



To: VELCO Middlebury SCAP – Project File

Date: January 12, 2023

Memorandum

Project #: 58456.01

From: Ryan Scott, CPESC, PWS, Senior Ecologist Re: Section 248 Natural Resources Assessment

At the request of Vermont Transco LLC and Vermont Electric Power Company (collectively, “VELCO”), VHB conducted natural resource investigations and impact/environmental permitting assessments in support of condition-based substation upgrades as part of VELCO’s Substation Condition Assessment Project (the “Project”). The Project is located at 522 Quarry Road in Middlebury, Vermont, as indicated on the Natural Resource Map in Attachment 1. This technical memorandum includes a description of the proposed Project, site conditions within the Study Area (as defined below), a description of the individual methodologies for each resource assessment, the findings, and an evaluation of the Project with respect to each criterion per the applicable 30 V.S.A. § 248 natural resource criteria reviewed by the Vermont Public Utility Commission (“PUC”). Though findings are described within the overall Study Area, a review of potential impacts is limited to the Project, which focuses on improvements to the existing Middlebury Substation and the associated temporary substation, and temporary staging areas.

The natural resource assessment that VHB conducted in support of the Project included database reviews as well as field study, and was designed to include an evaluation of the following Act 250 Criteria, which are incorporated into the Section 248 review:

- 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 (§ 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 (§ 6086(a)(1)(D))
- Streams (§ 6086(a)(1)(E))
- Shorelines (§ 6086(a)(1)(F))
- Wetlands (§ 6086(a)(1)(G))
- Water Supply (10 V.S.A. § 6086(a)(2) and (3))
- Soil Erosion (10 V.S.A. § 6086(a)(4))
- Rare and Irreplaceable Natural Areas (“RINA”)(§ 6086(a)(8)), and Necessary Wildlife Habitat and
- Endangered Species (§ 6086 (a)(8)(A))
- Primary Agricultural Soils 10 V.S.A. § 6001(15)

In making assessments of Project impacts or conformance with the applicable criteria, VHB relied substantially on Project plans included as Exh. Petitioner EJM-5.

Site Description

As depicted on the Natural Resource Map in Attachment 1, VHB’s Study Area encompasses approximately 11 acres and is focused on VELCO-owned property in the vicinity of the Project. The Project area is limited to a subset of the area reviewed and is focused on and adjacent to the existing substation, including the areas necessary for the

substation rebuild, temporary substation, associated overhead utility line work required to support substation upgrades, and staging areas. VHB conducted natural resource assessments on May 6, 2020, and November 10, 2022, and conducted a site visit with the U.S. Army Corps of Engineers (“USACE”) and the Agency of Natural Resources (“ANR”) on September 2, 2020, to review delineated wetland boundaries and proposed wetland classifications.

The site consists of the Middlebury Substation, overhead electric utility rights-of-way (“ROW”), and agricultural land. The Study Area borders Quarry Road and is accessed by a gravel drive. Surrounding land use consists of rural residential, undeveloped forested areas, and agricultural land. Representative photographs are provided in Attachment 2.

The Study Area occurs in the western extent of the Champlain Valley biophysical region of Vermont [from *Wetland Woodland Wildland: A Guide to the Natural Communities of Vermont* (Thompson, et. al. 2019)], and within the New Haven River Sub-Watershed Basin (HUC 12 – 041504020203). According to the Natural Resources Conservation Service (“NRCS”), the mapped soils within the Study Area include Vergennes clay (6 to 12 percent slopes), Vergennes clay (2 to 6 percent slopes) and Covington and Panton silty clays. The topography within the Study Area is generally flat near the existing substation, but gently slopes north towards Quarry Road. Elevations range from 450 feet above mean sea level (“amsl”) in the southeastern portion of the Study Area to 409 feet amsl in the northwest corner. There are no wetlands mapped by the Vermont Significant Wetlands Inventory (“VSWI”), but there is one stream mapped by the Vermont Hydrography Dataset (“VHD”) that flows along the western portion of the Study Area. Representative photographs of the Study Area are included in Attachment 2.

Project Description

As part of a standard asset condition evaluation, VELCO developed and utilizes an evaluation tool that is used to conduct a condition assessment of the substation. The assessment identified the need to replace a portion of the existing equipment at the Middlebury Substation, primarily due to condition, though design standards and operating practices are also taken into consideration. The primary deficiency is the control building. To correct this deficiency, VELCO proposes to replace the existing control building with a larger building and replace/expand a portion of the existing fence to accommodate the proposed building upgrades on the northeast side of the existing facility.

VHB understands the major Project components to include:

- Replace the existing control building with a larger control building that can accommodate a new protection and control system, redundant AC & DC station services, communication equipment, security systems and new bathroom facilities
- Replace the existing perimeter fence and expand the northeast substation yard area to accommodate new control building
- Replace water supply & wastewater systems for control building facilities
- Install a temporary substation and associated temporary access road, poles and conductors and temporary fenced in yard to maintain electrical transmission for the Project’s duration (to be returned to existing conditions upon commissioning of the permanent substation)

- Reroute an existing stream that presently runs through the middle of the substation in an underground culvert so it runs along the southern fence line in an underground culvert.
- Shorten and revise existing access road
- Replace the oil containment system for the transformer (typically maintenance work that does not require any regulatory procedures but is included as a component of this project)
- Install temporary 46 kV Lines and poles to support GMP's electric system during construction

Section 248 Natural Resources Criteria

The following provides an assessment and summary of applicable natural resource criteria, as reviewed under 30 V.S.A. § 248 and as it relates to findings within the Study Area and Project Area.

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

The Vermont Water Quality Standards ("VWQS", effective January 15, 2017) (ANR 2017a), under section 1-03D, state that the Secretary of the Vermont Agency of Natural Resources ("ANR") may, under 10 V.S.A. Section 1424(a), designate Outstanding Resource Waters ("ORW"). The following waterways have been classified as ORWs:

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

The Study Area was reviewed against this list to determine if it is located within the vicinity of any listed ORWs. The Project is located in the New Haven River watershed, which is not designated as an ORW.

As such, there are no ORWs which intersect or are in the vicinity of the Study Area, therefore the Project will not result in any impacts to resources included for review under this criterion.

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

This criterion requires that the Project will not result in undue greenhouse gas emissions. For the Project, VHB's consideration of this criterion is limited to the construction phase of the proposed work as the substation, when in operation, will not emit greenhouse gases. Construction phase impacts will include emissions from vehicular traffic entering and existing the Site, as well as construction equipment associated with site work and equipment operation. This work will be temporary in nature and will not have any undue impacts resulting from greenhouse gas emissions.

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

This criterion requires that the Project result in no undue water or air pollution. The Project will address surface water pollution through Best Management Practices ("BMPs"), which are described further in the Soil Erosion and Waste Disposal section of this memorandum and will not result in undue water pollution. Further, VHB understands that the Project will obtain necessary permits for wastewater treatments associated with a single bathroom, sink and eyewash within the new control building.

As described above, once in operation, the Project will have no component that will generate air pollution or require an air pollution control permit from ANR Air Quality and Climate Division. Minor temporary emissions associated with vehicular traffic and construction equipment operations are expected during the construction phase, though they are not anticipated to be significant. VELCO will control dust generated during the Project's construction phase in accordance with VELCO's Environmental Guidance Manual ("VEGM") and applicable BMPs. Through the use of applicable BMPs, the Project will not generate any water or air pollution.

Headwaters (§ 6086(a)(1)(A))

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

- 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 elevation; or
- iv. Watersheds of public water supplies designated by ANR; or
- v. Areas supplying significant amounts of recharge waters to aquifers.

The Study Area is located within the New Haven River sub watershed, which has a drainage area of 48.7 square miles. Additionally, VHB reviewed the Agency of Natural Resources Atlas and confirmed that there are no public water supplies or associated source protection areas (SPA) within the Study Area, it is below 1,500 feet in elevation, and is not characterized as headwaters. As the Study Area does not meet sub criteria, it is VHB's opinion that it is not located within a headwater.

Waste Disposal (10 V.S.A. § 6086(a)(1)(B))

The Waste Disposal criterion requires that a project meet applicable health and DEC regulations regarding the disposal of waste, and not involve the injection of waste materials into ground water or wells. For the Project, VHB's consideration of waste disposal involves sanitary wastewater, stormwater runoff, and general construction debris.

VELCO will dispose of all construction debris that cannot be re-used or recycled in accordance with Vermont Department of Environmental Conservation ("DEC") waste management rules and BMPs. A site-specific SPCC Plan was developed for the existing Middlebury Substation, which VELCO will update to reflect the proposed substation changes, as required. The SPCC Plan provides detailed spill response information in the event of a release of oil and outlines storage capacities, types of oil stored, and secondary containment systems. In addition, the VELCO Environmental Guidance Manual "VEGM" outlines spill response procedures for operational oil-filled equipment at the site and requires all contractors to maintain response kits to respond to incidental spills associated with construction activities and equipment. The Project will obtain a construction stormwater permit and will implement

practices in the Low Risk Site Handbook for Erosion Prevention and Sediment Control (ANR 2020b), to meet the 2022 Vermont Water Quality Standards (“VWQS”) (ANR 2022). In addition, pertinent pieces of the VEGM will be implemented to avoid discharges tied to stormwater. The existing substation has a Spill Prevention Control and Countermeasures (“SPCC”) Plan which will be updated for the proposed work. An Operational Stormwater Permit is not required for the Project, as the total resulting impervious surfaces will be less than one acre.

As described above, the Project will meet the applicable health and VT DEC regulations regarding the disposal of waste and does not involve the injection of waste materials into groundwater or wells. VELCO will obtain and comply with the necessary Wastewater and Potable Water Supply Permit from ANR for the proposed onsite wastewater system and decommissioning of the existing wastewater system. Therefore, the Project will not have an undue adverse effect to the environment associated with waste disposal.

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

Under this criterion, the Project design must consider water conservation, incorporate multiple use or recycling where technically and economically practical, utilize the best available technology for such applications, and provide for continued efficient operation of these systems. VELCO will install a new bathroom within the proposed control building, it will consist of a low-flow toilet and fixtures for water conservation. Water is also likely to be used during the Project’s construction phase for dust control, and establishment of vegetation, if required. Water use during the construction phase will be limited and temporary in nature. Given the limited amount of water use during the construction and operational phase of the Project, there will be no undue adverse effect to water conservation.

Floodways (§ 6086(a)(1)(D))

The Act 250 Floodway criterion (10 V.S.A. § 6086(a)(1)(D)), as incorporated into Section 248 review, takes into consideration a project’s effect on both floodways and floodway fringes. The term “floodway” is defined to mean “the channel of a watercourse which is expected to flood on an average of at least once every 100 years and the adjacent land areas which are required to carry and discharge the flood of the watercourse.” (10 V.S.A. § 6001(6)). The term “floodway fringe” is defined as “an area which is outside of a floodway and is flooded with an average frequency of once or more in each 100 years.” (Id. § 6001(7)). Floodway fringe is synonymous with other commonly used terms, such as 100-year floodplain, and flood (inundation) hazard area. A project’s impacts are considered with respect to both flood inundation and fluvial erosion hazards pursuant to ANR Flood Hazard Area and River Corridor Protection Procedure (“FHARC Procedure”) (ANR 2017b).

The Flood Hazard Area and River Corridor Protection Procedure addresses both inundation risks as represented by Federal Emergency Management Agency (“FEMA”)-mapped flood information and potential fluvial erosion risks associated with the geomorphic principles necessary to achieve stable fluvial processes. The River Corridor consists of the meander belt or fluvial erosion hazard area, which is defined as the lateral width of a stream corridor that may be subject to fluvial erosion from stream channel lateral migration as well as a 50-foot buffer outside of this meander belt (ANR 2017b). If River Corridor is not mapped by the State, VHB assigns a 50-foot River Corridor to perennial streams based on ANR guidance.

VHB reviewed the available FEMA data for the Town of Middlebury (Flood Insurance Rate Map – Panel #500055 0015 B), floodway and other special flood hazard data, as well as river corridor mapping from ANR, in order to determine if the Study Area is situated within floodway areas.

Based on this review, the Study Area is located outside of federally- and state-mapped Flood Hazard Areas and River Corridors. In addition, VHB did not map any perennial streams requiring an assigned 50-foot River Corridor within the Study Area, and the VHD-mapped stream mapped proximal to the Project is intermittent. As such, the Project would not restrict or divert the flow of floodwaters (floodway or floodway fringe) or increase the peak discharge of the river, or endanger the health, safety, and welfare of the public, riparian, or downstream landowners during flooding or from potential erosion.

Streams (§ 6086(a)(1)(E))

This Act 250 criterion, as incorporated into Section 248 review, requires that projects will, when feasible, maintain natural stream channel condition, and will not endanger the health, safety, or welfare of the public or adjoining landowners (10 V.S.A. § 6086(a)(1)(E)). VHB conducted stream delineation and assessment work on May 2, 2020, to map any onsite stream channels.

VHB conducted stream delineations pursuant to the ANR Guidance for Agency Act 250 and Section 248 Comments regarding Riparian Buffers (“ANR Riparian Buffer Guidance”) (ANR 2005). Stream determinations and Ordinary High Water (“OHW”) width follow guidance provided in the United States Army Corps of Engineers (“USACE”) Regulatory Guidance Letter: Subject - Ordinary High-Water Identification (USACE 2005). Stream Top of Bank (“TOB”) and Top of Slope (“TOS”) are flagged in the field per ANR 2005. Stream TOB and TOS are flagged on larger channels and stream center-line is flagged for smaller channels and labeling includes the stream ID and flag number. OHW limits are flagged when applicable. Stream flow regimes are preliminarily classified as ephemeral, intermittent, or perennial and are determined based on qualitative observations of instream hydrology indicators at the time of observation, as well as geomorphic characteristics, and are subject to professional judgment. Stream features are located in the field using sub-meter capable GPS equipment. Riparian buffers adjacent to streams and rivers, consistent with the ANR Riparian Buffer Guidance, are designated for natural perennial and intermittent stream channels when applicable.

One VHD stream passes through the Study Area along its western boundary. During field investigation, this stream was delineated as intermittent stream 2020-SC-MI-002 (see Natural Resources Map, Attachment 1), which has an average OHW of two feet wide with a substrate consisting of organic material and cobbles. As the stream is intermittent, a regulated River Corridor does not apply, though a 50-foot riparian buffer does, pursuant to the ANR Riparian Buffer Guidance. Further details characterizing the stream channel are provided in the Summary of Delineated Streams (Attachment 3).

Stream 2020-SC-MI-002 currently runs through a culvert beneath the existing substation. The Project proposes to remove a portion of the existing culvert, and leave a portion of the culvert in place, which will be capped and re-enforced with a flowable fill. Proposed work will re-route the stream to the west and outside of the substation to avoid subterranean infrastructure beneath critical substation equipment. The proposed relocation will have permanent and temporary impacts near the inlet and outlet of the culvert but will not impact the overall reach of the stream. Impacts to Stream 2020-SC-MI-002 will require approval under Section 404 of the Clean Water Act. Though cumulative impacts will not surpass the Self-Verification threshold, VELCO will submit a Pre-Construction Notification if work cannot be completed during low-flow time-of-year. Work is also be proposed within the 50-foot assigned Riparian Buffer, however, this area is generally maintained, and the character of the Riparian Buffer will remain the same. As such, there will be no adverse impacts to stream condition, nor will the Project endanger the health, safety, or welfare of the public or of adjoining landowners.

Shorelines (§ 6086(a)(1)(F))

Shorelines are defined under Act 250, as also incorporated into Section 248, as the land adjacent to the waters of lakes, ponds, reservoirs, and rivers. Shorelines include the land between the mean high-water mark and the low-water mark of such waters (Argentine 2008). The Study Area was reviewed against these criteria to determine if it is located on any shoreline areas. There are no shorelines located with the Study Area and the Project will not have any undue adverse impacts on areas defined as shorelines.

Wetlands (§ 6086(a)(1)(G))

The wetlands criterion under Act 250, as incorporated into Section 248, requires that the proposed project comply with the Vermont Wetland Rules (“VWR”) (ANR 2020a). The VWR regulate significant wetlands (Class I and Class II wetlands) and their buffers. Impacts to Class III wetlands are not considered under Act 250 Criterion 1(G) but are generally reviewed under Section 248(b)(5) through the PUC’s consideration of the potential for undue adverse impacts on the natural environment. Further, wetlands are regulated by the USACE under Section 404 of the Clean Water Act (“CWA”), as well as the related DEC CWA Section 401 Water Quality Certification (“WQC”) review process.

Wetland delineations are made pursuant to applicable methodologies outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method* (USACE 2011). Wetlands are identified in the field with pink flagging. Wetland functions and value presence and significance are evaluated based on the field notes and observations according to the VWR (ANR 2020). When present, wetland features are GPS-located using the same methods as streams.

VHB prepared a summary spreadsheet that details wetland characteristics relative to the criteria for classifying significant wetlands under the VWR, as well as VHB’s proposed wetland classifications under the VWR (Wetland Summary Table, Attachment 3). VHB completed USACE Wetland Determination Data Forms for on-site wetlands where it collected data along the wetland and upland boundary (Attachment 4).

There are no Vermont Significant Wetlands Inventory (“VSWI”)-mapped wetlands within the Study Area. However, based on the results of VHB’s field delineation on May 2, 2020, there are three wetland features within the Study Area that VHB suggests would meet the USACE and/or the DEC jurisdictional criteria (described below). One of the VHB-mapped wetlands (MI-001) is Class II under the VWR, and subject to a 50-foot buffer, which coincides with the Riparian Buffer associated with stream 2020-SC-MI-002. Two wetlands (MI-37 and 202-MI-002) are Class III and regulated under Section 404 of the Clean Water Act (see Attachment 1). Additional information including wetland type, characteristics, and surveyed function and value are provided in Attachment 3. No potential vernal pools occur within the Study Area. VHB field reviewed and confirmed the wetland boundaries and classifications with the DEC Wetland Program (Zapata Courage) and USACE (Mike Adams) on September 2, 2020.

The proposed Project is sited to avoid impacts to wetlands and wetland buffers to the extent possible by generally working within the existing substation footprint or away from wetlands and associated wetland buffers. Current design proposes abandoning the culvert associated with stream 2020-SC-MI-002 and re-routing the stream around the western extent of the substation. This work will require grading within Class II wetland MI-001 and its associated buffer. The Project will seek approval for work activities within wetland and wetland buffer under the Vermont Wetlands Rules for impacts that are not considered Allowed Uses. Further, and based on limited impacts, the Project will qualify for Self-Verification, though may require Pre-Construction Notification depending on the Project adherence to time-of-year restriction for in-stream work, under the Department of the Army General Permits for the

State of Vermont, administered by the USACE for impacts to Waters of the U.S. under Section 404 of the Clean Water Act. The Project will comply with the Vermont Wetland Rules, will employ best management practices for activities within wetlands and wetland buffers, and will self-verify under Section 404 of the Clean Water Act. As such, the Project will not result in any undue adverse impacts to wetlands.

Water Supply (10 V.S.A. § 6086(a)(2) and (3))

To satisfy this criterion, the Project must show there is sufficient water available for the reasonably foreseeable needs of the Project and that the Project will not cause an unreasonable burden on an existing water supply, if one is to be utilized. The Project will use minimal amounts of water during the construction phase for potential dust control and to support vegetative growth, if necessary. VELCO is reviewing the installation of a well to serve the new control building or accessing an existing municipal water line, which will be designed in accordance with the Vermont Water Supply Rule. VELCO will follow pertinent regulations for the design, installation, and operation of a new onsite water supply well. The well will serve a single bathroom within the proposed new control building, which is not staffed and only used on a limited basis, such as but not limited to during monthly substation inspections by maintenance personnel.

As the system will be designed in accordance with regulatory standards, and the water supply will meet the limited needs of the new control building, the Project will have no undue adverse impacts on water supplies.

Soil Erosion (10 V.S.A. § 6086(a)(4))

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

Using available Vermont Center for Geographic Information ("VCGI") data and soil description from the Natural Resource Conservation Service ("NRCS"), the following soils are mapped within the Study Area:

Soil Map Unit	Erodibility Ranking	Area (acres)
Covington and Panton silty clays	not highly erodible	0.86
Vergennes clay, 2 to 6 percent slopes	potentially highly erodible	2.30
Vergennes clay, 6 to 12 percent slopes	potentially highly erodible	8.32

As the Project requires more than one acre of earth disturbance, it will obtain a construction stormwater discharge permit from VT DEC's Stormwater Section. The Project will comply with the VT DEC's *Vermont Standards and Specifications for Erosion Prevention and Sediment Control* (2019), and *The Vermont Erosion Prevention and Sediment Control Field Guide* (2006). The implementation of these measures along with the applicable BMPs described in the VEGM will minimize the potential for sediment-laden runoff to leave the Project area. Examples of Erosion Prevention and Sediment Control (EPSC) measures to be implemented include: project demarcation "Limits of Disturbance" tape/fence along the perimeter of the Project site, silt fence and/or silt sock downgradient of soil disturbance as necessary, stabilized construction entrance/exit, and temporary and final stabilization of exposed soils through

application of mulch or vegetative establishment. By implementing these EPSC measures, and obtaining a construction stormwater discharge permit if required, the Project will not have an undue adverse effect on soil erosion.

Rare or Irreplaceable Natural Areas (RINA) (§ 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (§6086(a)(8)(A))

From Act 250, as incorporated into Section 248 review, a project must be shown to have no undue adverse effect on Rare or Irreplaceable Natural Areas (“RINA”) (§ 6086(a)(8)). Additionally, a project must not destroy or significantly endanger Necessary Wildlife Habitat (“NWH”) or any Endangered Species (§ 6086(a)(8)(A)).

RINA

Certain significant natural communities may be deemed RINA under Act 250 Criterion 8. Determinations of “Significance” are made after utilizing a combination of community ranking, current condition (age, degree of disturbance), and landscape context (size, degree of fragmentation) in order to determine an “Element (or Community) Occurrence Ranking”. Additional considerations for RINA include the presence of rare, threatened, or endangered (“RTE”) species in these communities, as well as overall natural community associations.

In order to identify potential occurrences of known significant natural communities, VHB researched the Vermont Natural Heritage Inventory (“NHI”) database for the presence of known Element Occurrences (“EOs”) of significant natural community types within and adjacent to the Study Area. A one-mile radius was used when querying the NHI database (accessed Spring 2020 and updated Fall 2022) and information specific to each EO identified is presented in Attachment 5. During the field assessments, VHB field staff also reviewed the onsite natural community or vegetative assemblage types. Descriptions found in *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Thompson et. al 2019) were used to define the natural community parameters as well as characterize any natural communities within the Study Area. Field observations and mapping data were used to identify onsite natural communities.

Through database review, no known natural communities, significant or otherwise, are mapped within the Study Area and none were mapped within a one-mile radius. Information gathered in the field is used to compile a list of onsite natural community or vegetative assemblage types and is included as Attachment 5. This methodology is used to characterize on-site community type and condition as well as identify any natural communities that might be considered RINA during Section 248 review. The results are also used to define habitat characteristics and identify any target habitats for rare or sensitive species as discussed below. From database and corroborative field review, it is VHB’s judgment that there are no significant natural communities or other areas that could constitute a RINA within the Study Area.

Endangered Species

Endangered Species include those that are defined as “threatened” or “endangered” on the Vermont state endangered and the state threatened species lists, and that are protected under the Vermont Endangered Species Rule. Those species protected under the federal Endangered Species Act are included as well. Rare (considered S1, S2 or S2S3), but otherwise not protected species are often included under this criterion as part of a Project’s potential impacts to the natural environments.

In order to identify the potential occurrence of rare or sensitive species, particularly those that are federal or Vermont-listed threatened or endangered¹, and to quantify available onsite habitat condition relative to each, VHB researched the NHI database for the presence of known element occurrences (“EOs”) of RTE species within and adjacent to the Study Area. VHB used a one-mile radius to query for RTE species. The search yielded two plant EOs which are both considered rare, though they do not occur within the Study Area. These consist of false pennyroyal (*Trichostema brachiatum*, S1/G5) and hairy honeysuckle (*Lonicera hirsuta*, S1/G5). In addition, the NHI review identified an occurrence of northern long-eared bat (*Myotis septentrionalis* or “MYSE”) within a one-mile radius of the Study Area, though the associated known roosts are in downtown Middlebury and greater than one-mile from the Study Area. The Study Area is also located within observed summer habitat for Indiana bat (*Myotis sodalis* or “MYSO”). Based on NHI database review, there are no NHI-mapped RTE species within the Study Area. Details such as the species name, rarity rank and protection status, and potential habitat on site are included in Attachment 5, as well as any follow-up survey recommendations.

Additionally, VHB queried the U.S. Fish and Wildlife Service (“USFWS”) IPaC system project review database, to identify any federally listed Threatened or Endangered species or critical habitat within the Project region. The Project Study Area is within the known range of the forest-dwelling MYSE and MYSO (see Attachment 6). From the NHI EOs, there are no known summer occurrences or hibernacula within 1 mile of the Study Area.

The Project activities are located within and immediately surrounding the existing substation and thus resulting in limited vegetation removal. On November 10, 2022, VHB also conducted a potential roost tree (“PRT”) inventory within the Study Area and identified no PRTs based on diameter-at-breast-height (“DBH”) being less than three inches, or no roosting features present. Per the *Regulatory Review Guidance for Protecting NLEB and Their Habitats* (FWD 2017c), no further conservation measures or presence/absence surveys are necessary for MYSE. Furthermore, due to the absence of PRTs and the removal of vegetation less than three-inch DBH, there are no additional conservation measures required from MYSO (FWD 2021).

During field efforts, VHB conducted a floristic inventory for RTE species on July 10, 2020 (see Partial Floristic Inventory in Attachment 7). The survey identified no RTE plant species.

As explained in the Site Description section above, the Study Area consists of cleared utility ROWs and agricultural areas. From database and field reviews, it is VHB’s judgment that there are no adverse effects on known listed threatened or endangered species resulting from the Project and that no RINA occurs within the Study Area.

Necessary Wildlife Habitat

The types of habitats that typically constitute Necessary Wildlife Habitat (“NWH”) include deer wintering habitat, black bear mast stands (concentrated American beech and oak species), black bear forested wetland habitat, black bear travel corridors, grassland bird habitat, or in some cases, moose overwintering area.

To review NWH, VHB researched available deer wintering area, black bear travel, and black bear feeding habitat mapping available from ANR to determine if the Study Area is situated within or adjacent to mapped NWH. Based on the results of a desktop review, the Project area does not occur within a region of general bear habitat. The closest

¹ Federal-listed species are protected under the U.S. Endangered Species Act and Vermont-listed species are protected under 10 V.S.A. §123.

ANR-mapped deer wintering area is approximately 1,800 feet northeast of the Project and no unmapped deer wintering areas occur within the Study Area. The field adjacent to the substation meets the size and composition criteria to be considered potential grassland bird habitat, which VHB understands ANR now considers NWH. However, the work will occur within and adjacent to existing infrastructure which includes work proximal to vertical structures such as overhead transmission lines and poles, substation electrical infrastructure and fencing.

The substation expansion is within approximately 0.23 acres of grassland field and directly adjacent to the existing road and existing substation. As the work is proposed within the vertical structures associated with the existing transmission structures, VHB opines the proposed work will not have a permanent adverse negative impact on grassland bird habitat. For temporary impacts associated with the temporary substation and staging areas impacts will be mitigated through a one time in-lieu fee payment for the duration of temporary impacts, which are assumed be one year. As such, there will be no permanent impacts to NWH resulting from the Project, and temporary impacts will be mitigated. This approach was confirmed with Noel Dodge (FWD) via phone call on December 22, 2022.

Primary Agricultural Soils

VHB evaluated the Project pursuant to Primary Agricultural Soils (“PAS”) as considered by the PUC and as defined under 10 V.S.A. § 6001(15). The site is currently open agricultural field or developed for electric substation and transmission facilities and the Project will not change the use of the site. Approximately 11.5 acres of PAS are mapped within the Study Area. Soils within the Study Area consist of:

- Covington and Panton silty clays (Statewide(b));
- Vergennes clay, 2 to 6 percent slopes (Statewide); and
- Vergennes clay, 6 to 12 percent slopes (Statewide).

Work is proposed within NRCS-mapped PAS resulting in both temporary and permanent impacts. Proposed temporary impacts to PAS total approximately 1.5 acres and proposed permanent impacts to PAS total approximately 1.1 acres. Impact numbers were calculated by VHB, in consultation with VELCO, using plans provided by EK and dated December 28, 2022. Permanent impacts capture site modifications that will encroach on viable primary agricultural soils and will not be restored following Project construction. These include roadway expansion and realignment, substation fence expansion, new septic system, and oil containment system. Temporary impacts capture Project components that VELCO will restore to pre-construction condition following the Project completion and include temporary improvements to the access road, the temporary substation, temporary placement of utility poles, and staging areas. In calculating these impacts, VHB excluded the northwestern corner of the Study Area, between Quarry Road, the existing access, and the existing substation, as the area does not provide viable farmland. This area consists of a Class II wetland and stream, overhead powerlines and associated utility poles, and access roads. Given the size, disconnection from other farmlands, and physical characteristics, VHB feels this should not be considered PAS.

VELCO will mitigate temporary impacts resulting from the temporary substation and associated temporary access by windrowing topsoil adjacent to the temporary road and substation, or by installing stone on top of fabric for the Project’s construction phase. Once complete, topsoil will be re-applied, seeded and mulched or if stone-on-fabric is used, VELCO will de-compact soils as necessary. The Agency of Agriculture Food and Markets (“AAF”) generally requires mitigation for permanent impacts when mitigation totals exceed two acres. The agricultural value of the impacted soils range from 6 to 7, meaning mitigation is required at a 2:1 ratio. As such, 2.2 acres of mitigation will be required for permanent impacts to PAS. As this is just beyond the two-acre threshold that AAFM considers *de minimis*,

VELCO will coordinate with AAFM to implement appropriate mitigation, particularly if design plans change resulting in more or fewer impacts to PAS.

As VELCO will perform the majority of the work within the existing substation, temporary impacts will be restored and permanent impacts will be addressed through a mitigation plan approved by AAFM or considered *de minimis*, it is VHB's judgment that the Project will not unduly impact PAS or the potential for the site to support agricultural activity.

Attachments:

1. Natural Resource Map
2. Representative Site Photographs
3. Wetland and Waters Summary Table
4. USACE Wetland Determination Data Forms
5. Potential Rare, Threatened, and Endangered Plant Species and Significant Natural Communities Summary in the Project Region and Onsite Habitats
6. USFWS IPaC Official Species List – Franklin County, VT
7. Plant Species Checklist

References

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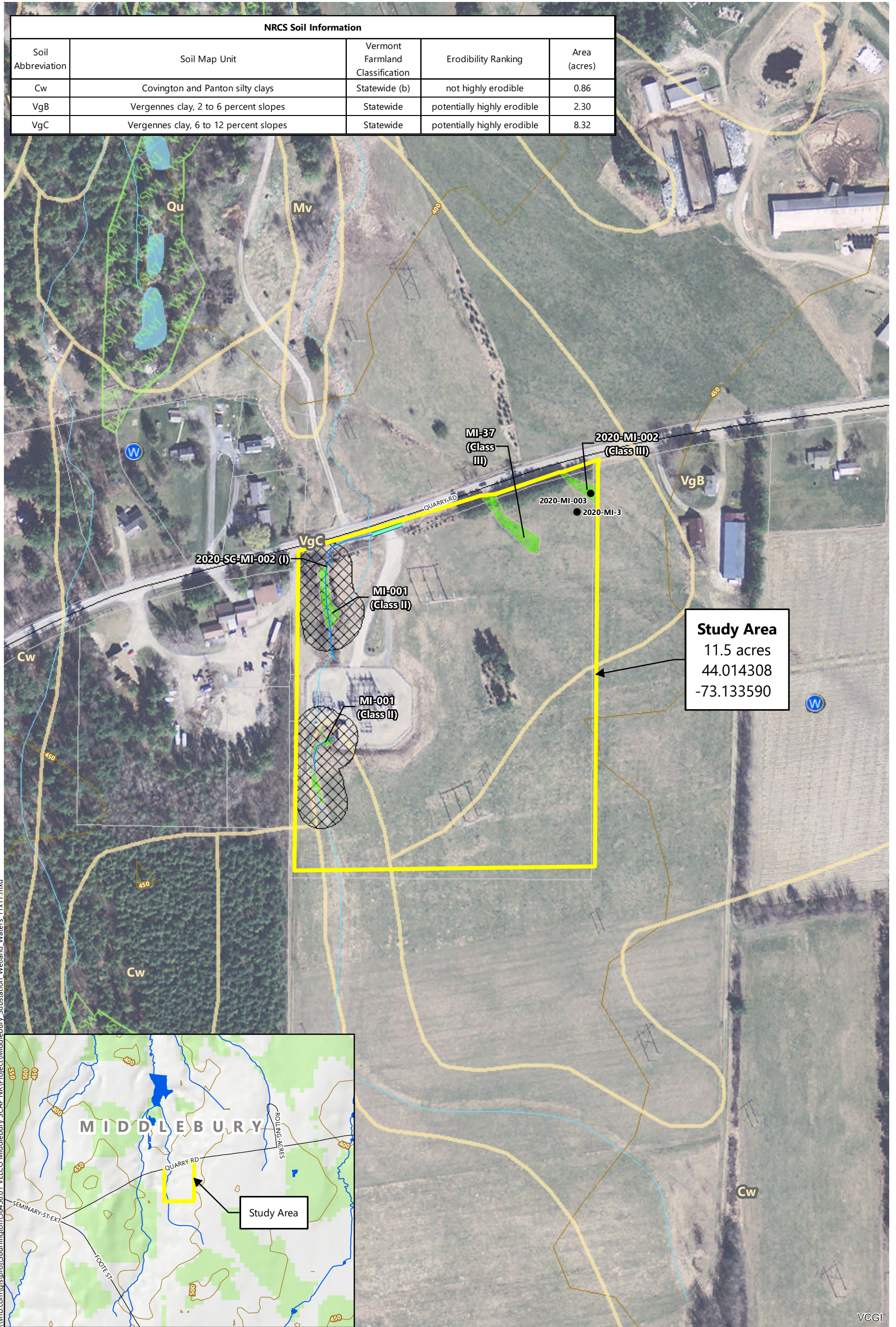
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ATTACHMENT 1

NRCS Soil Information				
Soil Abbreviation	Soil Map Unit	Vermont Farmland Classification	Erodibility Ranking	Area (acres)
Cw	Covington and Pantton silty clays	Statewide (b)	not highly erodible	0.86
VgB	Vergennes clay, 2 to 6 percent slopes	Statewide	potentially highly erodible	2.30
VgC	Vergennes clay, 6 to 12 percent slopes	Statewide	potentially highly erodible	8.32



\\vhb.com\gis\proj\58456.01 VELCO Middlebury SCAP NRI Project\Middlebury Substation Wetland Waters 11x17.mxd

VCGI



Middlebury Substation | Middlebury, Vermont

Wetland and Waters Map

Wetlands/Waters surveys conducted by VHB (R. Scott) on May 6, 2020

Sources:
Background Imagery by VCGI (Collected in 2016)
VCGI (Vermont Center for Geographic Information - Various Dates)
ANR (Vermont Agency of Natural Resources - Various Dates)
FWD (Vermont Fish and Wildlife Department - 2018)
VHB (2020)

*Layers not visible in map extent

- Study Area (VHB)
- Delineated Wetland (Class) (VHB)
- Proposed Class II 50' Wetland Buffer (VHB)
- Delineation Data Point (VHB)
- Delineated Stream (VHB)
- Found Culvert (VHB)
- Culvert Point (VHB)
- Public or Private Well (ANR)
- VSWI Wetland (ANR)
- Deer Wintering Area (ANR)*
- NHI Uncommon Occurrence (FWD)**
- River Corridor (ANR)*
- VHD Stream (VCGI)
- VHD Waterbody (VCGI)
- FEMA Zone A (VHB/FEMA)
- Ground Water Protection Area (ANR)*
- Surface Water Protection Area (ANR)*
- NRCS Soil Boundary (VCGI)
- Parcel Boundary (VCGI)
- Town Boundary (VCGI)
- County Boundary (VCGI)*
- Interstate*
- US Highway
- State Highway*
- Town Road
- 50' Contours (VCGI)

ATTACHMENT 2



SCAP Middlebury 2020 Field Assessment Representative Site Photographs

PROJECT NUMBER

58456.01

VELCO

VELCO Middlebury Substation, Quarry Road,
Middlebury, Vermont



NO. 1

DESCRIPTION

View to the east at palustrine emergent/palustrine scrub-shrub portion of Wetland MI-001.



NO. 2

DESCRIPTION

View to the north at Wetland MI-001.



NO. 3

DESCRIPTION

View north at Stream 2020-SC-MI-002. Stream is within Wetland MI-001.



NO. 4

DESCRIPTION

View north of Wetland MI-001 looking towards Quarry Road.



NO. 5

DESCRIPTION

View north at Wetland MI-37
looking towards Quarry Road.



NO. 6

DESCRIPTION

View south at Wetland 2020-MI-
002 looking towards adjacent
property.

ATTACHMENT 3

Summary of Delineated Wetlands and Streams

Project: SCAP Middlebury

Client: VELCO

Prepared by: VHB (R. Scott) November 20, 2020 (Updated December 8, 2022)

Delineation Date(s): VHB (R. Scott/J. Smith) May 5, 2020.



VHB Delineated Wetlands										
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Vermont Wetland Rules Classification						Typical Vegetation	Comments
			Contiguous to a VSWI-mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Presumptions ⁴	VWR Section 5 Functional Criteria Presence / Significance		VHB-Proposed VWR Classification ⁶		
						Type ⁵	VHB-Proposed Significant?			
MI-001	5,049	PEM,PSS	No	Yes	b,c	5.1 (L), 5.2 (L)	No	II	<i>Phalaris arundinacea, Onoclea sensibilis</i>	Previously delineated. Systems drains under existing substation via culvert and continues north of substation.
MI-37	4,590	PEM	No	No	-	5.1 (L), 5.2 (L)	No	III	<i>Onoclea sensibilis, Fraxinus pennsylvanica</i>	Feature located in swale of agricultural field.
2020-MI-002	2,114	PEM	No	No	-	5.1 (L), 5.2 (L)	No	III	<i>Alnus incanca, Onoclea sensibilis, Phalaris arundinacea</i>	Feature located in swale of agricultural field.

¹All wetlands field-delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2011;

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

³Wetland contiguity to streams as defined in the Vermont ANR 12/9/05 *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* and confirmed if a delineated perennial or intermittent stream channel inflows, through flows, and outflows from a delineated wetland (ephemeral channels not typically being subject to ANR Riparian Buffer Guidance). The vegetative assemblage or natural community type is used when determining riparian vegetation function. Flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment (P=perennial, I=intermittent, E=ephemeral).

⁴Alpha-numeric codes correspond with Section 4.6 Presumptions of the 2018 Vermont Wetland Rules.

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

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

VHB Delineated Streams											
Stream ID	Stream Name	Associated Wetlands	Average Ordinary High Water (OHW) Width (Feet) ¹	Dominant Substrate	Water Depth (Inches)	Bank Height (Feet)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	ANR-Mapped River Corridor? (Yes/No)	Watershed Size (Square Miles) ³	VWQS Classification (2014) ⁴	Comments
2020-SC-MI-002	n/a	MI-001	2.0	Organic, Cobbles	3	1.0	Intermittent	No	0.1	B	Drains into roadside ditch and north to fields across Quarry Road.

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

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

³Watershed size determined from Vermont ANR Stream Alteration Regulatory Program mapping.

⁴From the Vermont Water Quality Standards (Vt. Code R 12 004 052), Updated 2017 [Vermont Agency of Natural Resources (ANR) 2016].

⁵List of streams from the State of Vermont 2016 303(d) Assessment of the Condition of Vermont Waters. Priority Listing of Vermont Waters. <http://dec.vermont.gov/watershed/map/assessment#Assessment> (Vermont Department of Environmental Conservation (VT DEC) – Watershed Management Division, 2016) .

⁶If no ANR mapped river corridor is present, VHB proposed river corridor is applied pursuant to the DEC Flood Hazard Area and River Corridor Protection Procedure, updated 2017, as applicable.

ATTACHMENT 4



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2020-3-DP-Wet

Project Site: C City/County: Middlebury/Addison Smp. Date: 5/6/2020
Applicant/Owner: VELCO State: Vermont Sampling Point: 2020-3-DP-Wet
Investigator(s): RMS/JWS Section, Township, Range:
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 6 to 12
Subregion (LRR or MLRA): LRR R Lat: 44.015546 Long: Datum: NAD 83
Soil Map Unit: Vergennes clay NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? YES
Hydric Soil Present? YES
Wetland Hydrology Present? YES
Is This Sample Area Within a Wetland? YES
Remarks: Farm field

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial (B7) Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks)
Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial (C9) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Depth (inches): Water Table Present? X Depth (inches): 2 Saturation Present? X Depth (inches): surface Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 1.02" of rain in 7 days prior in Middlebury, VT (NWS 2018); PDSI 1.05 (Near Normal) for week ending 5/09/2020

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth, Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8)
Indicators for Problematic Hydric Soils3: 2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Dark Surface (S9) (LRR K, L, M) Polyvalue Below Surface (S8) (LRR K, L) Thin Dark Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Red Parent Material (F21) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks:

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>10.5</u> x 1 = <u>10.5</u> FACW <u>73.5</u> x 2 = <u>147</u> FAC _____ x 3 = _____ FACU <u>3</u> x 4 = <u>12</u> UPL _____ x 5 = _____ Sum: <u>87</u> (A) <u>169.5</u> (B) Prevalence Index = B/A = <u>1.95</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Shrub Stratum (Plot size: <u>15' RAD</u>)					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Herb Stratum (Plot size: <u>5' RAD</u>)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	Phalaris arundinacea	63	X	FACW	
2.	Calamagrostis stricta	10.5		FACW	
3.	Alopecurus geniculatus	10.5		OBL	
4.	Taraxacum officinale	3		FACU	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
		87 = Total Cover			
Woody Vines (Plot size: <u>15' RAD</u>)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
		_____ = Total Cover			Hydrophytic Vegetation Present? <u>YES</u>
Remarks: (If observed, list morphological adaptations below).					



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2020-3-DP-Up

Project Site: C City/County: Middlebury/Addison Samp. Date: 5/6/2020
Applicant/Owner: VELCO State: Vermont Sampling Point: 2020-3-DP-Up
Investigator(s): RMS/JWS Section, Township, Range:
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 6 to 12
Subregion (LRR or MLRA): LRR R Lat: 44.015436 Long: Datum: NAD 83
Soil Map Unit: Vergennes clay NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? NO
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: Farm field

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B13) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5) Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches):
Water Table Present? Depth (inches):
Saturation Present? Depth (inches):
Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
1.02" of rain in 7 days prior in Middlebury, VT (NWS 2018); PDSI 1.05 (Near Normal) for week ending 5/09/2020

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix, Redox Features (Color, %, Type, Loc), Texture, Remarks.
0-6: 10 YR 5/3, 100, SILTY CLAY
6-12: 10 YR 4/3, 100, SILTY CLAY

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S9) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 12
Hydric Soil Present? NO

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: _____ (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: _____ (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				_____ = Total Cover	Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU <u>99.5</u> x 4 = <u>398</u> UPL <u>6</u> x 5 = <u>30</u> Sum: <u>105.5</u> (A) _____ <u>428</u> (B) Prevalence Index = B/A = <u>4.06</u>
Sapling Stratum	(Plot size: <u>15' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				_____ = Total Cover	
Shrub Stratum	(Plot size: <u>15' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				_____ = Total Cover	
Herb Stratum	(Plot size: <u>5' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<u>Plantago major</u>	<u>38</u>	<u>X</u>	<u>FACU</u>	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height. Hydrophytic Vegetation Present? <u>NO</u>
2.	<u>Trifolium pratense</u>	<u>38</u>	<u>X</u>	<u>FACU</u>	
3.	<u>Phleum pratense</u>	<u>20.5</u>		<u>FACU</u>	
4.	<u>Taraxacum officinale</u>	<u>3</u>		<u>FACU</u>	
5.	<u>Daucus carota</u>	<u>3</u>		<u>UPL</u>	
6.	<u>Vicia cracca L.</u>	<u>3</u>		<u>UPL</u>	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>105.5</u> = Total Cover	
Woody Vines	(Plot size: <u>15' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				_____ = Total Cover	

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

ATTACHMENT 5

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

Project: Middlebury SCAP

Client: VELCO

Location: Middlebury, Vermont

Prepared By: VHB (R. Scott) - November 20, 2020 (Updated December 8, 2022)

Vermont Natural Heritage Inventory Database Query Radius: One Mile

Species	Common Name(s)	EO ID# ²	EO #	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO Last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ¹	EO Mapped within Map Extent (Yes/No)	Potential for Habitat to Occur Onsite? (Yes/No)	Survey Recommended?	
															(Yes/No)	Comments
<i>Trichostema brachiatum</i>	False Pennyroyal	6597		Plant	S1	G5	-	-	2013	Ledges, fields, river banks, woodlands, forested hillsides.	Means woods, north and west of the Site.	late summer	No	Yes	No	Not state-listed and not mapped within Study Area.
<i>Lonicera hirsuta</i>	Hairy Honeysuckle	11672	29	Plant	S2	G5	-	-	2013	Rocky forests, woodlands, and ledes, often in high Ph bedrock regions.	Found along side a trail in a park west of the Study Area	summer	No	No	No	Not state-listed and not mapped within Study Area.
<i>Myotis septentrionalis</i>	Northern long-eared bat	6999		Animal	S1	G1G2	E	T	2017	Open fields and forest edges	Observed in downtown Middlebury	-	No	Yes	Yes	PRT survey conducted

¹Potential Sources for Habitat Description and Optimal Survey Time:

DeGraaf, R.M. and M. Yamasaki. 2001. *New England Wildlife: Habitat, Natural History, and Distribution*. University Press of New England. Lebanon, NH.

Gilman, A.V. 2015. *New Flora of Vermont*. The New York Botanical Garden.

Gleason, H. A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeast United States and Adjacent Canada*. The New York Botanical Garden.

Haines, A. 2011. *Flora Novae Angliae*. New England Wildflower Society / Yale University Press, New Haven, CT.

Magee, D.W., and H.E. Ahles. 2007. *Flora of the Northeast: A Manual of the Vascular Flora of New England Adjacent New York*. University of Massachusetts Press. Amherst, MA.

McFarland, K. P. and B. Pfeiffer. 2019. *Vermont Butterfly Survey*. Vermont Center for Ecostudies - Vermont Atlas of Life.

Newcomb, L. 1977. *Newcomb's Wildflower Guide*. Little, Brown, and Company, Boston, MA.

Pfeiffer, B., Blust, M., and K. McFarland. 2019. *Vermont Odonata Atlas*. Vermont Center for Ecostudies-Vermont Atlas of Life.

Thompson, E.H. and E.R. Sorenson. 2005. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. Vermont Department of Fish and Wildlife and The Nature Conservancy.

Vermont Atlas of Life. 2017. *The Vermont Freshwater Mussel Atlas*. Vermont Center for Ecostudies - Vermont Atlas of Life.

²Sources for Occurrence Description:

Vermont Natural Heritage Inventory. 2019. Element Occurrence Reports. Fish and Wildlife Department. Accessed February 2019.

ATTACHMENT 6



United States Department of the Interior



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

In Reply Refer To:
Project Code: 2023-0011109
Project Name: Middlebury SCAP

November 01, 2022

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

To Whom It May Concern:

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

About Official Species Lists

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

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

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

Endangered Species Act Project Review

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

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

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

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

Northern Long-eared Bat Update - Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of NLEB after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

Additional Info About Section 7 of the Act

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

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

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

Candidate species that appear on the enclosed species list have no current protections under the

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

Migratory Birds

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

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

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

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

Attachment(s): Official Species List

Attachment(s):

- Official Species List
-

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Project Code: 2023-0011109

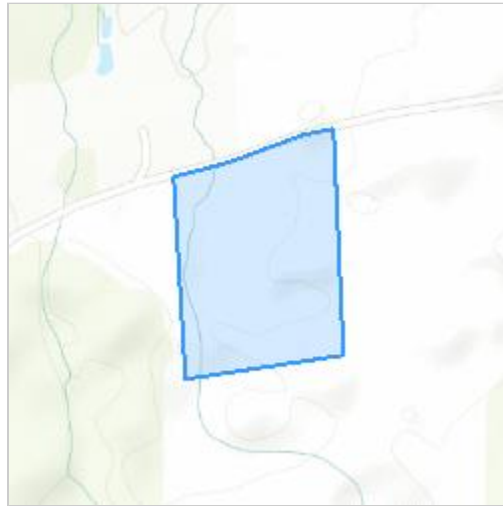
Project Name: Middlebury SCAP

Project Type: Transmission Line - Maintenance/Modification - Above Ground

Project Description: Substation

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.0142491,-73.13286975851864,14z>



Counties: Addison County, Vermont

Endangered Species Act Species

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

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

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

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

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

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

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

Critical habitats

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

IPaC User Contact Information

Agency: VHB
Name: Benjamin Galligan
Address: 40 IDX Drive
Address Line 2: Building 100 Suite 200
City: South Burlington
State: VT
Zip: 05430-7771
Email: bgalligan@vhb.com
Phone: 8023915572

ATTACHMENT 7

Project: VELCO Middlebury Substation SCAP
 Species Checklist - Partial Floristic Inventory
 Date: July 28, 2020 (Updated December 8, 2022)
 Survey Dates: July 10, 2020

Scientific Name ¹	Common Name	Family	Observed Habitat		VT Rarity Rank ²	Non-Native Invasive Species ³
			Naturalized Field/Forest Edge	Wetland		
Acer negundo L.	boxelder	Aceraceae	X			
Acer rubrum L.	red maple	Aceraceae	X			
Achillea millefolium L.	common yarrow	Asteraceae	X			
Actaea rubra (Aiton) Willd.	red baneberry	Ranunculaceae	X			
Agrostis gigantea Roth	redtop	Poaceae	X	X		
Alliaria petiolata (M. Bieb.) Cavara & Grande	garlic mustard	Brassicaceae	X			B
Ambrosia artemisiifolia L.	annual ragweed	Asteraceae	X			
Anemone virginiana L.	tall thimbleweed	Ranunculaceae	X			
Arctium minus Bernh.	lesser burdock	Asteraceae	X			
Artemisia vulgaris L.	common wormwood	Asteraceae	X			
Asclepias syriaca L.	common milkweed	Asclepiadaceae	X			
Berberis thunbergii DC.	Japanese barberry	Berberidaceae	X			B
Bidens cernua L.	nodding beggartick	Asteraceae		X		
Bromus inermis Leys.	smooth brome	Poaceae	X			
Cardamine pensylvanica Muhl. ex Willd.	Pennsylvania bittercress	Brassicaceae	X	X		
Carex scoparia Schkuhr ex Willd.	broom sedge	Cyperaceae	X	X		
Carex vulpinoidea Michx.	fox sedge	Cyperaceae		X		
Chenopodium album L.	lambsquarters	Chenopodiaceae	X			
Cichorium intybus L.	chicory	Asteraceae	X			
Circaea lutetiana L.	broadleaf enchanter's	Onagraceae	X			
Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	X			
Convolvulus arvensis L.	field bindweed	Convolvulaceae	X			
Coryza canadensis (L.) Cronquist	Canadian horseweed	Asteraceae	X			
Cornus amomum Mill.	silky dogwood	Cornaceae	X	X		
Cornus sericea L.	redosier dogwood	Cornaceae		X		
Dactylis glomerata L.	orchardgrass	Poaceae	X			
Daucus carota L.	Queen Anne's lace	Apiaceae	X			
Epilobium coloratum Biehler	purpleleaf willowherb	Onagraceae	X			
Equisetum arvense L.	field horsetail	Equisetaceae		X		
Erigeron annuus (L.) Pers.	eastern daisy fleabane	Asteraceae	X			
Euthamia graminifolia (L.) Nutt.	flat-top goldentop	Asteraceae	X	X		
Fragaria vesca L.	woodland strawberry	Rosaceae	X			
Fraxinus americana L.	white ash	Oleaceae	X			
Galium mollugo L.	false baby's breath	Rubiaceae	X			
Galium palustre L.	common marsh bedstraw	Rubiaceae		X		
Helianthus tuberosus L.	Jerusalem artichoke	Asteraceae	X			
Hesperis matronalis L.	dames rocket	Brassicaceae	X			WL
Hypericum perforatum L.	common St. Johnswort	Clusiaceae	X			
Impatiens capensis Meerb.	jewelweed	Balsaminaceae		X		
Juncus effusus L.	common rush	Juncaceae		X		
Juncus tenuis Willd.	poverty rush	Juncaceae	X			
Juniperus virginiana L.	eastern redcedar	Cupressaceae	X			
Leonurus cardiaca L.	common motherwort	Lamiaceae	X			
Leucanthemum vulgare Lam.	oxeye daisy	Asteraceae	X			
Lolium perenne L.	perennial ryegrass	Poaceae	X			
Lonicera morrowii A. Gray	Morrow's honeysuckle	Caprifoliaceae	X			B
Lonicera tatarica L.	Tatarian honeysuckle	Caprifoliaceae	X			B
Lotus corniculatus L.	bird's-foot trefoil	Fabaceae	X			
Lycopus americanus Muhl. ex W.P.C. Barton	American water horehound	Lamiaceae		X		
Lythrum salicaria L.	purple loosestrife	Lythraceae		X		B
Maianthemum racemosum (L.) Link	feathery false lily of the valley	Liliaceae	X			
Medicago sativa L.	alfalfa	Fabaceae	X			
Oenothera biennis L.	common evening primrose	Onagraceae	X			
Oxalis stricta L.	common yellow oxalis	Oxalidaceae	X			
Pastinaca sativa L.	wild parsnip	Apiaceae	X			
Phalaris arundinacea L.	reed canarygrass	Poaceae	X	X		WL
Phleum pratense L.	timothy	Poaceae	X			
Pinus strobus L.	eastern white pine	Pinaceae	X			
Populus tremuloides Michx.	quaking aspen	Salicaceae	X			
Potentilla simplex Michx.	common cinquefoil	Rosaceae	X			
Prunus serotina Ehrh.	black cherry	Rosaceae	X			
Prunus virginiana L.	chokecherry	Rosaceae	X			

Scientific Name ¹	Common Name	Family	Observed Habitat		VT Rarity Rank ²	Non-Native Invasive Species ³
			Naturalized Field/Forest Edge	Wetland		
Quercus alba L.	white oak	Fagaceae	X			
Ranunculus acris L.	tall buttercup	Ranunculaceae	X			
Rhamnus cathartica L.	common buckthorn	Rhamnaceae	X			
Rhus typhina L.	staghorn sumac	Anacardiaceae	X			
Rubus allegheniensis Porter	Allegheny blackberry	Rosaceae	X			
Rubus idaeus L.	American red raspberry	Rosaceae	X			
Rumex obtusifolius L.	bitter dock	Polygonaceae	X			
Salix discolor Muhl.	pussy willow	Salicaceae		X		
Scirpus atrovirens Willd.	green bulrush	Cyperaceae		X		
Solanum dulcamara L.	climbing nightshade	Solanaceae	X			
Solidago canadensis L.	Canada goldenrod	Asteraceae	X			
Solidago gigantea Aiton	giant goldenrod	Asteraceae	X			
Solidago juncea Aiton	early goldenrod	Asteraceae	X			
Symphotrichum cordifolium (L.) G.L. Nesom	common blue wood aster	Asteraceae	X			
Symphotrichum lateriflorum (L.) Á. Löve & D. Löve	calico aster	Asteraceae	X			
Taraxacum officinale F.H. Wigg.	common dandelion	Asteraceae	X			
Thlaspi arvense L.	field pennycress	Brassicaceae	X			
Tilia americana L.	American basswood	Tiliaceae	X			
Trifolium hybridum L.	alsike clover	Fabaceae	X			
Trifolium repens L.	white clover	Fabaceae	X			
Tussilago farfara L.	coltsfoot	Asteraceae	X	X		
Typha latifolia L.	broadleaf cattail	Typhaceae		X		
Verbena hastata L.	swamp verbena	Verbenaceae		X		
Viburnum dentatum L.	Arrowwood	Caprifoliaceae	X			
Viburnum opulus L.	European cranberrybush	Caprifoliaceae	X			
Vicia cracca L.	bird vetch	Fabaceae	X			
Viola sororia Willd.	common blue violet	Violaceae	X			
Vitis aestivalis Michx.	summer grape	Vitaceae	X			

X - Plant species was found in this community type.

¹ Nomenclature follows USDA-NRCS PLANTS database (plants.usda.gov/) (2017).

² The Vermont Rarity Rank from the "Rare and Uncommon Native Vascular Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated March 24, 2017.

³ **Class B Noxious Weeds Species (B)** from: Quarantine #3- Noxious Weeds (2012). **Watch List Species (WL)** from: Vermont Wildlife Action Plan- Appendix K Exotic Invasive and Pest Species (2017). Vermont Fish & Wildlife Department