APPLICATION FOR INDIVIDUAL SECTION 401 WATER QUALITY CERTIFICATION

1. Applicant	Applicant Information			
1.1 Contact Person	Donald Jessome and/or Josh Bagnato			
1.2 Company Name	Champlain VT, LLC d/b/a TDI New England			
1.3 Mailing Address	**Street / PO Box:** P.O. Box 155	**City / Town:** Charlotte	**State:** VT	**Zip Code:** 05445
1.4 Email Address	donald.jessome@chvtllc.com / josh.bagnato@chvtllc.com			
1.5 Phone Number	802-885-3890 / 802-477-3830			
2. Representative	Consultant, engineer, or other representative that is responsible for filling out this application, if other than the applicant.			
2.1 Representative Name	Jeffrey A. Nelson			
2.2 Representative Company Name	Vanasse Hangen Brustlin, Inc.			
2.3 Representative Address	**Street / PO Box:** 40 IDX Drive, Building 100, Suite 200	**City / Town:** S. Burlington	**State:** VT	**Zip Code:** 05403
2.4 Representative Phone Number	802-497-6150			
2.5 Representative Email Address	jnelson@vhb.com			
3. Landowner	If the applicant is not the landowner, please provide a list of all landowners owning property that is part of the project site.			
3.1 Landowner Name	Applicant to obtain necessary easements, permits or licenses to construct and operate Project.			
3.2 Landowner Company Name	NA			
3.3 Landowner Address	**Street / PO Box:** NA	**City / Town:**	**State:**	**Zip Code:**
3.4 Landowner Phone Number/Email Address	NA			
4. Pre-Application Meeting	Have you had your meeting yet? The Department of Environmental Conservation strongly encourages applicants to schedule and attend a pre-application meeting with affected programs prior to submitting an application.			
	☒ Yes. See below for dates of the most applicable meetings/site visits: April 24, 2014 - Field Protocol and Project Kickoff Meeting at ANR (ANR, USACE, TDI-NE, TRC, VHB) July 11, 2014- Field Site Visit (ANR, HDR, TRC, VHB) August 27, 2014- Field Site Visit Stream and Wetland Delineation and Classification Review (ANR, USACE, TRC, VHB) October 20, 2014- Stream Alteration Permit and Culvert Review (ANR, DEC, TDI-NE, TRC, VHB) January 5, 2015- 401, Stormwater and Wetlands meetings with ANR (ANR, TDI-NE, TRC, VHB) January 22, 2015- Lake Encroachment Permits (ANR, TDI-NE, VHB) February 27, 2015 - Wetland Classification Review for the Vermont Wetland Permit (ANR, TRC, VHB)			

	If you need to schedule a meeting, please call or email Megan McIntyre at 802-490-6110 or megan.mcintyre@state.vt.us.

5.a Resource Proposed for Alteration:	5.b Type(s) of Proposed Alteration(s):
☒ Wetlands ☒ Stream / Rivers ☒ Lake / Pond / Reservoir Name of Resource(s) (Please use consistent ID#s throughout the application for identification of unnamed resources. Please see application guide for more details and examples):	☒ Stream / River Crossing ☒ Utility Line or Linear Transportation Project ☐ Intake / Outfall Structure ☐ Stream or Wetland Restoration ☒ Wetland Fill / Excavation ☐ Dredging ☐ Launch Ramp ☐ Bank Stabilization ☐ Impoundment ☒ Other: electric cables in Lake Champlain

6. Additional Permits and Supporting Documents

6.1 Supporting Documents (Appendix I). Please list any additional Supporting Documents and attach to application labeled Appendix I. This should include, but not be limited to Memorandum of Understanding (MOU)'s with the Vermont Agency of Natural Resources (if applicable), applicable state and federal permits and permit applications, federal 404 permit application including alternatives analysis and mitigation package, site maps and plans, vegetation management plans, easement information, etc. Complete on an attached sheet if more room is needed. In the brief description column include page numbers for each appendix for quick reference. **Note, this section needs to be updated as supporting documents are updated.

Appendix	Document Title	Preparing Agent	Date of Last Revision	Brief Description
Appendix IA	See attached list of appendices			
Appendix IB				
Appendix IC				
Appendix ID				
Appendix IE				
Appendix IF				
Appendix IG				
Appendix IH				

7. Project Details

7.1 Project / Site Name	New England Clean Power Link Project ("NECPL" or "Project")
7.2 County or Counties	County or counties in which the project site is located. Grand Isle, Chittenden, Addison, Rutland and Windsor Counties
7.3 Town(s)	Town(s) in which the project site is located.

	The Lake Route is located in Lake Champlain, from Alburgh to Benson. The Overland Route is located in Alburgh, Benson, West Haven, Fair Haven, Castleton, Ira, West Rutland, Rutland, Clarendon, Shrewsbury, Wallingford, Mount Holly, Ludlow and Cavendish.
7.4 Physical Address	911 street address, if available. Numerous (linear project, see Project Overview Map, Appendix IA)
7.5 Compass Directions & Road(s)	Compass direction of the project in relation to the road(s) or nearest intersection. Name the road(s) that the project is located on. The Overland Cable Route of the Project is located in 13 towns in Grand Isle, Rutland and Windsor Counties as depicted on the Project Overview Map (Appendix Ia). The Natural Resource Maps ("NR Maps") included in Appendix IIf portray the Overland Route alignment and the identified natural resources along the route. The Lake Cable Route of the Project occurs within Lake Champlain as depicted on the NECPL Lake Segment Map (Appendix Ib). The transmission line will be installed according to the following route and approximate linear lengths:* 1. (0.5 miles) Overland Route from Canadian Border along Bay Road to 55 Bay Road, Alburgh; enter Lake Champlain to start Lake Cable Route; 2. (97.2 miles) Lake Cable Route within Lake Champlain; 3. (4.2 miles) Exit Lake Champlain to start Overland Route at 113 Stoney Point Road, Benson to Benson Town Road rights-of-way (ROWs) east to Vermont Route 22A; 4. (8.2 miles) Vermont Route 22A ROW south to U.S. Route 4 in Fair Haven; 5. (17.4 miles) U.S. Route 4 ROW east to U.S. Route 7 in Rutland; 6. (2.7 miles) U.S. Route 7 ROW south to Vermont Route 103 in Clarendon; 7. (3.9 miles) Vermont Route 103 south/southeast to Railroad Route in Shrewsbury; 8. (3.5 miles) Green Mountain Railroad Corp (GMRC) Railroad ROW in Shrewsbury south/southeast to Route 103 in Wallingford; 9. (10.6 miles) Vermont Route 103 ROW south/southeast to Vermont Route 100 in Ludlow; 10. (0.8 Miles) Vermont Route 100 ROW north to Town Roads in Ludlow; 11. (4.3 miles) Town Roads in Ludlow to Converter Station Site; 12. (0.6 miles) Proposed alternating current (AC) cable alignment from Converter Station Site in Ludlow to the existing Vermont Electric Power Company (VELCO) Coolidge Substation in Cavendish, VT along town roads; and 13. Several off-ROW laydown areas (which, as proposed, avoid all wetland and water resources). *The mileages listed have minor changes from the filing for a Petition for a Certificate of Public Good (Vermont 30 VSA Section 248) based on immaterial design alterations made since this filing.
7.6 Geographic Features	Identify any distinguishing geographic features near project location site. For General Site Location Information See the Project Overview Map in Appendix Ia and the NECPL Lake Segment and Overland Segment Maps in Appendix Ib.

7.7 Geographical Location Points

Identify the meridian points of all project components. Attach a USGS topographic Site Location Map.

Geographical Project Location	Latitude	Longitude
US Border (start)	45°0'39.01"N	73°19'49.116" W
Alburgh Lake Entry	45°0'22.854"N	73°20'2.806" W
Lake Champlain-Causeway HDD exit/re-entry	44°59'55.635"N	73°20'21.123" W
Lake Champlain-Benson HDD Shoreline Point	43°44'2.498"N	73°22'1.403" W
Converter Station Location	43 25' 56.98"N	72°39'49.821" W

7.8 Project Description Summary

Give a short narrative summary describing what the project is.

Champlain VT, LLC, d/b/a TDI New England (TDI-NE) is proposing the NECPL Project. The NECPL is an HVDC electric transmission line that will provide electricity generated by renewable energy sources to the New England electric grid. The line will run from the Canadian border at Alburgh, VT to the location of a proposed new Converter Station in Ludlow, VT. The Project route (and approximate linear lengths) is described in Section 7.5 of this application form.

The HVDC transmission line will be comprised of two approximately 5-inch diameter cables – one positively charged and the other negatively charged – and will be solid-state dielectric and thus contain no fluids or gases. The nominal operating voltage of the line will be approximately 300 to 320 kilovolts (kV), and the system will be capable of delivering 1,000 megawatts (MW) of electricity. A fiber optic cable will also be installed with the HVDC cables along the entire transmission line route, in order to provide a telecommunications link to operate the Project.

The proposed transmission line Lake Route is approximately 97 miles in length and will be buried to a target depth of 3 to 4 feet in the bed of Lake Champlain except at water depths of greater than 150 feet where the cables will be placed on the bottom and self-burial of the cables in sediment will generally occur. In areas where there are obstacles to burial (e.g. existing infrastructure, bedrock), protective coverings will be installed over the cables except in the deeper waters of the lake (i.e. greater than 150 feet). Construction Methods and Typical Details for Construction of the Lake Segment are provided in the NECPL Lake Chaplain Segment Plans (Appendix Id)

The Overland Route is approximately 57 miles in length and is located within existing public (state and town) road and railroad ROWs and within three properties controlled by TDI-NE (specifically, at the Proposed Converter Station Site and at the Lake Champlain shoreline transitions in Alburgh and Benson).

In Ludlow, the HVDC line will terminate at the proposed Converter Station that will convert the electrical power from direct current (DC) to alternating current (AC). An underground AC transmission line will then run to the existing 345 kV Coolidge Substation in Cavendish, VT located approximately 0.6 miles to the south that is owned and operated by the VELCO.

Along the Overland Route, the transmission cables will be installed primarily underground by utilizing a combination of open trench excavation, horizontal directional drilling (HDD), and jack-and-bore construction techniques, notably one HDD under the southern end of Lake Bomoseen. The only potential areas where underground burial will not occur is at two stream/river crossings in Ludlow where the cables are proposed to be placed in a conduit and attached to a bridge or culvert headwall. Along town roads (in Benson, Alburgh and Ludlow), the cables are proposed to be installed in the existing roadways. Along state-controlled ("VTrans") roads and railroads, the transmission line will primarily be installed along the edge of the existing VTrans ROWs, with some limited in-road installation proposed.

Construction Methods and Typical Details for construction of the Overland Route are included in the NECPL Overland Route Segment EPSC Plans (Appendix Ic).

The Applicable NECPL Permit Table in Appendix Va summarizes the environmental permits that have been submitted or will be submitted for the Project.

7.9 Project Description Details	Give a more detailed narrative description of the project, including phasing and a list of specific project components. The Lake Cable Route is discussed in detail in the Lake Champlain Encroachment Permit Application, provided in Appendix Ij. The Lake Cable Route is generally proposed in deeper sections of the Lake away from the shoreline. As discussed in the Project Overview section, certain areas, such as known fisheries, steep slopes, and archaeological resources, have been avoided to the extent possible during route design. The proposed underwater portions of the transmission line, approximately 97 miles in length, will be buried to a target depth of 3-4 feet in the bed of Lake Champlain except at water depths of greater than 150 feet where the cables will be placed on the bottom and self-burial of the cables in sediment is expected. In areas where there are obstacles to burial (e.g. existing infrastructure, bedrock), protective coverings will be installed except in the deeper waters of the Lake (i.e. greater than 150 feet). The cable will enter the Lake in Alburgh and exit the Lake in Benson via transitional HDD's) on the following TDI-NE controlled properties: • 55 Bay Road, Alburgh, VT (Alburgh Parcel ID: BY055) • 229 Stony Point Road, Benson, VT (Benson Parcel ID: 4-31.5) The Benson HDD launch area is setback approximately 100 feet from the shoreline of the Lake. As described in the Lake Champlain Encroachment Permit in Appendix Ij, the proposed entrance route involves an approximate 0.6-mile HDD from the launch site in a southwesterly direction where the boring would emerge on land in a receiving pit at the existing VT Fish and Wildlife Department (FWD) Korean War Veterans Access Area (FWD Access Area or causeway) off of US Route 2 in Alburgh, Vermont. A manhole and fiber optic hand hole will be constructed on the FWD Access Area for cable splicing and future access. A second HDD would extend from the manhole area approximately 0.2-miles in a southwesterly direction to an exit point in the Lake. A receiver casing or temporary cofferdam would be used at the exit point to receive the drilling fluid and serve as the point where first the reamer and then the high-density polyethylene ("HDPE") conduit are attached and pulled back through the borehole. The proposed exit location from Lake Champlain involves an approximate 0.2-mile HDD from the HDD launch area on TDI-NE owned land in Benson to a receiver casing or coffer dam located within the Lake. The Benson HDD launch area is setback over 400 feet from the shoreline of the Lake. While the entry and exit points to the Lake are proposed to remain fixed, the aquatic routing as shown in the Lake Route Series Plans as provided in the Lake Champlain Encroachment Permit in Appendix Ij, represents a proposed general alignment of the Project, which may be adjusted in places following more detailed design work necessary for the final construction-level plans. Construction level engineering will not be initiated until after all state and federal approvals have been received, so that any final site specific analysis completed will ensure compliance with the regulatory requirements that come with those authorizations. TDI-NE is seeking the flexibility to adjust the Lake route during final design with the understanding that any changes in routing would have the same or less impacts than the current route proposed. The transmission line within the Overland Route will be buried underground beginning at the U.S. - Canada border in Alburgh to the Lake entry point, and from the Lake exit point in Benson to the Converter Station in Ludlow, VT. There are two locations where the cables will not be buried, which are where the Project crosses the Black River and a stream along East Lake Road in Ludlow, VT. At these two locations the cables will be installed in 10-foot metal conduits which will be attached to the bridge and culvert structures. The remainder of the line will primarily be installed via open trenching techniques, with HDD and jack-and-bore installation being utilized in specific areas to avoid rivers and streams, wetlands, shorelines and existing infrastructure as depicted on the NR Maps in Appendix IIf. Along town roads in Benson and Ludlow, the cables will be installed within the existing roadways. Along the VTrans road and railroad ROWs, some limited in-road / railroad installation is proposed; however, the cable has typically been sited near the edge of the existing VTrans ROWs to limit encumbrances on VTrans and Vermont Rail System operations and maintenance and possible future infrastructure upgrades. The typically 12-foot-wide Permanent Project Corridor (PPC) is located entirely within public road and railroad ROWs, except where the cable will be installed on the parcels controlled by TDI-NE at the Lake Champlain shoreline transitions in Alburgh and Benson and at the new proposed Converter Station site in Ludlow. Temporary Workspaces will be confined to the public road and railroad ROW to the greatest extent practical, and all proposed wetland and buffer zone impact and clearing areas are located within the existing public ROWs. A typical Temporary Workspace for construction equipment in a roadway ROW will be approximately

	20 to 50 feet wide along one side of the PPC, although Temporary Workspace requirements and configuration vary considerably along the Overland Route as depicted in the Construction Methods in the EPSC Plans in Appendix Ic, and the associated Impact Exhibits in Appendix III. Temporary Workspace for off-site Laydown Areas are additionally proposed; these areas have been sited to avoid wetland and water resources. Construction Methods and Typical Details within the EPSC Plan Appendix Ic present typical dimensions and configurations of the cable installation and standard construction methods. The "Typical Trench Cross Section" detail portrays typical dimensions of the cable installation and backfilled trench. The two HVDC cables will be laid side-by-side (approximately 12 to 36 inches apart) in a trench approximately 4 to 6 feet deep to provide for at least 3.5 feet of cover over the cables. Deeper excavations may be required due to site-specific constraints (e.g., existing drainage culverts or utilities) and to provide appropriate clearance under streams and/or fluvial erosion hazard areas. A fiber optic cable will also be installed within the trench. The total excavated width of the trench will be approximately 4 feet. Subsequent to laying the cables in the open trench, native subsoils (or thermal sand if required to achieve the required low thermal resistivity immediately around the cables) will be added to the trench to provide at least 1 foot of coverage over the cables (this will depend on field testing of native soils around the trench) and compacted to a density of 95% of the modified proctor theoretical maximum density, in accordance with ASTM Standard D155 (Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort) in order to achieve the required thermal conductivity. Protective plates will be placed directly above the low thermal resistive backfill material. A marker tape will then be placed approximately 2 feet above the cables and then the remainder of the trench will be backfilled and brought to grade. In open-trenched wetland stream areas, the segregated native wetland topsoil will be returned to the excavated areas to restore these areas to original grade. Along Route 100 and the segment of Nelson Road between the proposed Converter Site in Ludlow and the existing VELCO Coolidge Substation, the transmission line will be installed in the existing roadways in concrete-encased duct bank. HDD and Jack-and-Bore will be used to install the transmission cables in transition areas between aquatic and terrestrial portions of the NECPL Project route, under roadway or railway crossing where trenching is challenging or under environmentally sensitive areas such as lakes, rivers, wetlands or RTE. The HDD and Jack-and-Bore details are provided in the EPSC Plan (Appendix Ic) and the HDD Summary Table (Appendix If).
7.10 Project Purpose	Describe the project purpose. The NECPL Project's purpose is to deliver clean, renewable power from Canada into Vermont and the markets operated by the New England Independent System Operator (ISO-NE) through a new 1,000 MW HVDC underground/underwater merchant transmission line. The NECPL Project is needed to further the New England States' energy and environmental policy goals, diversify fuel supply in ISO-NE, lower energy prices for consumers, reduce carbon emissions in New England, improve the economic competitiveness of the New England States, and provide economic benefits to Vermont and other New England States.
7.11 Total Project Acres	The overland portion of the Project is approximately 290-acres
7.12 Total Disturbed Area Associated with Project	Per the Project's Individual Construction Stormwater Discharge Permit (INDC) Application, the total disturbed area associated with the Project will be approximately 286 acres (EPSC narrative in Appendix Ig).
7.13 Site Slope Percent	Please provide the maximum slope percent. For linear projects, please provide the maximum and minimum slope percentage across the project. Approximately 78% of the overland portion of the typically PPC is located on gently-sloped (0 - 6 %) to moderately-sloped (7 - 15 %) soils. Less than 4% is located on soil types with a maximum slope of 80%. The remaining approximately 19% of the Overland Route area has a high slope range (16-50%). These ranges are based on the NRCS Soil Survey data for Grand Isle, Rutland and Windsor counties in VT.

7.14 Physical Description of Project Area

Give a narrative description of the physical attributes of the project site.

A detailed physical description of the Project area is contained in the NECPL Natural Resources Report (Appendix IIa).

The majority of the Overland Route is primarily collocated within existing transportation, along road and railroad ROWs. These ROWs have existing infrastructure and are generally cleared.

The southern portion of the Overland Route is generally a northwest to southeast alignment that traverses through portions of fourteen towns in Rutland and Windsor Counties. In addition, there is small portion of the transmission corridor in the town of Alburgh in Grand Isle, VT (see the Project Overview Map in Appendix Ia).

All Project components are located in the Champlain Valley, Taconic Mountains,Vermont Valley and Southern Green Mountains biophysical regions of the Vermont.

The land surrounding the Project route drains to five major Vermont watersheds, including the Lake Champlain Direct Main Lake, Lake Champlain Direct South End, Poultney River, Otter Creek, and the Black River watershed. Named streams that intersect the proposed Study Area include the Hubbardton River, Mud Brook, North Brenton Brook, Castleton River, Clarendon River, Otter Creek, Cold River, Mill River, Freeman Brook, Branch Brook, Coleman Brook, and Black River. The Project will also cross under (via HDD) Lake Bomoseen. Elevation in the segments of this overland component study ranges from approximately 100 feet above-mean-sea-level (amsl) at Lake Champlain up to 1660 feet amsl where the Project bisects the Southern Green Mountains biophysical region in Mt. Holly.

7.15 Soil K-Factor(s)

The Project Soils Map and Soils Table (Appendices Vd and Ve, respectively) detail soil K-factors for all soils encountered in the Project LOD.

7.16 Hydrologic Soil Group(s)

Due to the length and cross-county nature of the Project, the Overland Route intersects all four hydrologic soil groups, based on soil mapping from NRCS. See the Hydrologic Soil Group table in the below table for a breakdown of the hydrologic soil groups crossed by the Project.

NRCS Soil Hydro Group	Area (acres)	% of Total Area
A- soils have a high infiltration rate	58	20%
B- soils have a moderate infiltration rate	45	16%
C- soils have a slow infiltration rate	106	38%
D- soils have a very slow infiltration rate	71	25%
Not Rated / Water	6.17	2%
Total	**286**	**100%**

7.17 Receiving Waters	Identify all surface waters within the major basins (including streams/rivers, wetlands, and lakes) that drain from the project, beginning with waters within the proposed project area and progressing downstream. If the waterbody does not have a formal name, a descriptive name should be provided (e.g. unnamed tributary of the Mad River). (There are 17 major watershed basins defined by VTDEC in: http://www.vtwaterquality.org/mapp/htm/mp_assessment.htm) Details on receiving waters for the Project are included in the NECPL Natural Resources Report (Appendix IIa) and the Stream Alteration Individual Permit Application (Appendix IVa). Lands surrounding the Project route drain to five major Vermont watersheds: Lake Champlain Direct Main Lake, Lake Champlain Direct South End, Poultney River, Otter Creek and Black River watershed. Eleven named streams will be crossed by the proposed alignment: Hubbardton River, Mud Brook, North Brenton Brook, Castleton River, Clarendon River, Otter Creek, Cold River, Freeman Brook, Branch Brook (crossed twice), Coleman Brook, and Black River, as well as Lake Bomoseen.

7.18 Table 1: Watershed Area Summary from Project Area to Receiving Waters

Watershed(s)	Watershed Area (acres)	Disturbed Area (acres)	% Area Disturbed
Please refer to: • The Watershed Area Summary from Project Area to Receiving Waters table (Appendix Vb) • Watershed Map (Appendix Vc)			

8. Cumulative Impacts: For help identifying environmental features regarding your property use the VTANR Natural Resources Atlas: http://www.anr.state.vt.us/dec/maps.htm.

	Impervious surface % of property	Impervious surface square footage
8.1 Impervious Surface	Calculation of existing impervious surface percent of property is not feasible for a linear project that is not located on a discrete property. The additional impervious surface resulting from the Project is located at the converter station. The existing land at the converter station has no impervious surface and is currently undeveloped forestland.	The only proposed impervious surface associated with the Project will be at the proposed converter station (approximately 2 acres). See the NECPL Operational Stormwater Permit Narrative (Appendix Ih).

8.2 Land Use	Describe current and prior uses of the project property, including activities such as logging and agriculture or other uses that may have impacted water quality. Lake Champlain is a large freshwater lake at the northwest corner of Vermont. The waters of Lake Champlain reach their greatest depth, over 400 feet, in the area between Charlotte, Vermont and Essex, New York. The average depth of the lake is only 64 feet. However, water depths along the NECPL Project vary from 10 to 400 feet. Throughout Lake Champlain there are basins, troughs, and plateaus. The cable is sited to remain away from the shoreline and avoid steep changes in slope, areas known to provide habitat for fish and marine archaeological sites to the extent possible. Along the Section of Lake Champlain that extends from the Town of Alburgh south to the southern end of Grand Isle (approximately Mile Post 29), water depths vary widely ranging from approximately 15 feet deep where the cable enters the water to 240 feet deep near the southern end of Grand Isle. Superficial sediments along this section appear to be fine grained with rocky areas and obstructions occurring in several locations. Sub-bottom profile surveys revealed a layer of soft sediments. The section of Lake Champlain that extends between the southern end of Grand Isle (MP 29) and Chimney Point (MP 74) encompasses some of the deepest areas along NECPL with water depths increasing to as much as nearly 400 feet. Overall the surficial features between Grand Isle and Chimney Point are relatively smooth, although there were many large bathymetric features observed, causing abrupt changes in water depths over relatively short distances. The sub-bottom profiles showed deep penetration throughout this section, indicating a soft bottom and some possible rock outcrops restricted penetration in isolated areas. The southern section of Lake Champlain is similar to a high-order low gradient river in terms of its configuration and composition. Water depths along this segment of the cable route are

generally less than 30 feet. Surficial sediments along this portion of the route are fine grained, with some areas containing course grain surficial sediments and larger materials, specifically in the southern half of this stretch.

As described in the NECPL Natural Resources Report in (Appendix IIa), land uses along the Overland route of the Project are generally comprised of maintained local, state, and U.S. roadway and railroad corridors, mowed fields, agricultural lands, hardwood and mixed hardwood/coniferous forests, interspersed with other natural and disturbed vegetative communities. The alignment is mostly existing road ROW surrounded by scattered residential areas, undeveloped properties, agricultural lands and commercial development. The converter station location is forestland managed silviculturally.

8.3 Land Cover

Percent and type of change in land cover associated with the project relative to natural cover.

The table below summarizes the approximated percentage of land that would permanently or temporarily be converted from forest to non-forest condition, based on a treeline data layer developed for the Project, utilizing LIDAR and aerial photography.

Overland Cable Route Project Area (acres)	Existing Land Cover		Proposed Land Cover		Portion of Overland Cable Route Area (%)
	Type[1]	Acres	Type	Acres	
286	Forested	62	Permanent non-forest	21	7%
			Temporary cleared	41	14%
	Non-forested	224	No change	224	77%

Noteworthy points on the above table: First, approximately 12 acres of the permanent project clearing is associated with the proposed Converter Station. Second, as noted above, the determination of these clearing areas is through use of LIDAR-derived tree cover data in GIS. As such, the analysis is based on the "drip line" or outside edge of the tree canopy. In actuality, the "trunk line", which is unmapped (due to the technical difficulties of obtaining accurate data of the trunk line vs. the drip line) , represents the location where tree clearing would actually be necessary, and is expected to be further distant (i.e. away from the road or railroad) from the drip line. In certain areas denoted as having clearing, the actual circumstance may only involve trimming of branches, or no tree/forest removal, if Project construction work can be performed under the existing branches. Thus, the permanent and temporary clearing areas presented here are conservative over-estimates of the actual clearing that will be required for the Project.

If the Agency finds that additional information on the current condition of the receiving water(s) beyond what is available is needed to adequately assess potential impacts from the proposed activity, the applicant will be required to supply that information.

Resource Descriptions

9. Wetland Resources

9.1 Type of Wetland(s)

Describe the wetland(s) in the project area including the total number of wetlands in the area, the square footage of each wetland, the number of Class II and III wetlands (according to the Vermont Wetland Rules). If more than two wetlands will be affected by the project, fill out Wetland Resource Table 2, Appendix II by clicking (here) (xlsx, 12kb).

Due to the linear nature of the Project, numerous wetlands are associated with the Overland Route. VHB/TRC field staff conducted wetland delineation and approximate wetland mapping work from May to November 2014. The results of the field investigation can be found in the NECPL Natural Resource Maps, the NECPL Wetland and Waters Delineation Memorandum and the Summary of Delineated and Approximated Wetlands table (all in Appendix IIc and IId). Representative photographs of wetlands are included in Appendix IIb. The singular or larger Class II wetland complexes that are involved in the Project are described in more detail in the Project's Vermont Wetland Permit application.

9.2 Wetland Pre-Project Cumulative Impacts

Describe any known pre-project cumulative impacts to wetlands from land use, agriculture, forestry, development, etc.

Wetlands are associated with the Overland Route. The Project area includes pastureland, cultivated, cleared lands, residential and commercial development, roadways, railways, and utility ROWs. Given the Project proximity to existing land uses and disturbances, activities that have previously impacted wetlands or buffers, either directly (through fill/clearing) or indirectly (hydrologic modification, non-native invasive species introduction, etc.) are prevalent. Additional details are provided in the Project's Vermont Wetland Permit application.

9.3 Wetlands Impacted

Describe the proposed impacts to the wetlands and buffer area (include impacts from fill, clearing, temporary trenching, etc.)

The Overland Route construction will result in direct temporary impacts to state-significant Class II wetlands and 50-foot buffer zones as well as Class III wetlands. No direct permanent impacts (i.e., permanent wetland fill) are proposed.

The Project construction will require impacts to both Class II and Class III wetlands that require specific permit approval. Specific areas of impacts are included in the Project's application material that have been submitted pursuant to the Vermont Wetland Rules (for impacts to state-significant Class II wetlands and buffer zones) and Sections 401 and 404 of the federal Clean Water Act (for impacts to all wetlands and waters of the US).

In wetlands, temporary impacts will result from the temporary woody vegetation removal for installation of construction matting for access (temporary conversion), temporary soil stockpiling or fills, and temporary excavations for the trench. Secondary (permanent clearing) impacts will occur from permanent tree removal in certain wetlands in the PPC. No permanent fills are proposed in wetlands.

Temporary and permanent clearing impacts will also occur in Class II wetlands. Temporary and permanent impacts occur in Class II buffer zones for construction and operation of the Project. All wetlands and buffers proposed to be impacted or cleared by the Project occur adjacent to public road or railroad ROWs. As such, temporary workspace and clearing requirements in wetlands and buffers are minimized, and potential effects to wetland functions are limited. The results of a Class II Wetland impact analysis and descriptions are found in the NECPL Vermont Wetland Permit was submitted on March 6, 2014.

The Overland Route consists of a typically 12-foot-wide PPC centered on the cable alignment. An approximate 4-foot-wide trench will be excavated over the proposed cable alignment to an approximate depth of 4 to 6 feet to install the HVDC cables. Where possible, temporary construction mats will be utilized in wetlands in the PPC to minimize soil disturbance from equipment access and avoid temporary impacts.

However, temporary impacts to wetlands and buffer zones in the PPC will be required due to workspace and access constraints and to accommodate the trench and cable installation and restoration. Wetlands area in the PPC will be temporarily impacted by the following activities: matting, topsoil removal and segregation (to occur in wetlands prior to any soil disturbance or excavation, such as trenching); temporary excavations for the trench, temporary splicing boxes, and drill pits; cut/splice, repair, or replacement of existing culverts; temporary fills or soil stockpiles (to be placed on geotextile fabric or construction mats in wetlands); and

temporary grading (cut and fill) where necessary to establish safe and suitable access areas.

As described in the NECPL Vegetation Management Plan (VMP) included in Appendix Ie, The PPC will be maintained throughout the life of the transmission line operation for low-growth herbaceous and shallow-rooted shrub species to ensure that deep-rooted trees do not establish and damage the installed cables. Thus, permanent clearing is required in palustrine forested (PFO) wetlands and forested buffer zones that overlap the PPC. Permanent clearing in PFO wetlands will result in secondary impact of these wetlands to palustrine emergent (PEM) or palustrine scrub-shrub (PSS) wetlands.

Where HDD is used to install the underground cables in the PPC, no vegetation clearing will be required, excluding limited areas where the HDD is less than 15 feet deep near the HDD entry and exit points. These areas have been captured in the permanent clearing calculations, conservatively, by extending the PPC (12-foot width) approximately 60 feet beyond the drill entry and exit points.

The Overland Route also consists of a proposed Temporary Workspace, which is located adjacent to the PPC and will be utilized during construction for off-road equipment and vehicle access, setup areas for HDD or jack-and-bore, material laydown and staging. The Temporary Workspace varies in width between 20 and 50 feet and is typically proposed on one or both sides of the PPC. Temporary Workspace is absent in some areas, such as where construction equipment will utilize existing roadways. Temporary Workspace for off-site Laydown Areas are additionally proposed; these areas have been sited to avoid wetland and buffer zone resources.

Within Temporary Workspaces, temporary clearing is proposed in some PFO wetlands and forested buffer zones to allow for the installation of temporary construction mats and to establish the temporary construction workspace. Additionally, temporary damage or removal of woody vegetation in PSS wetlands, as may be required for temporary construction mat installation, is considered temporary clearing in this application. Wetland areas subject to temporary clearing in the Temporary Workspace will have construction matting installed to accommodate equipment access during construction. Following construction, mats will be removed and the buffer zones and wetlands will be restored if necessary and allowed to regenerate to pre-construction conditions.

Temporary impacts to wetlands (and Class II wetland buffers) in the Temporary Workspace will primarily be avoided, with the exception of several site-specific instances as described in Impact tables in Appendix IIIa and Impact Exhibits in Appendix III (Class II wetlands and buffers are described in more detail in the Project's application for a Vermont Wetland Permit). These temporary impacts will result from temporary grading (cut and/or fill) to establish safe and suitable equipment access, temporary excavation for drainage culvert repair or replacement in two wetland areas, temporary excavation in buffer zones for jack and bore pits, and implementation of EPSC measures (e.g., temporary stabilized construction entrances in buffer zones). As with work in the PPC, topsoil will be segregated from wetland areas prior to any soil disturbance or excavation, and any temporary fills will be placed on geo-textile fabric or construction mats. Following construction, segregated wetland topsoil will be replaced, and buffer zones and wetlands will be seeded and temporarily stabilized and allowed to regenerate to pre-construction conditions, per the Project's EPSC Plan (Appendix Ic).

The typical cable installation sequence in wetlands includes vegetation clearing, installation of erosion controls, matting, trenching, cable installation, backfilling and ground surface restoration. Mechanized and/or hand clearing will be implemented, and construction mats or the use of low pressure tracked equipment during suitably dry or frozen conditions will be utilized during any mechanized clearing activities as necessary to avoid temporary impact.

As previously indicated, no permanent wetland fill is proposed for the Project. In wetland areas subject to temporary impacts, native topsoil will be segregated and stockpiled on construction mats or geotextile fabric, and then returned to the original wetlands after construction in accordance with the "Typical Wetland Construction" detail included in Appendix Ic. Temporary trench breakers will be installed in the open trench at wetland boundaries (in accordance with the "Typical Wetland Construction" and "Temporary Trench Breaker" details included in Appendix Ic) as necessary to prevent the migration of ground and surface water during construction.

For trench backfill, in instances where native subsoils have low thermal resistivity (based on field testing), the cable trench will be backfilled with the native subsoils. If necessary, a thermal sand with the required low thermal resistivity will be imported and backfilled in the trench to cover the transmission cable a minimum of one foot, and then native subsoils will be backfilled to the approximate depth of the adjacent subsoil/topsoil horizon boundary. Prior to replacement of topsoil, the subsoils will be compacted to a density of 95% of the modified proctor theoretical maximum density, in accordance with ASTM Standard D155 (Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort). In

	wetland areas, the segregated native wetland topsoil will be returned to the excavated areas to restore these areas to original grade. A Project-specific EPSC Plan has been included with the Project application to the VT ANR DEC for an Individual Construction Stormwater Discharge Permit. The narrative is included in Appendix Ig. The Project EPSC Plan specifies EPSC and restoration Best Management Practices (BMPs) to be implemented for temporary impact and clearing. Impacted Class II wetlands and buffer zones will be restored following construction and allowed to regenerate to the approximate preconstruction condition, with the exception of those areas subject to permanent clearing in the PPC, which will convert to low growing herbaceous and/or scrub-shrub communities, or maintained by pre-existing management types. Disturbed soils will be seeded with wetland and upland seed mixes, in wetlands and buffer zones respectively, and stabilized with a weed-free straw mulch or other DEC-approved method. The NECPL Project may result in the limited, temporary diminishment of existing wetland functions which may include water storage for flood water and storm runoff, surface and ground water protection, wildlife habitat, RTE species habitat, and/or erosion control through binding and stabilizing the soil due to the temporary disturbance of soils and vegetation clearing. However, these temporary effects are not expected to be unduly adverse given the site context (i.e., Project has relatively limited effects in each wetland/buffer zone and is adjacent to existing roads and railroads where subject wetland functions are already diminished) and the substantial avoidance and minimization measures implemented by the Project as described in the submitted Vermont Wetland Permit. This application presents the permanent management actions by TDI-NE that would result in permanent wetland/buffer impacts (clearing); however, since the Project is located within existing ROWs, TDI-NE will default to pre-existing management actions (that do not impact the cable) that may be conducted by others within these ROWs that may impact wetlands or buffers. Wetland impact mitigation, including avoidance/minimization/mitigation measures taken, are described in more detail in the Project's Vermont Wetland Permit Application. TDI-NE prepared a complete alternatives analysis as part of the NECPL Project design process (Appendix Ii).
9.4 Table 3: Wetland Impact Table	Fill out the Wetland Impact Table, Appendix III by clicking (here) (xlsx, 11kb) **The wetland impact table is provided in Appendix IIIa.**
9.5 Converted Wetlands	List the square footage of wetlands converted from one type of wetland to another. Example would be conversion of forested wetland to shrub wetland for power line right of way clearing. Submit table if needed as an appendix. Approximately 36,607 square feet of wetland area would be converted from existing forested cover and maintained as a shrub wetland for the typically 12-foot wide PPC. 56,921 square feet of tree clearing would occur in temporary construction areas associated with the Project that would be allowed to revert to forested cover following construction. Appendix III, as noted above, includes detailed information regarding permanent forested wetland conversion and temporary clearing.
10. Stream/River Resources	
10.1 Streams/Rivers Impacted	Describe the perennial streams impacted by the project. As described in the Natural Resources Report in Appendix IIa, VHB/TRC environmental scientists conducted field delineation and assessment of stream features during the period from May 2014 to November 2014. Streams/water features are depicted on the Natural Resource Maps Series in Appendix IIf and included in the Stream Summary Table in Appendix IIe. Of the 52 perennial streams that would be crossed by the Project, 43 of these crossings would be conducted without disturbing the natural stream bed, either by using HDD construction, by installing the cable above or below an existing culvert, or by attaching the cable from the side of an existing structure. In locations where in-stream construction activities are proposed, the use of appropriate EPSC measures and construction details will minimize the impact to aquatic resources. The Project alignment was designed to minimize impacts to streams and rivers by proposing to construct the transmission cable within existing road and railroad ROWs. This approach avoids placing new infrastructure within otherwise unconstrained River Corridors and minimizes the amount of in-stream work by installing crossings at the locations of existing culverts and bridges.

	All perennial stream crossing within the Project area are summarized in the Summary of Proposed Perennial Stream crossings Table included in an attachment in the Stream Alteration Permit ("SAP") Application. Stream and Wetland Impact Exhibits are included in Appendix III and the NECPL Stream Alteration Individual Permit Application is included in Appendix IVa. A comprehensive summary of all stream crossings is included in the Table of Proposed Stream Crossings in Appendix IVb.
10.2 Table 4: Stream/Rivers Impacted	Fill out the following table with perennial streams impacted by the project, Appendix IV by clicking (here) (xlsx, 12kb). The stream impact table is provided in Appendix IIIa.

10.3 Table 5: Summary of Physical Impacts to Streams/Rivers

Proposed Stream Area Impacts						
Project Component	Permanent (s.f.)	Permanent (acres)	Temporary (s.f.)	Temporary (acres)	Total (s.f.)	Total (acres)
See the Summary of Stream Impacts table in Appendix XX						

10.4 Stream / Rivers Pre-Project Cumulative Impacts	Describe any known pre-project cumulative impacts to streams and rivers from land use and development, etc. Land uses within the vicinity of the streams and rivers intersected by the proposed transmission line include roadways, culverts, bridges mowed and cultivated fields, pastureland, and scattered farms and residences. The Project has been designed to co-locate the transmission line in previously disturbed or managed landscapes to the greatest extent feasible and mostly located in maintained road ROWs where the natural stream channel condition is often altered.
10.5 Impacts to the Geomorphic Condition and Geomorphic Sensitivity of the Stream	Describe using phase I & phase II stream geomorphic stream assessment protocols: Geomorphic condition means the degree of departure, if any, from the dimensions, pattern, and profile associated with the naturally stable channel that results from the unique set of natural stream processes or dynamic equilibrium conditions of a stream or river segment. Geomorphic sensitivity means the potential of a river, given its inherent characteristics and present geomorphic conditions, to be subject to a high rate of fluvial erosion and other river channel adjustments, including erosion, deposit of sediment, and flooding. The Project will not result in impacts to the geomorphic condition or sensitivity of the streams. Per the Stream Alteration Permit application and the Project ESPC plans, the proposed transmission cable will be installed at a minimum of 5 feet below culverts and stream channels to avoid becoming a barrier to future adjustment of the culvert or stream channel. Because the proposed Project alignment follows existing road and railroad corridors, stream crossings would occur within or adjacent to existing structures (bridges or culverts). As such, the proposed Project would not result in a further departure from the geomorphic conditions imposed by existing constraints. Assuming that any existing crossing structures would be replaced at or near the same location, the proposed depth of burial would also allow some of those constraints to be removed in the future. For example, where stream crossings would be installed beneath existing culverts carrying perennial streams, the burial depth of the cable below the culvert would allow for future replacement culverts to be installed that would fully comply with the Stream Alteration Permit requirements. For stream crossings that would be installed by open trench excavation (“OTE”), the existing channel geometry, substrate, and bank materials would be restored following installation of the transmission cable, protecting against altering the geomorphic sensitivity of the channel. For stream crossings proposed for HDD installation, the transmission cable would be installed a minimum of 20 feet below the channel bottom and

	the channel substrate and geometry would not be disturbed during the cable installation. Crossings proposed to be completed by aerial, duct bank, and over culvert crossings would not involve any in-stream work that could impact channel substrate or geometry. Further discussion of this topic will be provided in the forthcoming application for a State Floodplain permit for the project (pursuant to EPR Ch. 29).
11. Physical, Chemical, & Biological Conditions. Include & attach all analysis in appendix I.	
11.1 Physical Water Conditions	Summarize the physical conditions of the waters the project impacts or discharges into, including, temperature regime, conductivity, pH, turbidity, suspended sediment, and substrate type. Document source of data, geo-referenced to sampling location. If data are from the Bio-monitoring Sites Layer or the DEC Watershed Data Portal on the VTANR Atlas http://www.anr.state.vt.us/dec/maps.htm, please reference specific station identification numbers. Data are also available at www.vtwaterquality.org/wqd_mgtplan/waterq_data.htm. As detailed in the Lake Champlain Encroachment Permit Application (Appendix Ij), HDR and Exponent performed a Lake Champlain Water Quality Analysis and a thermal analysis of the NECPL Project on Lake Champlain for the Lake Route, respectively. The Lake Water Quality Report assessment used a water quality model to assess the potential water quality impacts of the Project, including compliance with Vermont Water Quality Standards (VWQS). The results of this report demonstrate that the water quality impacts associated with cable installation are short term and geographically limited to areas adjacent to the cable installation location, and will not adversely impact water quality in Lake Champlain. The Lake Champlain Thermal Report concludes that the Project's thermal effects are not expected to have undue adverse impact on water quality under the applicable criteria found in the VWQS. As described in the Thermal Report in Appendix Ij VWQS Section 3- 01(B)(1)(b) establishes a one degree Fahrenheit ("F") threshold for temperature changes above ambient temperature. VWQS Section 2-04(A) provides for the ability to establish mixing zones of a limited size (200 feet) where temperature increases are otherwise minor, and Section 3-01(B)(1)(d) provides greater flexibility to permit assimilation of thermal effects in zones larger than 200 feet, where thermal effects will otherwise still allow for the full support of existing aquatic uses. For the majority of the Lake Route, the maximum temperature increases associated with the Project will be below the 1 degree F threshold, and for the remainder of the cable route the areas of temperature increases above 1 degree F are extremely limited. Details regarding the crossing under Lake Bomoseen are included in the Lake Bomoseen Encroachment Permit application (Appendix Ik). The Overland Route crosses a number of stream features, as previously described. Given the temporary nature of Project impacts, as part of the review of this Project, the existing (2014) VWQS were evaluated on an overall basis throughout the Project alignment. All delineated streams and rivers crossed by the Project are designated as Vermont Class B waters. The Project is not expected to temporarily or permanently alter the physical water conditions of the Project streams with adherence to approved EPSC Plan during construction, operational Vegetation Management Plan, and applicable conditions from expected permits listed in Appendix Ie. There are no waters within the Project components that have been designated as Outstanding Resource Waters ("ORW"). However, the Project area is located in the Poultney River Watershed, although the project does not cross the main stem of the river. The Poultney River in Fair Haven is approximately 0.2 mile from the Proposed Project at the closest point. Based on review of VHD-mapped stream layers, the Project alignment crosses two unnamed tributaries that flow upstream of the Poultney River (near Project mile markers 109 and 109.2). Adherence to the Project's EPSC Plan will protect against any indirect impacts to this ORW. During construction of the Project the cables will be placed within a shallow trench that will be typically four to six feet deep and approximately four feet wide. If a ledge is encountered it will be removed by the most suitable technique, with preference for mechanical removal, rather than blasting. The Project will cross through a number of source protection areas ("SPAs") designated by the Water Supply Division of the DEC, for public water supplies, and will pass in the vicinity of other public water supplies. Along the terrestrial portion of the route, these include nine public water systems using groundwater sources that have either designated SPAs or public water sources within the immediate vicinity of the NECPL. The

	NECPL will also pass by various existing private water supplies, including drilled bedrock walls. Relative to the depth of a typical drilled well (generally 200 to 400 feet). The five-foot depth of trenching and potential blasting is very small. Likewise, the width of the trench is only four feet and thus minimizes the amount of blasting needed. Furthermore, the cable will be located within existing road ROW where earthwork and grading has taken place previously, and thus will reduce the potential for disturbance to natural soils, geology or groundwater flow. Further details regarding water supplies are included in the Project's Petition for a Vermont Certificate of Public Good.
11.2 Chemical Water Conditions	Summarize the chemical conditions of the waters the project impacts or discharges into, including, as available, total phosphorus and nitrogen, biochemical & chemical oxygen demand, hardness, metals, *E. coli*, and other data relevant to evaluation of the chemical condition of waters. If data are from the Bio-monitoring Sites Layer or the DEC Watershed Data Portal on the VTANR Atlas http://www.anr.state.vt.us/dec/maps.htm, please reference specific station identification numbers. Data are also available at www.vtwaterquality.org/wqd_mgtplan/waterq_data.htm. The Project does not propose to introduce new pollutant sources that would impact the chemical conditions of the waters the Project impacts or discharges into. Erosion and sedimentation during construction that could influence nutrient levels within the receiving waters will be controlled through the implementation of the Project-specific EPSC Plan, a blasting plan, and an inadvertent return contingency plan (for HDD sites), for example. With adherence to operational management plans (e.g. Vegetation Management/NNIS Plan, Aquatic Invasive Species Management Plan, etc.), there will also be no indirect introduction of chemicals post-construction. Details regarding water conditions applicable to the Lake Route are included in the Lake Champlain Encroachment Permit application (Appendix Ij). Details regarding the crossing under Lake Bomoseen are included in the Lake Bomoseen Encroachment Permit application (Appendix Ik).
11.3 Biological Water Conditions	Summarize the biological water conditions of the waters the project impacts or discharges into. If data are available, summarize biological condition in relation to DEC biological assessment endpoints as described by http://www.vtwaterquality.org/bass/htm/bs_biomon.htm. Document the occurrence or absence of aquatic rare, threatened, or endangered plant or animal species. If data are from the DEC Watershed Data Portal on the VTANR Atlas http://www.anr.state.vt.us/dec/maps.htm, please reference specific station identification numbers. Follow-up with the Fish & Wildlife Department's Natural Heritage Inventory (802-371-7333) if any such species are present. The Project impacts to aquatic resources are limited to temporary construction impacts. Streamflow will be maintained during OTE construction and stream culvert work in accordance with the EPSC Plan and details to prevent impacts to aquatic life downstream of Project activity, as well as conditions of applicable approved permits. HDD will be utilized to avoid impacts to select sensitive areas. Therefore the Project is not expected to result in significant temporary or permanent impacts to aquatic life. Details regarding water conditions applicable to the Lake Route are included in the Lake Champlain Encroachment Permit application (Appendix Ij). Details regarding the crossing under Lake Bomoseen are included in the Lake Bomoseen Encroachment Permit application (Appendix Ik).

12. Fish & Wildlife Resources

12.1 Fisheries

12.1.1 Fisheries Resource(s)

Provide a description of the existing fish resources within the waters that the project impacts or discharges into.

See Section 12.1.2 for summary of fishery classifications.

12.1.2 Habitat

Are the fisheries within and downstream from the proposed project managed as warm water or cold water?

Major Watershed	Named Subwatershed	VWQS Fishery Classification
Lake Champlain Direct Main Lake	Remainder of direct watershed and unnamed tributaries	WARM/COLD[1]
Lake Champlain Direct South End	Remainder of direct watershed and unnamed tributaries	WARM/COLD[2]
Poultney River	Castleton River	COLD
	Hubbardton River	COLD
	Lake Bomoseen	COLD
	Mud Brook	COLD
	North Benton Brook	COLD
	Remainder of direct watershed and unnamed tributaries	COLD
Otter Creek	Clarendon River	COLD
	Cold River	COLD
	Freeman Brook	COLD
	Mill River	COLD
	Remainder of direct watershed and unnamed tributaries	COLD
Black River	Branch Brook	COLD
	Coleman River	COLD
	Twentymile Stream	COLD
	Remainder of direct watershed and unnamed tributaries	COLD

1. Classified as Warm Water Fish Habitat between the Ferrisburgh-Charlotte town boundary and the U.S./Canada boundary, where depths are less than 25 feet at Low Lake Level (93 feet NGVD) - June 1, through September 30, only as per Appendix A, Section A (5)(c) of the Vermont Water Quality Standards (2014).

2. Classified as Warm Water Fish Habitat south of the Crown Point Bridge and between the Crown Point Bridge and the Ferrisburgh-Charlotte town boundary, where depths are less than 25 feet at Low Lake Level (93 feet NGVD) - June 1, through September 30, only as per Appendix A, Section A (4)(a)(b) of the Vermont Water Quality Standards (2014).

12.1.3 Fisheries Affects & Minimization

Provide a description of the anticipated and other possible impacts of the proposed project on aquatic habitat, fish resources, and recreational fisheries and how those will be avoided or minimized.

For the Overland Route, HDD installation at several locations avoids impacts to aquatic habitat and the implementation of the Vegetation Management Plan limits impacts to riparian buffers. The Project requires temporary impact to aquatic habitat of smaller streams during OTE installation of the cable. The impacts will be minimized by utilizing temporary bridges to allow equipment to traverse the streams, maintaining streamflow during construction, and restoring the stream and banks in accordance with EPSC Plan. The Project's Stream Alteration Individual Permit Application in Appendix IVa provides further details regarding in-stream work within perennial streams.

The Project Lake Route under Lake Champlain has been designed to avoid the rocky reefs

	and shoals where water depth ranged from 10 to 40 feet in order to reduce potential impacts on these fishery areas. There will be restrictions on construction for in-lake installation from May 1 to September 15 (Alburgh to Chimney Point) and September 15 to December 31 (Chimney Point to Benson) to avoid certain fisheries and complications resulting from cold weather. See the Lake Champlain Encroachment Permit application in Appendix IVa for more details. The HDD under Lake Bomoseen will avoid any potential effects on fisheries.
12.2 Wildlife: For help identifying wildlife habitat, natural communities, and rare, threatened, or endangered species use the VTANR Natural Resources Atlas: http://www.anr.state.vt.us/dec/maps.htm.	
12.2.1 Habitat	Provide an assessment of wildlife habitat within the project area. This must include a description of the methods employed to identify, map, and assess the habitats. Include a map that depicts all the wildlife habitat resources of the area (e.g., deer wintering habitat, riparian habitat, floodplain forest natural communities, wetland types). The entire Overland Route corridor was reviewed for necessary wildlife habitat as defined under 30 V.S.A. Section 248 (B)(5), in addition to potential wetland bird breeding habitats, Indiana bat summer roost tree habitat, vernal pools, and habitat for documented rare animals in the Project vicinity. Based on desktop review and the results of field surveys, there will be no adverse impact to necessary or rare wildlife habitat during or after construction. The Project EPSC Plan and operational management plans will minimize undue, adverse impacts to habitat while the Survey Results Report: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (Appendix II) outlines specific wildlife and RTE species avoidance and minimization measures, including protective measures for the Wood Turtle (*Glyptemys insculpta*), a state-uncommon species of Special Concern, to be implemented within 1,000 feet of major named rivers. Temporary effects to the wildlife habitat function from temporary soil disturbance and/or temporary vegetative clearing in the PPC and Temporary Workspace will be minimal based on the result of wildlife evaluations and the location of the proposed Project. The permanent tree removal in wetlands in the PPC will be limited and these areas will convert to herbaceous and scrub-shrub habitats that will provide habitat for many species of wildlife. This will include approximately 0.32 acres of temporary tree removal and 0.29 acres of permanent tree removal in potential Deer Wintering Areas. No adverse impacts to this potential DWA will occur from this limited tree removal along an existing highway corridor. Potential necessary wildlife habitats are depicted on the Natural Resource Maps in Appendix IIf. Habitat conditions related to Lake Champlain and the Lake Route are included in the Lake Champlain Encroachment Permit Application (Appendix Ij).
12.2.2 Natural Communities	Provide an assessment of significant natural communities within the project area. This must include a description of the methods employed to identify, map and assess the communities. Include a map that depicts the natural communities. The Overland Route was surveyed in 2014 for Significant Natural Communities and potential Rare and Irreplaceable Natural Areas, per V.S.A. Section 248(b)(5) of Title 30. As described in the NECPL Survey Results Report: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (Appendix II), only one significant wetland natural community was observed and this area will be avoided entirely by the Project. The field surveys identified four potentially significant natural communities and five likely- significant natural communities. All are terrestrial forested communities located adjacent to roadside ROWs and will not be unduly adversely impacted by limited tree removal. Vegetation management best management practices as described in the Vegetation Management Plan in Appendix Ie will be implemented.

12.2.3 Rare, Threatened, and Endangered Species	Provide an assessment of rare, threatened, and endangered species within the project area. This must include a description of the methods employed to identify and map the locations of these rare species of plants and animals. Include a map that depicts the locations of these species. For the Overland Route, as described in the Survey Results Report: Rare, Threatened and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (Appendix II), desktop and field investigations were completed during the 2014 growing season to identify suitable habitat or individual species of known Element Occurrences documented within 0.25 mile of the Project study area and to conduct a visual survey of the Overland Route for previously undocumented RTE species. There were 53 uncommon (Rank S3) or rare (Rank S1, S2, S2S3, and SH) plant species identified in the Study Area. This includes 3 state endangered and 6 state threatened plant species. No federally threatened or endangered species were observed. The state threatened and state endangered species have all been avoided with the proposed implementation of HDD or route and workspace reconfiguration. Additionally, most state rare species have been avoided. Where complete avoidance or rare species populations or habitat is not possible, minimization and mitigation measures have been proposed in Sections 5.1 and 5.2 of the Survey Results Report (Appendix II). In consultation with VT FWD, habitat surveys for Indiana Bat (*Myotis sodalis*) were conducted to identify potential roosting trees for avoidance and/or further study, as described in the Indiana Bat Habitat Assessment Report in Appendix II. 116 potential roosting trees for Indiana Bat were identified and mapped in the Project Study Area. Within the Project Segment in Lake Champlain surveys for RTE mussel species were completed as recommended by the VT FWD. This is summarized in the NECPL Lake Champlain Freshwater Mussel Survey Report in Exhibit IVc. No RTE species were observed and no further RTE species assessments or RTE avoidance measure in Lake Champlain were recommended.
12.2.4 Wildlife Affects & Minimization	Provide a description of the anticipated and other possible impacts of the proposed project on the foregoing wildlife resources and how those will be avoided or minimized. The design sought to implement construction practices that would avoid and minimize impacts as described in the NECPL Survey Results Report: Rare, Threatened and Endangered Species, Necessary Wildlife Habitat, and Natural Communities in (Appendix II). These practices include the following: - Avoidance or minimization to RTE plant species by routing the Project away from RTE species populations or under RTE species populations with the proposed implementation of HDD; - Avoidance of potential Indiana Bat roosting trees; - Development of general and species-specific protection measures; - Development of a long term Vegetation Management Plan and non-native invasive species (NNIS) monitoring and control plan for implementation within RTE species populations that will be impacted by the Project (See Appendix Ie); All observed threatened or endangered plants will be avoided. All but 6 rare plant species are avoided. Impacts to these six rare plant species will be confined to areas along existing road corridors, primarily within actively mowed and maintained areas in the VTrans ROW.Two such plant species, Smaller Forget-me-not (*Myosotis laxa*) and Shore Sedge (*Carex lenticularis*) are located in wetland habitat. Protection measures are included in the Survey Results Report in Appendix II.

13. Fee	Pursuant to 3 V.S.A. § 2822(j)(30), use the following formula to calculate the certification fee: 1% of project cost with a minimum of $200.00 and a maximum of $ 20,000.00. Project Cost: $_____ Total Enclosed: $__20,000.00_____ ☐ Exempt Please make check or money order payable to "Treasurer – State of Vermont"

Signature (original signature required)	I certify under penalty of law that this document and all attachments were prepared at my request or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I recognize that by signing this application, I am giving consent for the Commissioner of the Department, or a duly authorized representative, at reasonable times and upon presentation of credentials, to enter upon and inspect the subject property to verify information in and process the Section 401 application.	
	X_____	Date: March 30th, 2015
Signature details	Please Print Name: Donald Jessome	Signor Contact Phone# and Email:802.885.3890 Donald.jessome@chvtllc.com

Administrative Information - Official Use Only

Date Received	Project #	Fee Received	Application Administratively Complete:	Application Technically Complete:
		Yes ☐ No ☐ Amount Received: $	Yes ☐ No ☐ Additional Information Requested on:	Yes ☐ No ☐ Additional Information Requested on: