federal regulations regarding handling and disposal of hazardous materials. The sanitary facilities installed will interconnect with VELCO's existing substation wastewater system. A wastewater permit will be obtained, if necessary, for the interconnection. VELCO will dispose of sanitary waste during construction by obtaining and using portable toilet(s).

VELCO will retain the passive secondary containment system for the single transformer that is to remain onsite as part of the proposed Project activities.

The implementation and adherence to the above-mentioned criteria will ensure that proper waste disposal practices are performed during the construction and operation of the Project. As such, the Project will not have any undue adverse impacts relating to waste disposal.

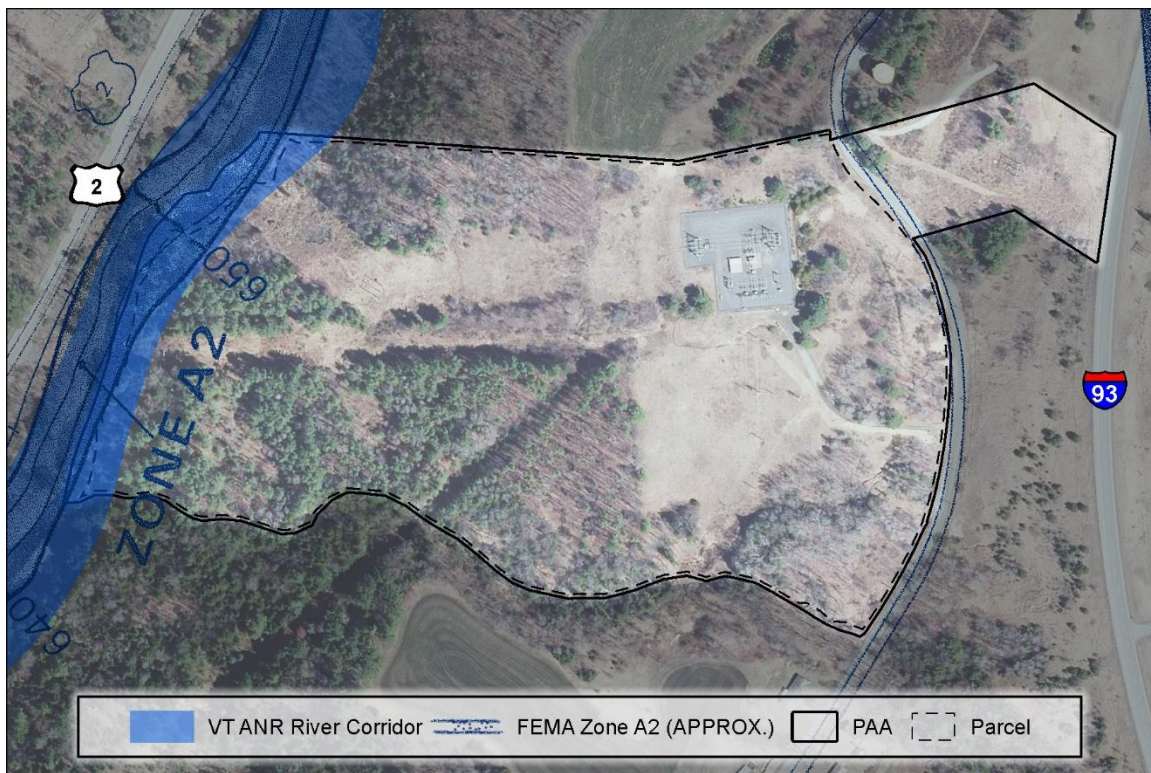
### **10.0 Water Conservation (§ 6086)(a)(1)(C))**

VELCO will install a new bathroom in the new proposed control building. The new facility will utilize low flow toilet and fixtures for water conservation. Water may be used onsite during the Project for several activities, which may include dust control, certain aspects of restoration, and watering aesthetic mitigation plantings. Water for this use is expected to be limited and temporary in nature. Water use associated with the overall Project is expected to be minimal, and thus, there will be no undue adverse effect to water conservation.

### **11.0 Floodways (§ 6086)(a)(1)(D))**

AE reviewed the Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Map Database (DFIRM) and the VT ANR's Flood Ready Atlas to identify floodways or floodway fringes in the PAA. AE also reviewed ANR's river corridor data layer on the VT ANR's Flood Ready Atlas.

A portion of the PAA is located within a 100-year Flood Zone Area (zone A2) as shown on the figure below. There are mapped river corridors associated with the Moose River in the PAA.



**Figure 3. FEMA Floodways and ANR River Corridors in the PAA**

The Project is not located within a 100-year Flood Zone Area and will not restrict or divert the flow of floodwaters or significantly increase the peak discharge of a river or stream within or downstream from the area of development. The nearest Project element is more than 600' away from and over 100' in elevation higher than the mapped floodplain. The mapped river corridor for the Moose River in the northwestern extent of the PAA is also approximately 610' distant from the nearest Project work activity. The Project's proposed site drainage improvements will not significantly alter existing drainage characteristics with respect to drainage area contributions and flows. The Project will not have any undue, adverse impacts on floodways or river corridors, nor will the Project endanger the health, safety, and welfare of the public or riparian owners as it relates to flood events or fluvial erosion.

## **12.0 Streams (§ 6086)(a)(1)(E))**

The stream assessment involved both a remote review of the USGS topographic map, Vermont Hydrography Dataset (streams, rivers, and waterbodies), high resolution LiDAR derived topography, and field investigation.

AE delineated and mapped streams in the PAA and characterized their physical and natural conditions. AE conducted surveys for stream resources using the following definition of a stream as per the VT ANR Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers (2005):

*A stream has a channel that periodically or continuously contain moving water, has a defined bed, and has banks that serve to confine water at low to moderate flows. Streams include intermittent streams that have a defined channel and evidence of sediment transport, even if such stream does*



*not have surface water flow throughout the year and/or throughout the channel. For the purpose of this guidance, constructed drainageways including water bars, swales, and roadside ditches, are not considered streams.*

AE identified and mapped several stream sections within an overall network that flows northerly to the Moose River. The intermittent headwater stream segments, S-SJ-1, S-SJ-2 and S-SJ-3 flow into S-SJ-4/S-SJ-5 at which point the stream flow regime is perennial to the Moose River. Three intermittent streams (S-SJ-8, S-SJ-9 and S-SJ-10) are located within the northern portion of the PAA. All the streams flow in a northerly direction to the Moose River. The data was compiled and transferred to the geo-referenced resource map drawing in Attachment 1. Summary stream data is provided in the following table.

**Table 1. Stream Resource Summary Data**

Stream ID	Flow Regime	Bed Material	Bank Height	Bank Full Depth	Ave. OHW	Rosgen Class
S-SJ-1	Intermittent	Course gravel	0.8'	0.8'	1.5'	A4
S-SJ--2	Intermittent	Silt	1.8'	0.8'	2.2'	A6
S-SJ-3	Intermittent	Fine gravel	0.6'	0.6'	1'	A4
S-SJ-4	Perennial	Cobble	0.8'	1.4'	11'	A3
S-SJ-5	Perennial	Cobble	1'	1.2'	9'	A3
S-SJ-8	Intermittent	Silt/Topsoil	0.8'	1.3'	3'	A6
S-SJ-9	Intermittent	Sand	0.6'	0.7'	1.5'	A5
S-SJ-10	Intermittent	Sand	0.4'	0.7'	1.5'	A5

Based on review of the ANR Atlas, no impaired waters are located within the PAA. The PAA is located within a watershed included on the 303(d) list of impaired watersheds. The pollutant of concern is E. Coli and associated with the St. Johnsbury WWTR Collection System. Portions of the Passumpsic and Lower Sleepers River in St. Johnsbury have been impacted. The Project is located in the Moose River subwatershed.

One stream (S-SJ-1) is located within the direct Project footprint. The Project access will utilize the existing gravel road to the existing substation. The road will be expanded and upgraded and existing 24" culvert replaced. The driveway will be expanded from a 12' width to 20' with improved shoulder. The drive expansion is necessary to bring in replacement equipment, such as transformers, for the substation. The existing culvert is perched at the outlet, rusting and showing signs of poor condition in several places. The replacement culvert will be sized appropriately for the stream and drainage area and will be designed and installed to enable aquatic organism passage in accordance with best management practices and as outlined in the VEGM. VELCO has consulted with the VT Department of Environmental Conservation ("VT DEC") River Management Engineer on the stream classification and received confirmation that stream S-SJ-1 is intermittent and that no Stream Alteration Permit will be required.

The Project will require a VT DEC Construction Stormwater Discharge Permit and VELCO will develop and adhere to a detailed EPSC plan for the Project to facilitate compliance and proper implementation of stormwater BMPs to avoid and minimize soil erosion in the stream during construction.

VELCO will avoid or mitigate adverse impacts to streams and riparian buffers through permit-specific mitigation plantings within and adjacent to the wetland impact areas (W-SJ-4) associated

with S-SJ-1, in addition to the implementation and maintenance of EPSC measures during construction of the Project. The proposed design, which given the existing site constraints, avoids and minimizes impacts to stream and riparian zone resources to the extent practicable. The Project will not have an undue, adverse impact upon stream resources.

### **13.0 Shorelines (§ 6086 (a)(1)(F))**

The shoreline assessment involved the review of USGS topographic maps, the Vermont Hydrography Dataset (streams, rivers, and waterbodies), digital orthophotography and field investigation. Shoreline boundaries include the land between the mean high water and low water mark of ponds, lakes, and applicable rivers (10 V.S.A. §6001(17)). Act 250 further defines shoreline as the land adjacent to the waters of lakes, ponds, reservoirs, and rivers. Act 250 criterion (1)(F) seeks to, insofar as possible and reasonable considering the purpose of the proposed Project,

- (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 Moose River forms the northern boundary of the PAA. The shoreline of the Moose River is however several hundred feet from the closest Project element. The Project area is not in a shoreline area so the Project will have no undue adverse impacts on shoreline resources.

### **14.0 Wetlands (§ 6086 (a)(1)(G))**

The wetland assessment involved both a remote review of available maps (including Vermont Significant Wetland Inventory Maps and the NRCS Soil Survey) and a field inventory component conducted on May 30, 2023. The protocols put forth in the USACE's *Corp of Engineers Wetlands Delineation Manual* (2009 Regional Supplement for the Northcentral and Northeast Region) were employed for delineating wetlands as is the standard practice in Vermont.

AE field review confirmed the presence of 5 wetlands within the PAA. There were no potential vernal pools identified within the PAA. Per the wetland survey protocol, AE flagged wetland boundaries in the field and subsequently located with a GPS unit capable of sub-meter accuracy. The data was compiled and transferred to the geo-referenced resource map drawing in Figure 1 of the Attachment. Documentation of wetland boundaries further consisted of completing wetland and upland data forms (USACE Wetland Determination Forms) for each wetland. Table 1 of the Attachment summarizes the wetland resources delineated in the PAA, provides the Cowardin classification, the functions and values for each wetland, and lists the wetland classification. Wetland field data forms and functions and values assessment forms are included in Attachment 4.

The Project involves impacts to wetland W-SJ-4 and its associated 50-foot wetland buffer. Impacts associated with W-SJ-4 are primarily related to the expansion of the existing facility for the new control building, drainage improvements for the site and improvements to the access

road. Temporary impacts are primarily associated with temporary trenching, construction workspace, material stockpiling, erosion control measures, and tree clearing access that will be restored with vegetated cover at or near pre-existing grades.

VELCO proposes to expand the existing substation perimeter fence in the direction of wetland W-SJ-4 for the new control building. W-SJ-4 is approximately 69' from the existing substation's southern fenceline. The preferred siting location for the new control building on the expanded south side of the substation would include necessary site drainage improvements which result in unavoidable, direct impacts to wetland W-SJ-4. Wetland W-SJ-4 and associated buffer will also be impacted by access drive widening (from 12' to 20') that is necessary for substation construction and maintenance equipment access to the site.

The Project team conducted a detailed evaluation of the site and identified several constraints, including but not limited to overhead transmission lines, fire code setbacks, adjacent existing infrastructure, necessary vehicle access, and mandatory clearances between energized equipment and substation fencing. As wetland W-SJ-4 closely abuts the existing substation and access drive, impacts in this wetland were largely unavoidable. VELCO designed the Project to avoid impacts to the wetland buffer of a presumed Class II wetland located to the east of the Project parcel.

VELCO met with the VT DEC and the US Army Corps of Engineers onsite September 21, 2023, to review the wetland delineation boundaries, proposed wetland classifications, and the Project's anticipated wetland and wetland buffer impacts. The USACE and VT DEC reviewed and approved the wetland delineations and classifications during the site visit. Onsite consultation with the VT DEC Wetlands Program confirmed that a permit could be issued for the Project, as the proposed impacts to the adjacent wetland and wetland buffer are unavoidable and VELCO has taken the necessary steps to minimize impacts as part of the design.

VELCO will seek the necessary authorizations from the VT DEC Wetlands Program and the USACE for its proposed impacts to jurisdictional wetlands (and buffers) and will adhere to its Construction Stormwater Discharge permit, Project-specific EPSC plan, and the VEGM to minimize the Project's potential impacts to wetlands during construction. Additionally, VELCO will implement onsite mitigation through a robust tree and shrub plantings plan that includes wetland compatible woody species within and adjacent to the wetland to be impacted by the Project.

For these reasons, the Project will not have an undue, adverse impact upon wetland resources.

## **15.0 Water Supply (§ 6086 (a)(2) and (3))**

Water usage is proposed onsite during the Project for several activities, including, but not limited to dust control, certain aspects of restoration, and watering plantings. Water for these uses will be limited and temporary in nature and are necessary to support the construction phase of the proposed Project. As such, VELCO expects water use associated with Project construction to be minimal. The St Johnsbury substation is served by a Town of St Johnsbury municipal water supply connection.

VELCO is currently in the evaluation and design phase of its water and wastewater system connections for the new control building and will obtain and comply with a Wastewater System and Potable Water Supply permit from the VT ANR for the Project's engineered design and associated connections. It is expected that the onsite water supply will meet the limited water supply demand associated with the operation of the Project without causing a burden on existing water supplies. As such, the Project will have no undue adverse impacts on water supplies.

## 16.0 Soil Erosion (§ 6086 (a)(4))

AE assessed whether the Project would cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.

### 16.1 Soils Types

Soil series data was obtained from VCGI and soil series descriptions from the Natural Resources Conservation Service (NRCS) Web Soil Survey for Caledonia County. These series were plotted within the PAA as shown in Figure 4. Soils found in the PAA are summarized in Table 2 below.

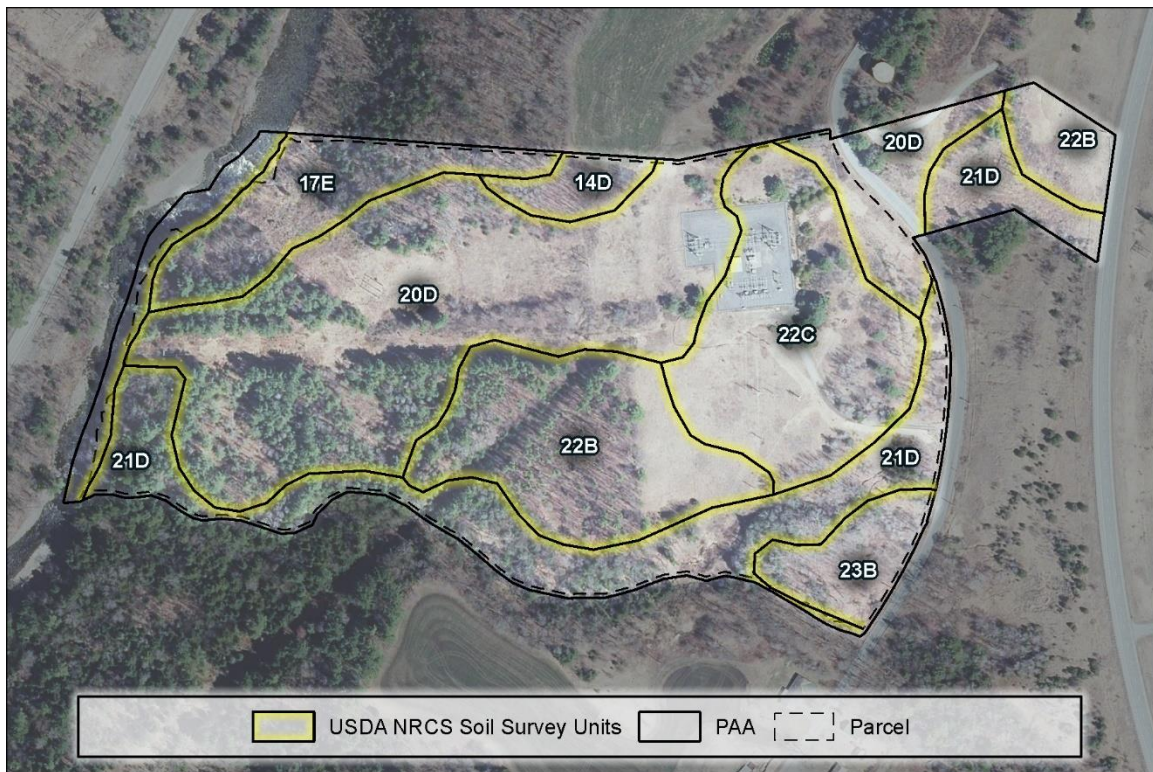


Figure 4. Soil Types in PAA

The following table provides summary information for the soil types within the PAA.

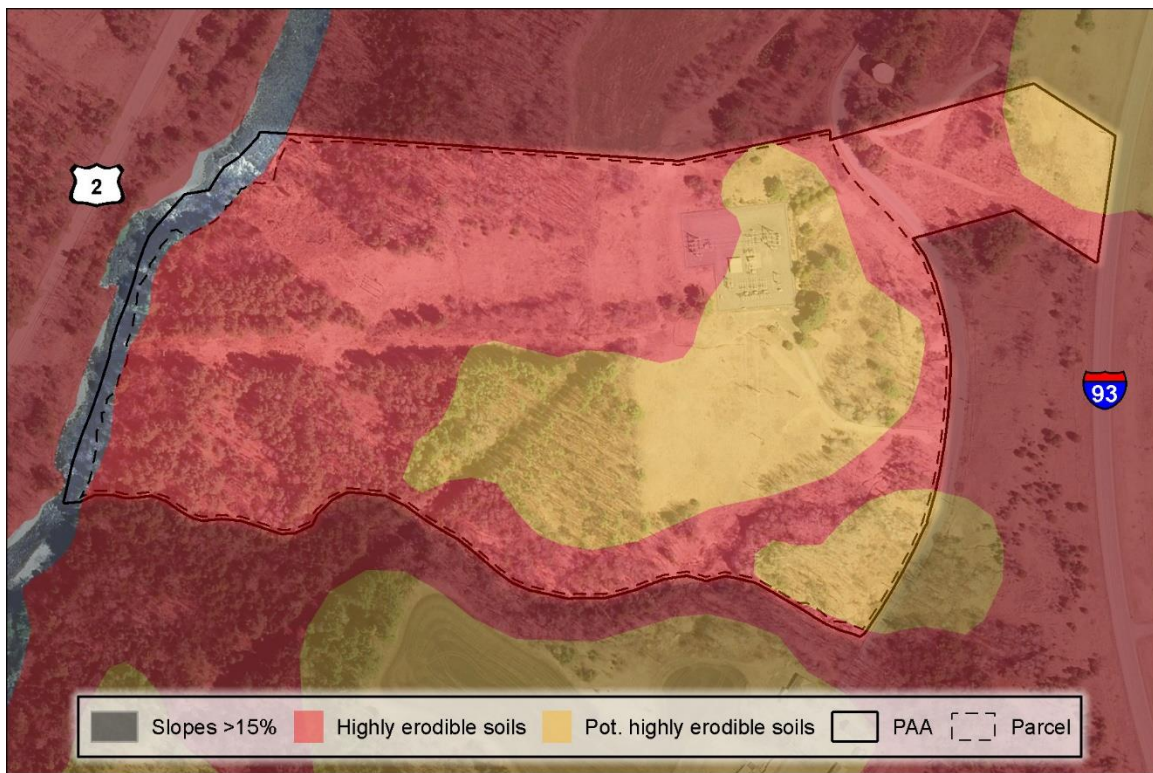
**Table 2. Soil Type Summary**

<b>Symbol</b>	<b>Soil Name</b>	<b>Highly Erodible Class</b>	<b>Acres in Study Area</b>
14D	Vershire-Lombard complex, 15 to 25 percent slopes, rocky	highly erodible	0.78
17E	Dummerston very fine sandy loam, 35 to 60 percent slopes, very stony	highly erodible	2.88
20D	Buckland fine sandy loam, 15 to 25 percent slopes	highly erodible	14.09
21D	Buckland fine sandy loam, 15 to 35 percent slopes, very stony	highly erodible	6.67
22B	Cabot silt loam, 3 to 8 percent slopes	potentially highly erodible	6.04
22C	Cabot silt loam, 8 to 15 percent slopes	potentially highly erodible	5.95
23B	Cabot silt loam, 0 to 8 percent slopes, very stony	potentially highly erodible	1.42

## 16.2 Soil Erosion

Soil types and slope gradients were evaluated within the PAA to assess the potential for proposed construction activity to reduce permeable area or cause an unreasonable risk for drainage or runoff problems that lead to soil erosion.





**Figure 5. Soil Erodibility within PAA**

The Project will require a VT DEC Construction Stormwater Discharge Permit, as the construction activities will involve more than one acre of earth disturbance. VELCO will develop and adhere to a detailed EPSC plan for the Project to facilitate compliance and proper implementation of stormwater BMPs to avoid and minimize soil erosion during construction.

VELCO will perform all earth-disturbing activities in accordance with the site-specific EPSC Plan, the Construction Stormwater Permit conditions, the Vermont Standards and Specifications for EPSC, and the VEGM. With the adherence to these conditions and BMPs, the proposed construction activities will not cause undue, adverse effects on soil erosion, or cause a reduction in the capacity of the land to hold water from the Project.

## **17.0 Rare and Irreplaceable Natural Areas (§ 6086(a)(8)), Necessary Wildlife Habitat and Endangered Species (§ 6086(a)(8)(A))**

### **17.1 Rare and Irreplaceable Natural Areas (RINA)**

The RINA assessment involved both a remote review of available digital maps for the PAA and a field review. AE reviewed digital orthophotography, the NRCS Soil Survey, the 2011 Bedrock Geologic Map of Vermont, and the Wildlife Natural Heritage Inventory (NHI) Rare, Threatened and Endangered Species digital database. No NHI-documented significant natural communities are located within 2000' of the PAA.

The PAA consists of open field vegetation, mixed forests and numerous wetlands. The forests consist of White Pine-Northern Hardwood and Hemlock-Northern Hardwood Forests which are

disturbed and contain early successional areas and areas dominated by non-native invasive species. The wetlands consist of Northern Hardwood Seepage Forests and Hemlock-Balsam Fir-Black Ash Seepage Swamps. These wetland communities are small, somewhat disturbed and contain NNIS species. None of the upland or wetland natural communities meet the criteria for state-significant natural communities or Rare and Irreplaceable Natural Areas.

## **17.2 Necessary Wildlife Habitat**

The wildlife habitat assessment involved both a remote review of available digital maps for the PAA and a field inventory component. A remote review of available digital databases was conducted to identify and map necessary wildlife habitat (including State of Vermont Deeryard data layer USGS Topographic map, “VT HYDRODEM” elevation data, State of Vermont Bear Habitat data layers) within the PAA and within the vicinity of the PAA. The field inventory component involved characterizing vegetation natural communities and recording observations of wildlife signs or sightings during field surveys. There are no State of Vermont Wildlife Management Areas within 2,000’ of the PAA.

### **17.2.1 White-tailed Deer Wintering Habitats**

There are no mapped VT Fish and Wildlife Department (VFWD) white-tailed deer (*Odocoileus virginianus*) winter areas (DWA) within approximately 2.5 miles of the PAA. Based on field review, the conifer forest in the northern PAA was likely deer wintering area due to the presence of multiple hemlock with historic barking (winter feeding sign) greater than five years old. Mr. Noel Dodge from the VFWD conducted a site visit on September 21, 2023 to review and approve the DWA boundary. The closest Project work to the DWA consists of the onsite soil disposal area and associated temporary substation and laydown area. The proposed Project is not expected to result in any direct or indirect impacts to the identified DWA at the site, as there is an adequate buffer distance both horizontally and vertically between the Project activities and DWA. The Project will have no adverse impact on deer wintering habitat.

### **17.2.2 Black Bear Habitat**

There is no bear habitat mapped by the VFWD within the PAA and no observations of bear feeding (including bear claw scarring) were made during the field inventories of the forests, open fields, and wetlands within the PAA. One bear scat was observed in wetland W-SJ-1 to the north west of the existing substation. The forests contained within the PAA consist of northern hardwood with combinations of white pine and hemlock. No concentrations of beech or oak stands were documented in these forests. The PAA does not contain necessary bear habitat. As such, the Project will have no adverse impact on necessary bear habitat.

### **17.2.3 Grassland Bird Habitat**

The VFWD considers grassland bird habitat to be easily identifiable, concentrated and essential for the reproductive success and survival of a suite of birds. Grasslands used by many species of grassland birds consist of large expanses (minimum of 20 acres with a core breeding/nesting area of 15 acres) of native grasses with little or no woody vegetation. Contiguous area of open field is approximately 3.5 acres within the PAA. While a single grassland bird nest was identified during the VFWD site visit on September 21, 2023, the open field does not provide necessary



wildlife habitat. As such, the Project will have no adverse impact on necessary grassland bird habitat.

### **17.3 RTE Species**

The RTE species review involved both a remote review of available digital maps for the PAA as well as a field survey. AE reviewed digital orthophotography, the NRCS Soil Survey, the 2011 Bedrock Geologic Map of Vermont and the Wildlife Natural Heritage Inventory (NHI) Rare, Threatened and Endangered Species digital database.

#### **17.3.1 RTE Animal Species**

According to the NHI, there are no RTE EOs of rare (ranked “S1” or “S2”), threatened, or endangered animal species within 2,000 feet of the PAA. The Northern Long Eared Bat (NLEB) is a federally listed endangered species in Vermont, potentially occurring statewide. The VFWD has issued guidance that project clearing constituting greater than 1% of the total forested area within a 1 square mile radius of a project triggers review for habitat loss of this species. The tree clearing area for the Project constitutes approximately 0.82 acres, significantly less than 1% of the total forested area within a 1 square mile radius of the Project. This Project involves a Federal nexus with the Section 404 US Army Corps of Engineers permit. VELCO will develop appropriate avoidance, minimization or mitigation measures during the wetland permitting process as necessary to avoid and/or mitigate significant adverse impacts to NLEB.

The Project is not in an area that potentially provides summer roosting habitat for Indiana bat, there are no old or abandoned buildings potentially providing roosting habitat for little brown bat proposed for demolition, and there are no known bat hibernacula or maternity roosts within 1 mile of the Project site. The Project will have no undue adverse impact on RTE animal species.

#### **17.3.2 RTE Plant Species**

An RTE plant survey was conducted throughout the entire PAA on June 16, 2023 by Michael Lew-Smith. A complete species list is included in Attachment 3.

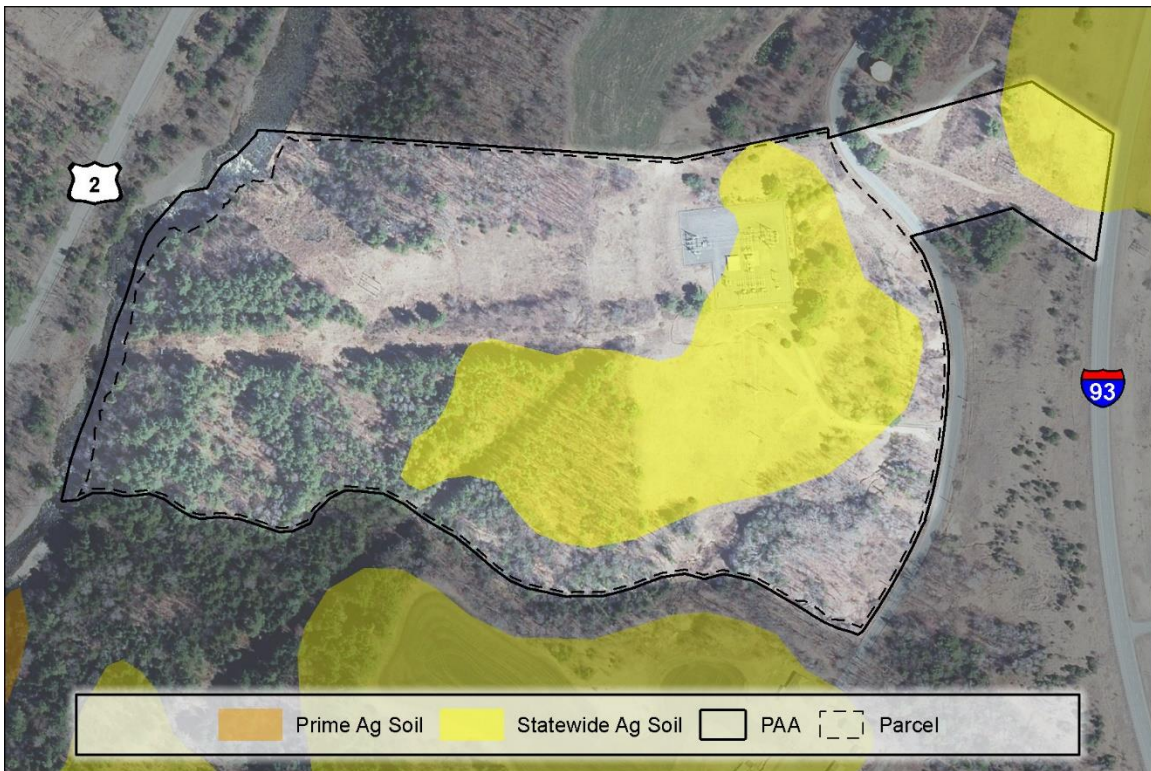
According to the NHI, there are no known occurrences of RTE or uncommon plant species in the PAA, and none were found in the Project Area. The Project will have no undue adverse impact on RTE plant species.

### **18.0 Primary Agricultural Soils (10 V.S.A. § 6086 (a)(9)(B))**

AE assessed whether the Project would result in a reduction in the agricultural potential of primary agricultural soils (PAS).

#### **18.1 Soil Types**

Soil series data was obtained from VCGI and soil series descriptions and PAS designation from the Natural Resources Conservation Service (NRCS) Web Soil Survey for Caledonia County. These series were plotted within the PAA as shown in Figure 6.



**Figure 6. Primary Agricultural Soils within PAA**

## 18.2 Primary Agricultural Soils in the Project Area

The southern portion of the PAA is comprised of PAS soils rated by the NRCS as Prime soils. There are no areas within the mapped PAS currently used for agriculture, and the surrounding slope and proximity to dense utility infrastructure largely precludes agricultural use of the land. The area of mapped PAS soils overlaps a portion of the existing substation, is also coincident with wetlands W-SJ-1, W-SJ-4, and W-SJ-5 and existing managed utility corridors, and areas with slope greater than 15%. Of the NRCS-mapped PAS, only approximately 2 acres are viable PAS within the vicinity of the Project Area (generally coincident with the proposed temporary configuration and construction support area).

The Project has been designed to minimize impacts to the extent possible, but because of terrain-driven constraints, there will be both temporary and permanent impacts to PAS as a result of the Project. Of the approximately 2 acres of intact PAS acreage coincident with the Project Area, Project construction will result in approximately 1.10 acres of temporary impacts and approximately 0.50 acres of permanent impacts. The approximately 0.50 acres of permanent PAS impacts associated with the Project are related to grading side slopes, the temporary substation configuration ground grid, and an overhead GMP line re-route that will be left in place permanently. Once the temporary substation configuration aboveground equipment is removed, the below grade ground grid will be left in place and connected to the rebuilt substation for improved grounding (resistivity) capabilities.

Temporary impacts include the aboveground temporary substation configuration and construction support (staging) area, an access driveway to the temporary configuration area, and Project activities temporary in nature, such as minor trenching that will be appropriately

backfilled and stabilized within a short timeframe. Before any Project-related ground disturbance takes place, the topsoil of these areas will be stripped, windrowed, and stabilized for the duration of the Project. During construction, fill from the substation expansion area will be placed in the staging area. Post-construction, the windrowed top soil will be redeployed over these temporary areas which will then be stabilized with seed and mulch. VELCO will ensure revegetation of the areas and follow BMPs listed in the VEGM.

In addition to the temporary and permanent impacts to intact PAS at the site described above, the Project will also result in minor impacts to non-intact PAS. Areas of non-intact PAS at the site do not provide viable farmland due to proximity to existing site improvements and/or their position within and adjacent to steep slopes, wetlands, and existing site improvements. These areas include the substation driveway, substation, and substation site drainage/grading. The Project includes approximately 0.23 acres of non-temporary impacts to non-intact PAS and approximately 0.04 acres of temporary impacts to non-intact PAS.

The Agency of Agriculture Food and Markets (“AAFM”) generally requires mitigation for permanent impacts to PAS when mitigation totals exceed two acres. VELCO will coordinate with AAFM to implement any necessary mitigation. For these reasons, the Project will have no undue adverse impact to soils with agricultural potential or importance.

## **19.0 References**

Argentine, Cindy Corlett. Vermont Act 250 Handbook. Putney Press. 2008.

Natural Resources Board. Vermont Wetland Rules. Effective February 10, 2023.

Natural Resources Conservation Service. Soil Survey Maps.

Ratcliffe, N.M., Stanley, R.S., Gale, M.H., Thompson, P.J., and Walsh, G.J., 2011, Bedrock geologic map of the Vermont: U. S. Geological Survey Scientific Investigations Map 3184, scale 1:100,000.

Thompson, Elizabeth H. and Eric R. Sorenson, and Robert J. Zaino. Wetland, Woodland, and Wildland: A Guide to the Natural Communities of Vermont. The Nature Conservancy of Vermont, 2019.

Vermont Agency of Natural Resources Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers. December 9, 2005.

Vermont Agency of Natural Resources Guidelines for the Conservation and Protection of State-Significant Natural Communities, October 21,2004.

Vermont Center for Geographic Information (VCGI). EcologicHabitat\_DEERWN GIS data layer. Provided by Vt. Dept. of Fish and Wildlife, release date April 1, 2011.

Vermont Fish and Wildlife Department Regulatory Review Guidance for Protecting Northern Long-eared Bats and Their Habitats. February 2017.

Vermont Fish and Wildlife Department. Guidance for Conducting Rare, Threatened, and Endangered Plant Inventories in Connection with Section 248 Projects, 2016.

## **Attachments**

Attachment 1: Streams/Wetlands Resources

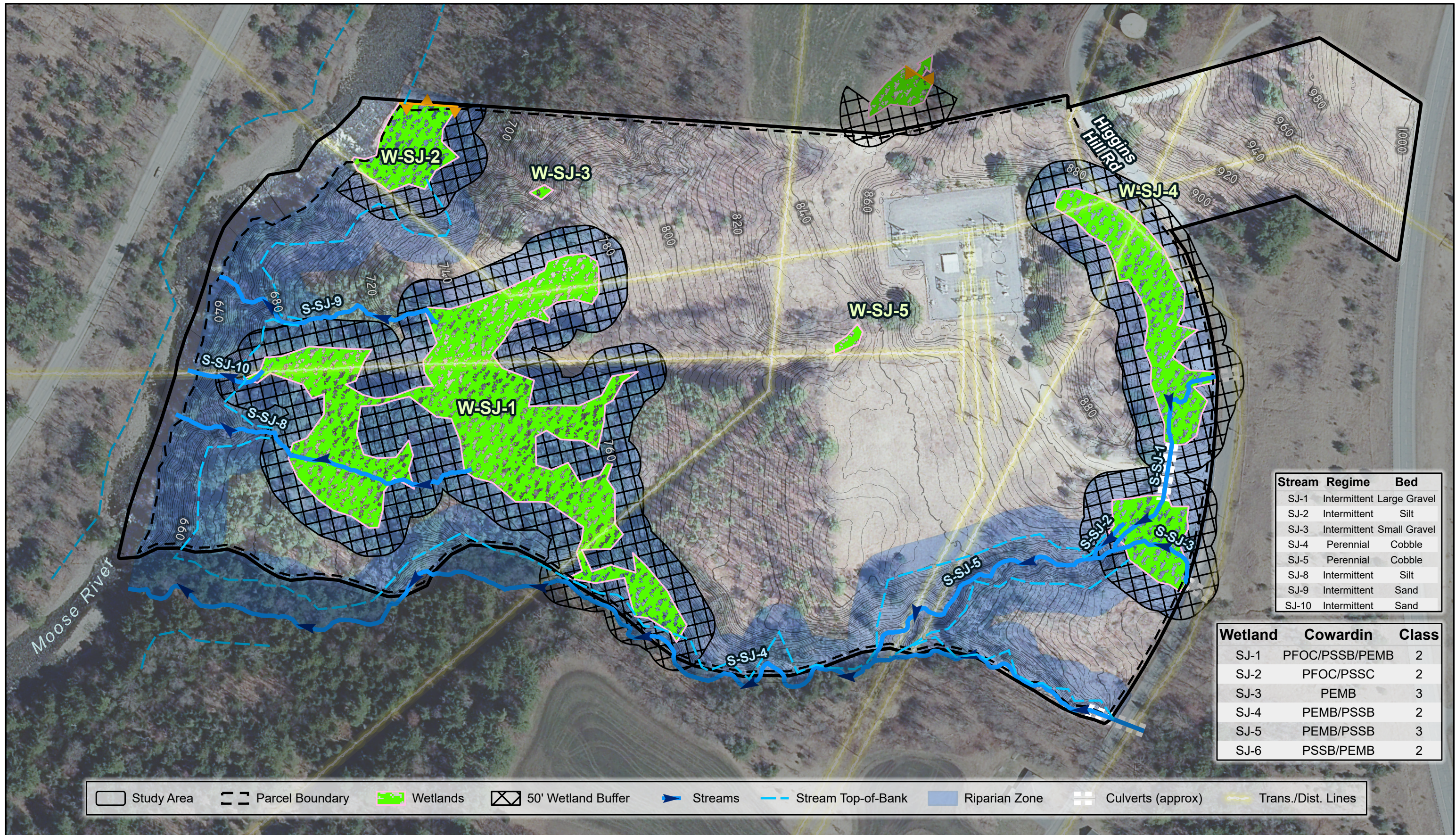
Attachment 2: Rare, Threatened and Endangered Species/Natural Communities/Necessary  
Wildlife Habitat Areas

Attachment 3. Rare Plant Inventory Species List

Attachment 4. Wetland Field Data Forms and Functions and Values Assessment Forms

Table 1. Wetland Summary Table



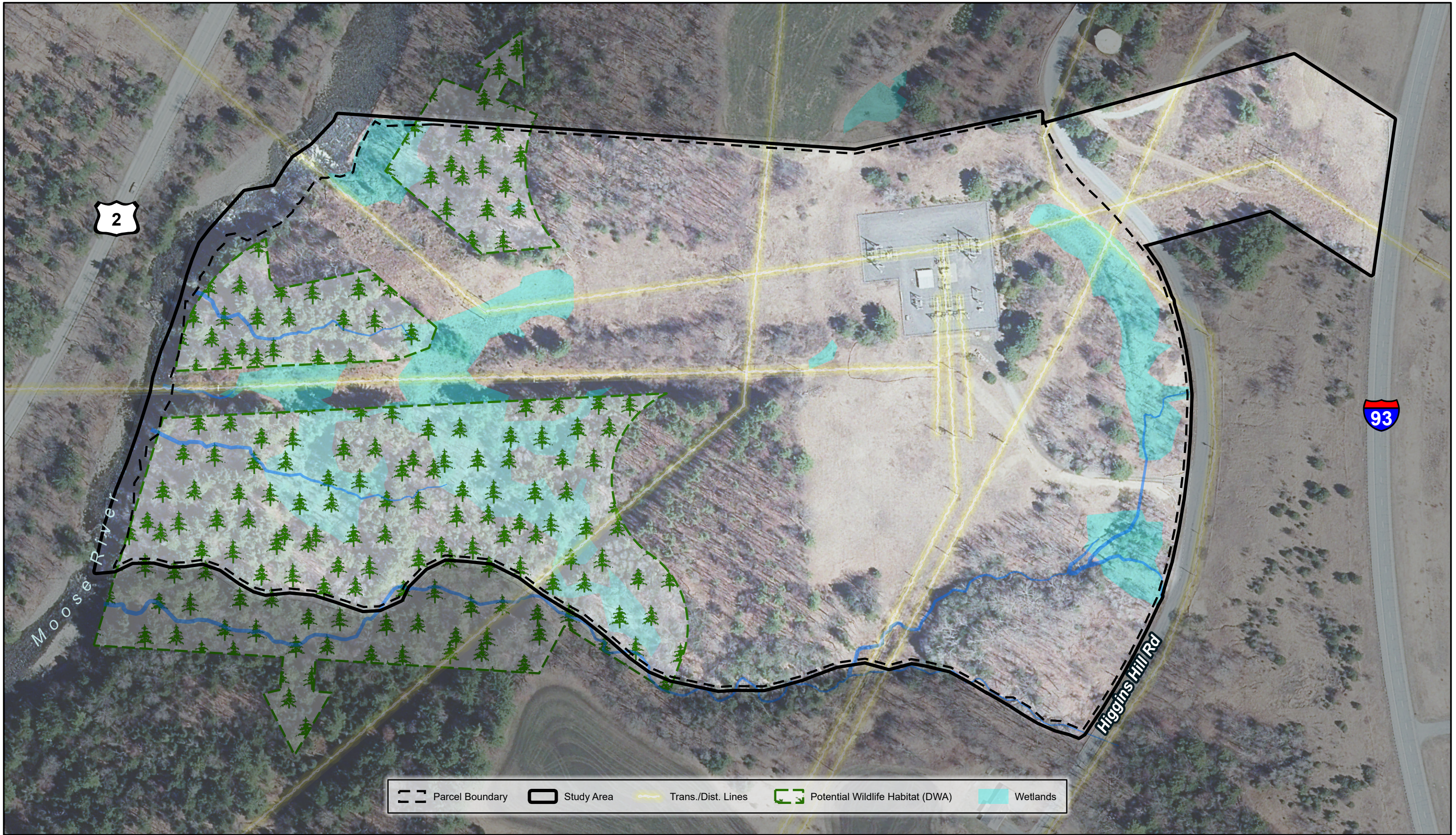


Stream	Regime	Bed
SJ-1	Intermittent	Large Gravel
SJ-2	Intermittent	Silt
SJ-3	Intermittent	Small Gravel
SJ-4	Perennial	Cobble
SJ-5	Perennial	Cobble
SJ-8	Intermittent	Silt
SJ-9	Intermittent	Sand
SJ-10	Intermittent	Sand

Wetland	Cowardin	Class
SJ-1	PFOC/PSSB/PEMB	2
SJ-2	PFOC/PSSC	2
SJ-3	PEMB	3
SJ-4	PEMB/PSSB	2
SJ-5	PEMB/PSSB	3
SJ-6	PSSB/PEMB	2

Study Area  
 Parcel Boundary  
 Wetlands  
 50' Wetland Buffer  
 Streams  
 Stream Top-of-Bank  
 Riparian Zone  
 Culverts (approx)  
 Trans./Dist. Lines





**VELCO: SCAP St Johnsbury Rare Species, Natural Communities, Wildlife Habitat**

Wednesday, October 18, 2023



**ARROWWOOD ENVIRONMENTAL**  
 930 BERT WHITE ROAD  
 HUNTINGTON, VT 05462  
 (802) 434-7276 FAX: (802) 329-2259



**Rare, Threatened and Endangered Plant Inventory**

Report Date: 8/29/2023

Project Name St Johnsbury Higgins Hill Rd SCAP

Botanist Michael Lew-Smith

Survey Date 6/16/2023, 6/29/2023

Description Open fields and mixed woods

## Plant List

*\*note: plants with no listed S-Ranks are considered common in Vermont.*

Plant Name	Common Name	S-Rank*	T/E	Plant Family
<i>Sagittaria latifolia</i>	common arrowhead			Alismataceae
<i>Maianthemum canadense</i>	Canada mayflower			Amaryllidaceae
<i>Maianthemum racemosum</i>	false Solomon's-seal			Amaryllidaceae
<i>Rhus typhina</i>	staghorn sumac			Anacardiaceae
<i>Toxicodendron rydbergii</i>	creeping poison-ivy			Anacardiaceae
<i>Daucus carota</i>	Queen Anne's lace			Apiaceae
<i>Hydrocotyle americana</i>	marsh pennywort			Apiaceae
<i>Zizia aurea</i>	golden Alexanders			Apiaceae
<i>Apocynum cannabinum</i>	Indian hemp			Apocynaceae
<i>Asclepias syriaca</i>	common milkweed			Apocynaceae
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit			Araceae
<i>Achillea millefolium</i>	yarrow			Asteraceae
<i>Anaphalis margaritacea</i>	pearly everlasting			Asteraceae
<i>Cichorium intybus</i>	chicory			Asteraceae
<i>Cirsium arvense</i>	Canada thistle			Asteraceae
<i>Erigeron philadelphicus</i>	Philadelphia fleabane			Asteraceae
<i>Euthamia graminifolia</i>	grass-leaved goldenrod			Asteraceae
<i>Leucanthemum vulgare</i>	common daisy			Asteraceae
<i>Nabalus altissimus</i>	tall white lettuce			Asteraceae
<i>Packera sp.</i>	ragwort			Asteraceae
<i>Pilosella aurantiaca</i>	orange hawkweed			Asteraceae
<i>Pilosella piloselloides</i>	glaucous king-devil			Asteraceae
<i>Rudbeckia hirta</i>	black-eyed Susan			Asteraceae
<i>Solidago caesia</i>	blue-stemmed goldenrod			Asteraceae
<i>Solidago flexicaulis</i>	zig-zag goldenrod			Asteraceae
<i>Solidago gigantea</i>	large goldenrod			Asteraceae
<i>Solidago juncea</i>	early goldenrod			Asteraceae
<i>Solidago rugosa</i>	rough-leaved goldenrod			Asteraceae
<i>Sonchus arvensis</i>	sow thistle			Asteraceae
<i>Symphotrichum cordifolium</i>	heart-leaved aster			Asteraceae

## Rare, Threatened and Endangered Plant Inventory

Report Date: 8/29/2023

Plant Name	Common Name	S-Rank*	T/E	Plant Family
<i>Symphyotrichum lateriflorum</i>	calico aster			Asteraceae
<i>Symphyotrichum cf novae-angliae</i>	New England aster			Asteraceae
<i>Symphyotrichum puniceum</i>	red-stemmed aster			Asteraceae
<i>Taraxacum officinale</i>	common dandelion			Asteraceae
<i>Tragopogon dubius</i>	fistulous goat's-beard			Asteraceae
<i>Athyrium filix-femina</i>	lady fern			Athyriaceae
<i>Caulophyllum thalictroides</i>	blue cohosh			Berberidaceae
<i>Alnus incana</i>	gray alder			Betulaceae
<i>Betula alleghaniensis</i>	yellow birch			Betulaceae
<i>Betula papyrifera</i>	paper birch			Betulaceae
<i>Corylus cornuta</i>	beaked hazelnut			Betulaceae
<i>Ostrya virginiana</i>	hop-hornbeam			Betulaceae
<i>Myosotis scorpioides</i>	common forget-me-not			Boraginaceae
<i>Cardamine diphylla</i>	common toothwort			Brassicaceae
<i>Diervilla lonicera</i>	dwarf bush-honeysuckle			Caprifoliaceae
<i>Lonicera tatarica</i>	Tartarian honeysuckle			Caprifoliaceae
<i>Valeriana officinalis</i>	garden heliotrope			Caprifoliaceae
<i>Cerastium fontanum</i>	common mouse-ear chickweed			Caryophyllaceae
<i>Silene sp.</i>	campion			Caryophyllaceae
<i>Stellaria longifolia</i>	long-leaved stitchwort			Caryophyllaceae
<i>Parnassia glauca</i>	grass-of-parnassus			Celastraceae
<i>Uvularia sessilifolia</i>	wild-oats			Colchicaceae
<i>Calystegia sepium</i>	hedge bindweed			Convolvulaceae
<i>Cornus racemosa</i>	gray dogwood			Cornaceae
<i>Cornus rugosa</i>	round-leaved dogwood			Cornaceae
<i>Cornus sericea</i>	red-osier dogwood			Cornaceae
<i>Juniperus virginiana</i>	eastern red cedar			Cupressaceae
<i>Thuja occidentalis</i>	northern white cedar			Cupressaceae
<i>Carex arctata</i>	drooping wood sedge			Cyperaceae
<i>Carex aurea</i>	golden-fruited sedge			Cyperaceae
<i>Carex baileyi</i>	Bailey's sedge			Cyperaceae
<i>Carex brunnescens</i>	brownish sedge			Cyperaceae
<i>Carex castanea</i>	chestnut sedge			Cyperaceae
<i>Carex crinita</i>	fringed sedge			Cyperaceae
<i>Carex debilis</i>	weak sedge			Cyperaceae
<i>Carex deweyana</i>	Dewey's sedge			Cyperaceae
<i>Carex flava</i>	yellow sedge			Cyperaceae

## Rare, Threatened and Endangered Plant Inventory

Report Date: 8/29/2023

Plant Name	Common Name	S-Rank*	T/E	Plant Family
<i>Carex intumescens</i>	swollen sedge			Cyperaceae
<i>Carex leptalea</i>	bristle-stalked sedge			Cyperaceae
<i>Carex lurida</i>	sallow sedge			Cyperaceae
<i>Carex novae-angliae</i>	New England sedge			Cyperaceae
<i>Carex pallescens</i>	pale sedge			Cyperaceae
<i>Carex pensylvanica</i>	Pennsylvania sedge			Cyperaceae
<i>Carex platyphylla</i>	broad-leaved sedge			Cyperaceae
<i>Carex rosea</i>	rosy sedge			Cyperaceae
<i>Carex scabrata</i>	rough sedge			Cyperaceae
<i>Carex scoparia</i>	broom sedge			Cyperaceae
<i>Carex sparganioides</i>	bur-reed sedge			Cyperaceae
<i>Carex stipata</i>	stipitate sedge			Cyperaceae
<i>Eleocharis obtusa</i>	blunt spike-rush			Cyperaceae
<i>Eriophorum viridicarinum</i>	green-keeled cotton-grass			Cyperaceae
<i>Scirpus atrovirens</i>	dark bulrush			Cyperaceae
<i>Scirpus microcarpus</i>	barberpole bulrush			Cyperaceae
<i>Gymnocarpium dryopteris</i>	oak fern			Cystopteridaceae
<i>Pteridium aquilinum</i>	bracken			Dennstaedtiaceae
<i>Dryopteris intermedia</i>	intermediate woodfern			Dryopteridaceae
<i>Dryopteris marginalis</i>	marginal woodfern			Dryopteridaceae
<i>Polystichum acrostichoides</i>	Christmas fern			Dryopteridaceae
<i>Equisetum arvense</i>	field horsetail			Equisetaceae
<i>Equisetum hyemale</i>	scouring-rush			Equisetaceae
<i>Equisetum scirpoides</i>	dwarf scouring-rush			Equisetaceae
<i>Equisetum sylvaticum</i>	woodland horsetail			Equisetaceae
<i>Equisetum variegatum</i>	variegated scouring-rush			Equisetaceae
<i>Vaccinium myrtilloides</i>	velvet-leaved blueberry			Ericaceae
<i>Lathyrus pratensis</i>	meadow pea			Fabaceae
<i>Medicago lupulina</i>	black medick			Fabaceae
<i>Medicago sativa</i>	alfalfa			Fabaceae
<i>Securigera varia</i>	crown vetch			Fabaceae
<i>Trifolium pratense</i>	red clover			Fabaceae
<i>Trifolium repens</i>	white clover			Fabaceae
<i>Vicia cracca</i>	cow vetch			Fabaceae
<i>Fagus grandifolia</i>	American beech			Fagaceae
<i>Quercus rubra</i>	red oak			Fagaceae
<i>Ribes glandulosum</i>	skunk currant			Grossulariaceae

**Rare, Threatened and Endangered Plant Inventory**

Report Date: 8/29/2023

Plant Name	Common Name	S-Rank*	T/E	Plant Family
<i>Iris versicolor</i>	blue flag			Iridaceae
<i>Juncus effusus</i>	soft rush			Juncaceae
<i>Juncus tenuis</i>	path rush			Juncaceae
<i>Luzula multiflora</i>	common wood rush			Juncaceae
<i>Ajuga reptans</i>	carpet bugle			Lamiaceae
<i>Galeopsis tetrahit</i>	dead hemp-nettle			Lamiaceae
<i>Mentha arvensis</i>	field mint			Lamiaceae
<i>Prunella vulgaris</i>	self-heal			Lamiaceae
<i>Dendrolycopodium obscurum</i>	flat-branched tree clubmoss			Lycopodiaceae
<i>Tilia americana</i>	basswood			Malvaceae
<i>Trillium erectum</i>	red trillium			Melanthiaceae
<i>Fraxinus americana</i>	white ash			Oleaceae
<i>Circaea canadensis</i>	tall enchanter's nightshade			Onagraceae
<i>Oenothera perennis</i>	sundrops			Onagraceae
<i>Onoclea sensibilis</i>	sensitive fern			Onocleaceae
<i>Epipactis helleborine</i>	helleborine			Orchidaceae
<i>Osmunda claytoniana</i>	interrupted fern			Osmundaceae
<i>Osmunda regalis</i>	royal fern			Osmundaceae
<i>Osmundastrum cinnamomeum</i>	cinnamon fern			Osmundaceae
<i>Oxalis stricta</i>	tall yellow wood-sorrel			Oxalidaceae
<i>Abies balsamea</i>	balsam fir			Pinaceae
<i>Larix laricina</i>	tamarack			Pinaceae
<i>Picea rubens</i>	red spruce			Pinaceae
<i>Pinus strobus</i>	white pine			Pinaceae
<i>Tsuga canadensis</i>	eastern hemlock			Pinaceae
<i>Chelone glabra</i>	turtlehead			Plantaginaceae
<i>Plantago lanceolata</i>	buckhorn plantain			Plantaginaceae
<i>Veronica chamaedrys</i>	germander speedwell			Plantaginaceae
<i>Agrostis stolonifera</i>	creeping bent			Poaceae
<i>Anthoxanthum nitens</i>	sweet grass			Poaceae
<i>Anthoxanthum odoratum</i>	sweet vernal grass			Poaceae
<i>Brachyelytrum aristosum</i>	bearded shorthusk			Poaceae
<i>Bromus inermis</i>	Hungarian brome			Poaceae
<i>Dactylis glomerata</i>	orchard grass			Poaceae
<i>Dichanthelium acuminatum</i>	woolly panic grass			Poaceae
<i>Elymus repens</i>	witch grass			Poaceae
<i>Festuca ovina</i>	sheep fescue			Poaceae

## Rare, Threatened and Endangered Plant Inventory

Report Date: 8/29/2023

Plant Name	Common Name	S-Rank*	T/E	Plant Family
<i>Festuca trachyphylla</i>	hard fescue			Poaceae
<i>Glyceria striata</i>	fowl manna grass			Poaceae
<i>Patis racemosa</i>	black-seeded rice-grass			Poaceae
<i>Phalaris arundinacea</i>	reed canary grass			Poaceae
<i>Phleum pratense</i>	Herd's grass			Poaceae
<i>Poa annua</i>	annual bluegrass			Poaceae
<i>Poa palustris</i>	fowl meadow grass			Poaceae
<i>Poa pratensis</i>	Kentucky bluegrass			Poaceae
<i>Schedonorus arundinaceus</i>	tall fescue			Poaceae
<i>Fallopia cilinodis</i>	fringed bindweed			Polygonaceae
<i>Rumex acetosella</i>	sheep sorrel			Polygonaceae
<i>Rumex crispus</i>	curly dock			Polygonaceae
<i>Lysimachia borealis</i>	starflower			Primulaceae
<i>Lysimachia nummularia</i>	moneywort			Primulaceae
<i>Lysimachia vulgaris</i>	garden loosestrife			Primulaceae
<i>Adiantum pedatum</i>	northern maidenhair			Pteridaceae
<i>Actaea pachypoda</i>	doll's-eyes baneberry			Ranunculaceae
<i>Anemone quinquefolia</i>	wood anemone			Ranunculaceae
<i>Caltha palustris</i>	marsh-marigold			Ranunculaceae
<i>Clematis virginiana</i>	virgin's-bower			Ranunculaceae
<i>Ranunculus abortivus</i>	kidney-leaved crowfoot			Ranunculaceae
<i>Ranunculus acris</i>	common buttercup			Ranunculaceae
<i>Thalictrum pubescens</i>	tall meadow-rue			Ranunculaceae
<i>Frangula alnus</i>	glossy buckthorn			Rhamnaceae
<i>Rhamnus alnifolia</i>	alder-leaved buckthorn			Rhamnaceae
<i>Rhamnus cathartica</i>	buckthorn			Rhamnaceae
<i>Amelanchier sp.</i>	shadbush			Rosaceae
<i>Crataegus sp.</i>	hawthorn			Rosaceae
<i>Fragaria vesca</i>	wood strawberry			Rosaceae
<i>Geum rivale</i>	purple avens			Rosaceae
<i>Malus pumila</i>	wild apple			Rosaceae
<i>Potentilla recta</i>	sulphur cinquefoil			Rosaceae
<i>Prunus serotina</i>	black cherry			Rosaceae
<i>Prunus virginiana</i>	choke cherry			Rosaceae
<i>Rubus idaeus</i>	red raspberry			Rosaceae
<i>Rubus pubescens</i>	dwarf raspberry			Rosaceae
<i>Sorbus americana</i>	American mountain ash			Rosaceae

## Rare, Threatened and Endangered Plant Inventory

Report Date: 8/29/2023

Plant Name	Common Name	S-Rank*	T/E	Plant Family
<i>Spiraea alba</i>	meadowsweet			Rosaceae
<i>Spiraea tomentosa</i>	steeplebush			Rosaceae
<i>Galium asprellum</i>	rough bedstraw			Rubiaceae
<i>Galium mollugo</i>	common bedstraw			Rubiaceae
<i>Galium tinctorium</i>	southern three-lobed bedstraw			Rubiaceae
<i>Galium triflorum</i>	sweet-scented bedstraw			Rubiaceae
<i>Houstonia caerulea</i>	bluets			Rubiaceae
<i>Populus balsamifera</i>	balsam poplar			Salicaceae
<i>Populus grandidentata</i>	large-toothed aspen			Salicaceae
<i>Populus tremuloides</i>	quaking aspen			Salicaceae
<i>Salix eriocephala</i>	wand willow			Salicaceae
<i>Salix humilis</i>	small willow			Salicaceae
<i>Salix sericea</i>	silky willow			Salicaceae
<i>Acer pensylvanicum</i>	striped maple			Sapindaceae
<i>Acer rubrum</i>	red maple			Sapindaceae
<i>Acer saccharum</i>	sugar maple			Sapindaceae
<i>Verbascum thapsus</i>	common mullein			Scrophulariaceae
<i>Solanum dulcamara</i>	bittersweet nightshade			Solanaceae
<i>Parathelypteris noveboracensis</i>	New York fern			Thelypteridaceae
<i>Phegopteris connectilis</i>	long beech fern			Thelypteridaceae
<i>Thelypteris palustris</i>	marsh fern			Thelypteridaceae
<i>Typha latifolia</i>	broad-leaved cat-tail			Typhaceae
<i>Ulmus rubra</i>	slippery elm			Ulmaceae
<i>Sambucus nigra</i>	elder			Viburnaceae
<i>Viburnum acerifolium</i>	maple-leaved viburnum			Viburnaceae
<i>Viburnum lantanoides</i>	hobble-bush			Viburnaceae
<i>Viola sororia</i>	woolly blue violet			Violaceae
<i>Viola sp.</i>	violet			Violaceae
<i>Parthenocissus quinquefolia</i>	woodbine			Vitaceae
<i>Vitis riparia</i>	riverbank grape			Vitaceae

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St Johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Wetland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope (%): 12  
 Subregion (LRR or MLRA): LRR R Lat: 44.4194647 Long: 71.9854215 Datum: TP#5  
 Soil Map Unit Name: Buckland fine sandy loam NWI classification: 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes x No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>x</u> No _____ If yes, optional Wetland Site ID: <u>Wetland SJ-W1</u>
Remarks: (Explain alternative procedures here or in a separate report.) PFOC/PEMB/PSSB: old field/emergent/scrub shrub/forested	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) <u>x</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) <u>x</u> Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes <u>x</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>x</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:







## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Upland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 12  
 Subregion (LRR or MLRA): LRR R Lat: 44.419261 Long: 71.9853045 Datum: TP6  
 Soil Map Unit Name: Buckland fine sandy loam NWI classification: Class 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>SJ-W1</u>
Remarks: (Explain alternative procedures here or in a separate report.) Old field under powerline	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

Tree Stratum (Plot size: <u>30' x 30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
			=Total Cover
<b>Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u>)</b>			
1. _____	_____	_____	_____
2. <u>Frangula alnus</u>	5	Yes	FAC
3. <u>Rubus occidentalis</u>	2	Yes	UPL
4. <u>Rubus idaeus</u>	2	Yes	FAC
5. <u>Lonicera morrowii</u>	1	No	NI
6. _____	_____	_____	_____
7. _____	_____	_____	_____
			10 =Total Cover
<b>Herb Stratum (Plot size: <u>5' x 5'</u>)</b>			
1. _____	_____	_____	_____
2. <u>Bromus inermis</u>	30	Yes	UPL
3. <u>Solidago rugosa</u>	25	Yes	FAC
4. <u>Galium mollugo</u>	20	No	UPL
5. <u>Vicia sativa</u>	2	No	FACU
6. <u>Anthoxanthum odoratum</u>	10	No	FACU
7. <u>Symphyotrichum lanceolatum</u>	25	Yes	UPL
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
			112 =Total Cover
<b>Woody Vine Stratum (Plot size: <u>30' x 30'</u>)</b>			
1. _____	_____	_____	_____
2. <u>None present</u>	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
			=Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>32</u>	x 3 = <u>96</u>
FACU species <u>12</u>	x 4 = <u>48</u>
UPL species <u>77</u>	x 5 = <u>385</u>
Column Totals: <u>121</u> (A)	<u>529</u> (B)
Prevalence Index = B/A = <u>4.37</u>	

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes      No      x

Remarks: (Include photo numbers here or on a separate sheet.)





## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St Johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Wetland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope (%): 6  
 Subregion (LRR or MLRA): LRR R Lat: 44.4203883 Long: 71.9851403 Datum: TP#1  
 Soil Map Unit Name: Dummerston very fine sandy loam NWI classification: 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes x No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>x</u> No _____ If yes, optional Wetland Site ID: <u>Wetland SJ-W2</u>
Remarks: (Explain alternative procedures here or in a separate report.) PFOC/PSSC	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>x</u> Water-Stained Leaves (B9) <u>x</u> High Water Table (A2)                          _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3)                                      _____ Marl Deposits (B15) _____ Water Marks (B1)                          _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) <u>x</u> Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3)                              _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4)                          _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5)                              _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7)      _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes <u>x</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>x</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

Tree Stratum (Plot size: <u>30' x 30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. <u>Acer pennsylvanica</u>	<u>10</u>	<u>Yes</u>	
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
	<u>10</u>	=Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u> )			
1. _____			
2. _____			
3. <u>Alnus incana</u>	<u>40</u>	<u>Yes</u>	<u>FacW</u>
4. _____			
5. _____			
6. _____			
7. _____			
	<u>40</u>	=Total Cover	
Herb Stratum (Plot size: <u>5' x 5'</u> )			
1. _____			
2. <u>Carex scabrata</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>
3. <u>Onoclea sensibilis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
4. <u>Equisetum sylvaticum</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>
5. <u>Caltha palustris</u>	<u>15</u>	<u>No</u>	<u>OBL</u>
6. <u>Veratrum viride</u>	<u>1</u>	<u>No</u>	<u>FACW</u>
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
	<u>86</u>	=Total Cover	
Woody Vine Stratum (Plot size: <u>30' x 30'</u> )			
1. _____			
2. _____			
3. <u>None present</u>			
4. _____			
		=Total Cover	

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>40</u>	x 1 = <u>40</u>
FACW species <u>86</u>	x 2 = <u>172</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>126</u> (A)	<u>212</u> (B)
Prevalence Index = B/A = <u>1.68</u>	

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes  No

Remarks: (Include photo numbers here or on a separate sheet.)



## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Upland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 25  
 Subregion (LRR or MLRA): LRR R Lat: 44.4202542 Long: 71.9848878 Datum: TP2  
 Soil Map Unit Name: Dummerston very fine sandy loam NWI classification: Class 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes x No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>x</u> Hydric Soil Present? Yes _____ No <u>x</u> Wetland Hydrology Present? Yes _____ No <u>x</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>x</u> If yes, optional Wetland Site ID: <u>SJ-W2</u>
Remarks: (Explain alternative procedures here or in a separate report.)   	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1)                      _____ Water-Stained Leaves (B9) _____ High Water Table (A2)                      _____ Aquatic Fauna (B13) _____ Saturation (A3)                                      _____ Marl Deposits (B15) _____ Water Marks (B1)                                      _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2)                              _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3)                                      _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4)                                      _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5)                                      _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7)                      _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>x</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

Tree Stratum (Plot size: <u>30' x 30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. <u>Tsuga canadensis</u>	10	Yes	FACU
3. <u>Abies balsamea</u>	5	No	FAC
4. <u>Populus tremuloides</u>	10	Yes	UPL
5. <u>Fraxinus americana</u>	1	No	FACU
6. <u>Betula alleghaniensis</u>	5	No	FAC
7. _____			
	31	=Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u> )			
1. _____			
2. <u>Betula alleghaniensis</u>	1	No	FAC
3. <u>Acer pensylvanicum</u>	2	No	FACU
4. <u>acer saccharum</u>	1	No	FACU
5. _____			
6. _____			
7. _____			
	4	=Total Cover	
Herb Stratum (Plot size: <u>5' x 5'</u> )			
1. _____			
2. <u>Phegopteris connectilis</u>	10	No	UPL
3. <u>Dryopteris intermedia</u>	1	No	FACU
4. <u>Caulophyllum thalictroides</u>	2	No	UPL
5. <u>Gymnocarpium dryopteris</u>	40	Yes	UPL
6. <u>Arisaema triphyllum</u>	2	No	FACW
7. <u>Cardamine diphylla</u>	1	No	FACU
8. <u>Equisetum sylvaticum</u>	20	Yes	FACW
9. <u>Polystichum acrostichoides</u>	1	No	FACU
10. _____			
11. _____			
12. _____			
	77	=Total Cover	
Woody Vine Stratum (Plot size: <u>30' x 30'</u> )			
1. _____			
2. <u>None present</u>			
3. _____			
4. _____			
		=Total Cover	

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>22</u>	x 2 = <u>44</u>
FAC species <u>11</u>	x 3 = <u>33</u>
FACU species <u>17</u>	x 4 = <u>68</u>
UPL species <u>62</u>	x 5 = <u>310</u>
Column Totals: <u>112</u> (A)	<u>455</u> (B)
Prevalence Index = B/A = <u>4.06</u>	

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes      No      x

Remarks: (Include photo numbers here or on a separate sheet.)





## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St Johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Wetland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope (%): 20  
 Subregion (LRR or MLRA): LRR R Lat: 44.4198259 Long: 71.98503224 Datum: TP#3  
 Soil Map Unit Name: Buckland fine sandy loam NWI classification: 3

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>Wetland SJ-W3</u>
Remarks: (Explain alternative procedures here or in a separate report.) Small seepage: PEMB	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:





## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Upland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 25  
 Subregion (LRR or MLRA): LRR R Lat: 44.4197584 Long: 71.9849707 Datum: TP4  
 Soil Map Unit Name: Buckland fine sandy loam NWI classification: Class 3

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>SJ-W3</u>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)			

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

<u>Tree Stratum</u> (Plot size: <u>30' x 30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. <u>Tsuga canadensis</u>	3	No	FACU
3. <u>Betula populifolia</u>	1	No	FAC
4. <u>Acer saccharum</u>	35	Yes	FACU
5. <u>Fraxinus americana</u>	1	No	FACU
6. <u>Betula alleghaniensis</u>	3	No	FAC
7. _____			
	43	=Total Cover	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15' x 15'</u> )			
1. _____			
2. <u>Rhamnus cathartica</u>	1	No	UPL
3. <u>Acer pensylvanicum</u>	2	No	FACU
4. _____			
5. _____			
6. _____			
7. _____			
	3	=Total Cover	
<u>Herb Stratum</u> (Plot size: <u>5' x 5'</u> )			
1. _____			
2. <u>Polystichum acrostichoides</u>	5	Yes	FACU
3. <u>Dryopteris intermedia</u>	5	Yes	FACU
4. <u>Carex gracillima</u>	2	No	FACU
5. <u>Gymnocarpium dryopteris</u>	2	No	UPL
6. <u>Arisaema triphyllum</u>	1	No	FACW
7. <u>Hieracium</u>	2	No	
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
	17	=Total Cover	
<u>Woody Vine Stratum</u> (Plot size: <u>30' x 30'</u> )			
1. _____			
2. <u>None present</u>			
3. _____			
4. _____			
		=Total Cover	

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>1</u>	x 2 = <u>2</u>
FAC species <u>4</u>	x 3 = <u>12</u>
FACU species <u>53</u>	x 4 = <u>212</u>
UPL species <u>3</u>	x 5 = <u>15</u>
Column Totals: <u>61</u> (A)	<u>241</u> (B)
Prevalence Index = B/A = <u>3.95</u>	

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes      No      x

Remarks: (Include photo numbers here or on a separate sheet.)



## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St Johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Wetland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope (%): 3  
 Subregion (LRR or MLRA): LRR R Lat: 44.4176192 Long: 71.983264 Datum: TP#9  
 Soil Map Unit Name: Cabot Silt loam NWI classification: 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation x, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>x</u> No _____ If yes, optional Wetland Site ID: <u>Wetland SJ-W4</u>
Remarks: (Explain alternative procedures here or in a separate report.) PEMB/PSSB: Emergent marsh/scrub shrub under powerline	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) <u>x</u> Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes <u>x</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Tree Stratum</b> (Plot size: <u>30' x 30'</u> )			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15' x 15'</u> )			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
<b>Herb Stratum</b> (Plot size: <u>5' x 5'</u> )			
1.			
2.	<u>80</u>	<u>Yes</u>	<u>FACW</u>
3.	<u>10</u>	<u>No</u>	<u>FACW</u>
4.	<u>10</u>	<u>No</u>	<u>OBL</u>
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	<u>100</u>	=Total Cover	
<b>Woody Vine Stratum</b> (Plot size: <u>30' x 30'</u> )			
1.			
2.			
3.			
4.			
		=Total Cover	

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>10</u>	x 1 = <u>10</u>
FACW species <u>90</u>	x 2 = <u>180</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>100</u> (A)	<u>190</u> (B)
Prevalence Index = B/A = <u>1.90</u>	

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**      Yes X      No     

Remarks: (Include photo numbers here or on a separate sheet.)



## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Upland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15  
 Subregion (LRR or MLRA): LRR R Lat: 44.4176139 Long: 71.9834315 Datum: TP8  
 Soil Map Unit Name: Cabot silt loam NWI classification: Class 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>SJ-W4</u>
Remarks: (Explain alternative procedures here or in a separate report.) Old field	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status																	
<b>Tree Stratum</b> (Plot size: <u>30' x 30'</u> )																				
1. _____				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40.0%</u> (A/B)																
2. <u>Thuja occidentalis</u>	5	Yes	FACW																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	5	=Total Cover		<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;">Total % Cover of:</th> <th style="width:50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>45</u></td> <td>x 3 = <u>135</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>70</u></td> <td>x 5 = <u>350</u></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>565</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center">Prevalence Index = B/A = <u>4.04</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>45</u>	x 3 = <u>135</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>70</u>	x 5 = <u>350</u>	Column Totals: <u>140</u> (A)	<u>565</u> (B)	Prevalence Index = B/A = <u>4.04</u>	
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Prevalence Index = B/A = <u>4.04</u>																				
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15' x 15'</u> )																				
1. _____																				
2. <u>Juniperus communis</u>	10	Yes	UPL																	
3. <u>Frangula alnus</u>	25	Yes	FAC																	
4. <u>Lonicera morrowii</u>	10	Yes	NI																	
5. <u>Rubus idaeus</u>	5	No	FAC																	
6. _____																				
7. _____																				
	50	=Total Cover																		
<b>Herb Stratum</b> (Plot size: <u>5' x 5'</u> )																				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Bromus inermis</u>	50	Yes	UPL																	
3. <u>Solidago rugosa</u>	10	No	FAC																	
4. <u>Galium mollugo</u>	10	No	UPL																	
5. <u>Solidago canadensis</u>	15	No	FACU																	
6. <u>Osmunda claytoniana</u>	5	No	FAC																	
7. <u>Symphyotrichum puniceum</u>	5	No	FACW																	
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	95	=Total Cover																		
<b>Woody Vine Stratum</b> (Plot size: <u>30' x 30'</u> )																				
1. _____				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.																
2. <u>None present</u>																				
3. _____																				
4. _____																				
		=Total Cover																		
<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;"><b>Hydrophytic Vegetation Present?</b></td> <td style="width:20%; text-align:center">Yes <u>    </u></td> <td style="width:20%; text-align:center">No <u>    </u> x</td> </tr> </table>					<b>Hydrophytic Vegetation Present?</b>	Yes <u>    </u>	No <u>    </u> x													
<b>Hydrophytic Vegetation Present?</b>	Yes <u>    </u>	No <u>    </u> x																		

Remarks: (Include photo numbers here or on a separate sheet.)



## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St Johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Wetland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope (%): 6  
 Subregion (LRR or MLRA): LRR R Lat: 44.4181235 Long: 71.9847857 Datum: TP#7  
 Soil Map Unit Name: Buckland fine sandy loam NWI classification: 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation x, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>x</u> No _____ If yes, optional Wetland Site ID: <u>SJ-W5</u>
Remarks: (Explain alternative procedures here or in a separate report.) PEMB/PSSB: Emergent marsh/scrub shrub under powerline	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) <u>x</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) <u>x</u> Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes <u>x</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>x</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:





## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Velco SCAP St johnsbury City/County: St Johnsbury Sampling Date: 5/30/2023  
 Applicant/Owner: Velco State: VT Sampling Point: Upland  
 Investigator(s): DB Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15  
 Subregion (LRR or MLRA): LRR R Lat: 44.4188803 Long: 71.9847842 Datum: TP8  
 Soil Map Unit Name: Buckland fine sandy loam NWI classification: Class 2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>SJ-W5</u>
Remarks: (Explain alternative procedures here or in a separate report.) Old field under power line	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Tree Stratum</b> (Plot size: <u>30' x 30'</u> )			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15' x 15'</u> )			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
<b>Herb Stratum</b> (Plot size: <u>5' x 5'</u> )			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
<b>Woody Vine Stratum</b> (Plot size: <u>30' x 30'</u> )			
1.			
2.			
3.			
4.			
		=Total Cover	

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>1</u>	x 4 = <u>4</u>
UPL species <u>85</u>	x 5 = <u>425</u>
Column Totals: <u>86</u> (A)	<u>429</u> (B)
Prevalence Index = B/A = <u>4.99</u>	

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**

Yes  No  x

Remarks: (Include photo numbers here or on a separate sheet.)







to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
  - The wetland is mapped on the VSWI map
  - The wetland is contiguous to a VSWI mapped wetland
  - The wetland meets the presumptions of significance under Section 4.6
  - The wetland has a preliminary determination that it is Class II

## 1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
  - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
  - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
  - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - History of downstream flood damage to public or private property.
  - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
    - 1. Developed public or private property.
    - 2. Stream banks susceptible to scouring and erosion.
    - 3. Important habitat for aquatic life.
  - The wetland is large in size and naturally vegetated.

- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
  - 1. A large amount of impervious surface in urbanized areas.
  - 2. Relatively impervious soils.
  - 3. Steep slopes in the adjacent areas.

## 2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
  - The wetland provides flows to Class A surface waters.
  - The wetland contributes to the protection or improvement of water quality of any impaired waters.
  - The wetland is large in size and naturally vegetated.

### 3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
  - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
  - Documented or professionally judged spawning habitat for northern pike.
  - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
  - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

#### 4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
  - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
  - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
  - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
  - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
  - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
  - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
  - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
  - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
    - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
    - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
    - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.



- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
  - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
  - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
  - 3. Located adjacent to a lake, pond, river or stream;
  - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
  - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
  - 6. One of the following:
    - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
    - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
    - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The wetland complex is large in size and high in quality.
  - The habitat has the potential to support several species based on the assessment above.
  - Wetland is associated with an important wildlife corridor.
  - The wetland has been identified by ANR-F&W as important habitat.

## 5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
  - Deep peat accumulation reflecting a long history of wetland formation;
  - Forested wetlands displaying very old trees and other old growth characteristics;
  - A wetland natural community that is at the edge of the normal range for that type;

- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

## 6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

    - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
    - There is credible documentation that threatened or endangered species have been present in past 10 years;
    - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
    - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

## 7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
  - Owned by or leased to a public entity dedicated to education or research.
  - History of use for education or research.
  - Has one or more characteristics making it valuable for education or research.

### 8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
  - Used for, or contributes to, recreational activities.
  - Provides economic benefits.
  - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
  - Used for harvesting of wild foods.

Comments:

### 9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Can be readily observed by the public; and
    - Possesses special or unique aesthetic qualities; or
    - Has prominence as a distinct feature in the surrounding landscape;
  - Has been identified as important open space in a municipal, regional or state plan.

### 10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Erosive forces such as wave or current energy are present and any of the following are present as well:
    - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
    - Good interspersion of persistent emergent vegetation and water along course of water flow.
    - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The stream contains high sinuosity.
  - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.



to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
  - The wetland is mapped on the VSWI map
  - The wetland is contiguous to a VSWI mapped wetland
  - The wetland meets the presumptions of significance under Section 4.6
  - The wetland has a preliminary determination that it is Class II

## 1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
  - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
  - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
  - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - History of downstream flood damage to public or private property.
  - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
    - 1. Developed public or private property.
    - 2. Stream banks susceptible to scouring and erosion.
    - 3. Important habitat for aquatic life.
  - The wetland is large in size and naturally vegetated.



- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
  - 1. A large amount of impervious surface in urbanized areas.
  - 2. Relatively impervious soils.
  - 3. Steep slopes in the adjacent areas.

## 2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
  - The wetland provides flows to Class A surface waters.
  - The wetland contributes to the protection or improvement of water quality of any impaired waters.
  - The wetland is large in size and naturally vegetated.

### 3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
  - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
  - Documented or professionally judged spawning habitat for northern pike.
  - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
  - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

#### 4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
  - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
  - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
  - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
  - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
  - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
  - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
  - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
  - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
    - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
    - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
    - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
  - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
  - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
  - 3. Located adjacent to a lake, pond, river or stream;
  - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
  - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
  - 6. One of the following:
    - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
    - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
    - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The wetland complex is large in size and high in quality.
  - The habitat has the potential to support several species based on the assessment above.
  - Wetland is associated with an important wildlife corridor.
  - The wetland has been identified by ANR-F&W as important habitat.

## 5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
  - Deep peat accumulation reflecting a long history of wetland formation;
  - Forested wetlands displaying very old trees and other old growth characteristics;
  - A wetland natural community that is at the edge of the normal range for that type;

- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

## 6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

    - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
    - There is credible documentation that threatened or endangered species have been present in past 10 years;
    - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
    - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

## 7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
  - Owned by or leased to a public entity dedicated to education or research.
  - History of use for education or research.
  - Has one or more characteristics making it valuable for education or research.

### 8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
  - Used for, or contributes to, recreational activities.
  - Provides economic benefits.
  - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
  - Used for harvesting of wild foods.

Comments:

### 9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Can be readily observed by the public; and
    - Possesses special or unique aesthetic qualities; or
    - Has prominence as a distinct feature in the surrounding landscape;
  - Has been identified as important open space in a municipal, regional or state plan.

### 10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Erosive forces such as wave or current energy are present and any of the following are present as well:
    - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
    - Good interspersion of persistent emergent vegetation and water along course of water flow.
    - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The stream contains high sinuosity.
  - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.



**VERMONT WETLAND EVALUATION FORM**

Wetland ID#:                     SJ-4/SJ-3                     Project #:                     Velco St J SCAP                    

Date:                     5/30/23                     Investigator:                     DB                    

**SUMMARY OF FUNCTIONAL EVALUATION:**

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

<p><b>1. Water Storage for Flood Water and Storm Runoff</b> <span style="float: right;">P</span></p>	<p><b>6. Rare, Threatened, and Endangered Species Habitat</b> <span style="float: right;">0</span></p>
<p><b>2. Surface &amp; Ground Water Protection</b> <span style="float: right;">P</span></p>	<p><b>7. Education and Research in Natural Sciences</b> <span style="float: right;">0</span></p>
<p><b>3. Fish Habitat</b> <span style="float: right;">P</span></p>	<p><b>8. Recreational Value and Economic Benefits</b> <span style="float: right;">0</span></p>
<p><b>4. Wildlife Habitat</b> <span style="float: right;">P</span></p>	<p><b>9. Open Space and Aesthetics</b> <span style="float: right;">0</span></p>
<p><b>5. Exemplary Wetland Natural Community</b> <span style="float: right;">0</span></p>	<p><b>10. Erosion Control through Binding and Stabilizing the Soil</b> <span style="float: right;">P</span></p>

**Note:**

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
  - The wetland is mapped on the VSWI map
  - The wetland is contiguous to a VSWI mapped wetland
  - The wetland meets the presumptions of significance under Section 4.6
  - The wetland has a preliminary determination that it is Class II

## 1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
  - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
  - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
  - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - History of downstream flood damage to public or private property.
  - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
    - 1. Developed public or private property.
    - 2. Stream banks susceptible to scouring and erosion.
    - 3. Important habitat for aquatic life.
  - The wetland is large in size and naturally vegetated.

- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
  - 1. A large amount of impervious surface in urbanized areas.
  - 2. Relatively impervious soils.
  - 3. Steep slopes in the adjacent areas.

## 2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
  - The wetland provides flows to Class A surface waters.
  - The wetland contributes to the protection or improvement of water quality of any impaired waters.
  - The wetland is large in size and naturally vegetated.

### 3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
  - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
  - Documented or professionally judged spawning habitat for northern pike.
  - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
  - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.



#### 4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
  - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
  - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
  - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
  - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
  - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
  - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
  - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
  - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
    - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
    - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
    - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
  - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
  - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
  - 3. Located adjacent to a lake, pond, river or stream;
  - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
  - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
  - 6. One of the following:
    - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
    - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
    - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The wetland complex is large in size and high in quality.
  - The habitat has the potential to support several species based on the assessment above.
  - Wetland is associated with an important wildlife corridor.
  - The wetland has been identified by ANR-F&W as important habitat.

## 5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
  - Deep peat accumulation reflecting a long history of wetland formation;
  - Forested wetlands displaying very old trees and other old growth characteristics;
  - A wetland natural community that is at the edge of the normal range for that type;

- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

## 6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

    - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
    - There is credible documentation that threatened or endangered species have been present in past 10 years;
    - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
    - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

## 7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
  - Owned by or leased to a public entity dedicated to education or research.
  - History of use for education or research.
  - Has one or more characteristics making it valuable for education or research.

### 8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
  - Used for, or contributes to, recreational activities.
  - Provides economic benefits.
  - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
  - Used for harvesting of wild foods.

Comments:

### 9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Can be readily observed by the public; and
    - Possesses special or unique aesthetic qualities; or
    - Has prominence as a distinct feature in the surrounding landscape;
  - Has been identified as important open space in a municipal, regional or state plan.

### 10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Erosive forces such as wave or current energy are present and any of the following are present as well:
    - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
    - Good interspersion of persistent emergent vegetation and water along course of water flow.
    - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
  - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
  - The stream contains high sinuosity.
  - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.



Table 1: Wetland Summary Table

WETLAND ID	Town	Size (acres)	COWARDIN CLASSIFICATION**	FUNCTIONS AND VALUES***	OVERLAPS VSWI (Y/N)	WETLAND CLASSIFICATION*	ASSOCIATED STREAMS	VERNAL POOL (Y/N)	NOTES
SJ-1	St. Johnsbury	3.05	PFOC/PSSB/PEMB	1H,2H,3P,4H,8L	N	2	SJ-8, SJ-9	N	
SJ-2	St. Johnsbury	0.26	PFOC/PSSC	1P, 2P, 3P, 4P, 10P	N	2		N	
SJ-3	St. Johnsbury	0.01	PEMB		N	3		N	
SJ-4	St. Johnsbury	1.23	PEMB/PSSB	1P,2P,3P,4P,10P	N	2	SJ-1, SJ-3	N	
SJ-5	St. Johnsbury	0.03	PEMB/PSSB		N	3		N	
SJ-6	St. Johnsbury	0.21			N	2		N	Offsite- observed from fence. Not flagged or mapped. Boundary APPROX

\*:Wetland delineations and classifications preliminary, to be confirmed by VT DEC and ACOE on 9/21/23

\*\*: Cowardin Classification

PEM: Palustrine emergent wetland

PSS: Palustrine scrub shrub wetland

PFO: Palustrine forested wetland

\*\*\*: Vermont Wetlands Functions and Values

Army Corps of Engineers Functions and Values Equivalent/Similar

1-Water storage for flood water and storm runoff

Floodflow Alteration (Storage and Desynchronization)

2-Surface and groundwater protection

Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal/Retention/Transformation

3-Fisheries habitat

Fish and Shellfish Habitat

4-Wildlife and migratory bird habitat

Wildlife habitat

6-Threatened and endangered species habitat

Endangered species

10-Erosion control through binding and stabilizing soil

Sediment/Shoreline Stabilization