Vermont Agency of Natural Resources
DRAFT Water Quality Certification
33 U.S.C. § 1341

For New England Clean Power Link
Champlain VT, LLC dba TDI New England

Issued [Month Day, Year]

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I. INTRODUCTION

Pursuant to Section 13.11 of the Vermont Water Pollution Control Permit Regulations (February 26, 1974) (VWPCPR) and the Agency of Natural Resources' Section 401 Water Quality Certification Practice (October 22, 2014), the Secretary (Secretary) of the Vermont Agency of Natural Resources (Agency or ANR) has reviewed the Water Quality Certification application submitted April 3, 2015 filed by Vanasse Hangen Brustlin, Inc. (VHB) on behalf of Champlain VT, LLC dba TDI New England (TDI-NE or Applicant), for the New England Clean Power Link (NECPL or Project). The application was supplemented with a copy of the federal Clean Water Act Section 404 Request for Permit Authorization filed with the U.S. Army Corps of Engineers on March 31, 2015 and revised on June 10, 2015 and July 9, 2015 (File #NAE-2013-2689). Collectively, these materials are referred to as the "application."

The Agency also considered information submitted by the Applicant, pursuant to 30 V.S.A. § 248, as part of Public Service Board proceedings in Docket No. 8400, including the "Stipulation between Champlain VT, LLC, the Vermont Public Service Department, the Vermont Agency of Natural Resources, and the Vermont Division for Historic Preservation" (PSB Stipulation), and provided by the Applicant in its applications for various permits, including permits for Lake Encroachment, Stream Alteration, Wetlands, Floodplains, and Construction and Operational Stormwater. The Applicant applied for Lake Encroachment Permit #2015-011, applicable to Lake Bomoseen, on March 27, 2015. The Applicant applied for Lake Encroachment Permit #2015-030, applicable to Lake Champlain, on July 17, 2015, last revised on September 14, 2015. The Applicant applied for its Stream Alteration Permit #SA-06-0001 on March 5, 2015, last revised on August 4, 2015. The Applicant applied for its Wetlands Permit #2013-280 on March 23, 2015, last revised on August 7, 2015. The Applicant applied for its Floodplain Permit #FP-4-0001-IND on May 1, 2015, last revised on August 4, 2015. The Applicant applied for its Construction Stormwater Permit #7354-INDC on March 30, 2015, last revised on September 10, 2015, and the Applicant applied for its Operational Stormwater Permit #7354-9015 on March 5, 2015, last revised on June 5, 2015.

Pursuant to the VWPCPR §§ 13.11(c)-(f), the Agency provided public notice of its preliminary decision in this matter on October 1, 2015 and held public meetings in Rutland, Vermont on November 2, 2015, in Burlington, Vermont on November 3, 2015, and in St. Albans, Vermont on November 4, 2015.

The Project involves the installation and operation of high-voltage direct current (HVDC) electric transmission lines that will run from the Canadian border in Alburgh, Vermont to Ludlow, Vermont along underwater and underground routes. The NECPL will transmit up to 1,000 megawatts (MW) of electricity that will be generated by renewable energy sources in Canada, and will be delivered to the New England electric grid, a portion of which may also be delivered within Vermont in the future. The transmission line will be comprised of two approximately five inch diameter cables and will be solid-state dielectric and thus contain no fluids or gases. The NECPL will include a fiber optic system, which will consist of an industry standard fiber optic cable. This cable is approximately one inch in diameter and will be affixed to one of the submarine power cables in Lake Champlain and housed in an approximately two inch HDPE conduit installed in the same trench as the power cables, but adjacent to them on the overland portion of the route. The fiber optic cable is required to operate the Project and will facilitate HVDC control.

The proposed underwater portion of the transmission line, approximately 97 miles in length, will be buried to a target depth of three to four 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 occur. In shallow areas where there are obstacles to burial, protective coverings will be installed. The overland portion of the transmission line, approximately 56 miles in length, will be buried approximately four feet underground within existing public (state and town) road rights-of-way (ROWs). The cables will be installed within a railroad ROW for approximately three and a half miles in the towns of Shrewsbury, Vermont and Wallingford, Vermont. Very short sections of the route at the Lake Champlain entry and exit points, as well as at the converter site in Ludlow, Vermont, will be located on private land that is controlled by TDI-NE.

In Ludlow, Vermont, the HVDC line will terminate at a converter station that will convert the electrical power from direct current (DC) to alternating current (AC). An underground AC line will run approximately 0.3 miles along a town road to the existing Coolidge Substation in Cavendish, Vermont that is owned and operated by the Vermont Electric Power Company.

The NECPL's purpose is to deliver and sell clean, renewable power from Canada to the markets operated by the New England Independent System Operator (ISO-NE)), which may include markets in the State of Vermont in the future, through a new 1,000 MW HVDC underground/underwater merchant transmission line. The NECPL 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.

II. FINDINGS

A. Resource Description

Project Location and Introductory Information

1. The Project will start at the Canadian border in Alburgh, Vermont, run along Bay Road, and then enter Lake Champlain at 55 Bay Road in Alburgh, Vermont. The Project will run along the bottom of Lake Champlain for 97.2 miles and exit at 229 Stony Point Road in Benson, Vermont. From Lake Champlain, the Project will run from 113 Stoney Point Road East down VT Route 22A in Benson, Vermont. The Project will run south of Route 22A to US Route 4 in Fair Haven, Vermont then head east to US Route 7 in Rutland, Vermont, and from US Route 7, the Project will run south to VT Route 103 in Clarendon, Vermont. From Clarendon, Vermont, the Project will run south on VT Route 103, then along the railroad ROW in Shrewsbury, Vermont, and then south to Route 103 in Wallingford, Vermont. The Project will continue south/southeast on VT Route 103 to VT Route 100 in Ludlow, Vermont, where it will continue to run north on VT Route 100 to town roads where it will connect to the Ludlow converter station site. The Project will continue from the Ludlow converter station to the existing Vermont Electric Power Company Coolidge Substation in Cavendish, Vermont. The Project will run in total through five Vermont counties, including Grand Isle, Chittenden, Addison, Rutland, and Windsor County, and the

overland portion of the Project will run through 14 Vermont towns, including Alburgh, Benson, West Haven, Fair Haven, Castleton, Ira, West Rutland, Rutland, Clarendon, Shrewsbury, Wallingford, Mount Holly, Ludlow, and Cavendish. The Applicant has provided the Agency with a USGS topographic Site Location Map located in Appendix IA, IB, IC, and ID of the Certification application, indicating the exact location of the Project.

2. The overland portion of the Project area is approximately 290 acres. Land elevations range from approximately 100 ft. above mean sea level at Lake Champlain, up to 1,660 ft. above mean sea level where the project bisects the Southern Green Mountains biophysical region in Mt. Holly. The slope of the Project varies with 78% of the overland portion of the Permanent Project Corridor located on gently-sloped (0-6%) to moderately sloped (7-15%) soils. Less than 4% of the Project is located on soil with a maximum slope of 80%. The remaining approximately 19% of the overland route area has a high slope range of (16-50%). These ranges are based on the NRCS Soil Survey data for Grand Isle, Rutland, and Windsor counties in Vermont.

3. The overland portions of the Project are co-located within existing transportation infrastructure, along road and railroad ROWs. These ROWs contain existing infrastructure and are generally cleared of vegetation. The overland portion of the Project includes a crossing under the bed of Lake Bomoseen, also co-located within existing transportation infrastructure. All project components are located in the Champlain Valley, Taconic Mountains, Vermont Valley, and Southern Green Mountains biophysical regions of Vermont. The underwater portions of the Project are located in the Champlain Valley and follow a north-south corridor down the Vermont side of Lake Champlain.

4. The project area drains to five major Vermont watersheds: the Lake Champlain main lake and southend watersheds, the Poultney River watershed, the Otter Creek watershed, and the 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. A summary of the total land associated with the subject watersheds relative to the proposed disturbance is included below in Table 1.

Table 1. Watershed Area Summary

Watershed	Named Sub-Watershed	Watershed Area (acres)	Disturbed Area (acres)	% Area Disturbed
Lake Champlain Direct Main Lake	Remainder of direct watershed and unnamed tributaries	12,630	5.63	0.04%
Lake Champlain Direct South End	Remainder of direct watershed and unnamed tributaries	14,130	6.1	0.04%
Poultney River	Castleton River	30,770	66	0.21%
	Hubbardton River	28,480	28	0.10%
	Lake Bomoseen	24,010	10	0.04%

	Mud Brook	5,120	13	0.25%
	North Benton Brook	8,760	1.7	0.02%
	Remainder of direct watershed and unnamed tributaries	4,760	13	0.27%
Otter Creek	Clarendon River	30,310	8.1	0.03%
	Cold River	23,480	1.3	0.0%
	Freeman Brook	7,570	0.1	0%
	Mill River	38,040	46	0.12%
	Remainder of direct watershed and unnamed tributaries	162,620	43	0.03%
Black River	Branch Brook	9,000	17	0.19%
	Coleman River	800	0	0%
	Twentymile Stream	9,270	14	0.15%
	Remainder of direct watershed and unnamed tributaries	111,470	13	0.01%

Lake Resources

5. The Applicant identified two lakes in the project area, Lake Bomoseen and Lake Champlain. The Lake Bomoseen portion of the Project is a component of the overland section of the transmission line route and is located in Castleton, Vermont. Lake Bomoseen is over 7 miles long, covers an area of approximately 3.7 square miles, and is approximately 65 feet in depth at its deepest point and is considered to be the largest lake in Vermont that is entirely located with the state borders. Lake Bomoseen flows south to the outlet, which is the Hubbardton River, which then flows via the Castleton River and Poultey River to Lake Champlain.6. The Lake Champlain portion of the Project is the primary component of the aquatic section of the transmission line route where the transmission line will enter the lake in Alburgh, Vermont, and travel south down the Lake to where the line will exit the Lake in Benson, Vermont. The proposed aquatic portion of the transmission line in Lake Champlain is approximately 97 miles in length. Lake Champlain is approximately 120 miles long and 12 miles wide at its greatest width, and flows from Whitehall, New York north across the U.S. Canadian border to the outlet, which is the Richelieu River in Quebec, Canada. Lake Champlain covers an area of approximately 435 square miles, and includes lake surface area in Vermont, New York, and Quebec. Lake Champlain is approximately 400 feet in depth at its deepest point, located in an area between Charlotte, Vermont and Essex, New York.

Wetland Resources

6. The Applicant identified 91 wetland areas in the project area, ranging in size from 60 sq. ft. to over 200,000 sq. ft. Under the Vermont Wetland Rules, the Agency determined that there are 63 jurisdictional Class II wetlands impacted by the Project. A summary of the wetlands identified can be found in Appendix I of this Certification.

7. The Class II wetlands identified within the project area provide the following state protected functions and values: water storage for flood water and storm runoff (Vermont Wetland Rules (VWR) § 5.1), surface and groundwater protection (VWR § 5.2), fish habitat (VWR § 5.3), wildlife and migratory bird habitat (VWR § 5.4), exemplary wetland natural community (VWR § 5.5), threatened and endangered species habitat (VWR § 5.6), open space and aesthetics (VWR § 5.9), and erosion control through binding and stabilizing the soil (VWR § 5.10).

8. The Agency found all of other wetlands in the project area to be Class III wetlands. Pursuant to the Vermont Wetland Rules, Class III wetlands are those wetlands that do not provide significant functions or values, and as such, activities in Class III wetlands do not require a State Wetlands Permit.

Stream Resources

9. In total 52 crossings of perennial streams are proposed along the 57 mile overland transmission line route. A summary of the Project perennial stream/river crossings can be found in Appendix II of this [draft] Certification. In addition, the Project will cross numerous intermittent and ephemeral streams along the Project route, further identified in more detail in Stream Alternation Permit application #SA-06-0001. Crossings in five state drainage basins are proposed for this Project. Waterways of note are crossed in the Otter Creek-Little Otter Creek-Lewis Creek Basin, the Poultney-Mettawee Basin, and the Ottauquechee-Black River Basin. Crossings of the Castleton River, North Breton Brook, Mud Brook, and the Hubbardton River are proposed in the Poultney-Mettawee Basin. Crossings of Otter Creek, the Clarendon River, Cold River, and Freeman Brook, are proposed in the Otter Creek-Little Otter Creek-Lewis Creek Basin. Crossings of the Black River, Branch Brook, and Coleman are proposed in Ottauquechee-Black River Basin. Crossing of unnamed tributaries are proposed in the Lower Lake Champlain Basin.

Physical, Chemical, and Biological Water Conditions

10. The Project will affect Class B waters only (VWQS § 4). Class B waters must be managed to achieve and maintain a level of water quality that fully supports aquatic biota, wildlife, and aquatic habitat; aesthetics; public water supplies; irrigation of crops and other agricultural uses; swimming and other primary contact recreation; and boating, fishing, and other recreational uses (VWQS § 3-04). All streams and lakes that will be affected by the Project are designated as either cold or warm water fish habitat for the protection and management of fisheries (VWQS § 3-05). All streams and lakes that will be affected by the Project are designated as cold water fish habitat except the following waters designated as warm water fish habitat: Lower Lake Champlain Basin: locations south of the Crown Point Bridge, and locations between the Crown Point Bridge and the Ferrisburg-Charlotte town boundary where depths are less than 25 ft. at Low Lake Level (93 feet NGVD) – June 1 through September 30 only; Upper Lake Champlain Basin: locations between the Ferrisburg-Charlotte town boundary and the Canadian boundary where depths are less than 25 ft. at Low Lake Level (93 feet NGVD) – June 1 through September 30 only, and all streams, creeks, and brooks lying within Grand Isle County; Poultney, Mettawee Basin: all waters west of Vermont Route 22A, and Poultney River from Carvers Falls in West Haven to its confluence with Lake Champlain.

11. Stream Resources Data. In the last 15 years the Agency has collected biological data on all of the named streams impacted by the Project except Freeman Brook. Because the proposed project area outside of Lake Champlain spans 57 miles across Vermont and 52 perennial streams, it is difficult to characterize the biological, physical, and chemical conditions of all streams without doing so individually. Streams and rivers included in the proposed project area range from the low elevation, low gradient warm waters of the Champlain drainage to medium and higher elevation areas that are characterized by moderate to high gradient coldwater streams. The lower elevation running waters represented by Mud Creek, a few of the unnamed tributaries of the Poultney, and the Hubbardton River and its tributaries support typical warm and thermally tolerant species such as Bluntnose Minnow, Common Shiner, Creek Chub, Pumpkinseed, White Sucker, Cutlips Minnow, and Tessellated Darter. These species are generally regarded as tolerant to many types of perturbations. A single individual of Bridle Shiner was collected in Mud Creek. This intolerant species is rare in Vermont. The coldwater streams (generally represented at elevations above 500 ft.) support typical intolerant coldwater species such as Brook, Brown, and Rainbow Trout and Slimy Sculpin. The condition of the aquatic biota in all named streams, as represented by Agency fish and macroinvertebrate data, ranges from Good to Excellent, meeting Class B VWQS. The exception is Coleman Brook in Ludlow which drains Okemo Mountain Ski Area. This brook has only intermittently met Class B VWQS.

12. Lakes Resources Data.

    Lake Champlain: Monitoring on Lake Champlain is conducted April through October each year by the Agency and is focused on water quality parameters and aquatic invasive species. The water quality data can be accessed through the Division's integrated system - https://anrweb.vt.gov/DEC/IWIS/ReportSearch.aspx. Lake Champlain has been sampled annually by the Agency, in conjunction with the NY DEC, since 1992. Currently, there are 15 open water stations monitored for multiple parameters at approximately two week intervals, which include total phosphorus, dissolved phosphorus, total suspended solids (TSS), temperature, pH, multiprobe depth profiles (temperature, conductivity, dissolved oxygen, pH), and chlorophyll-a. In addition, the stations are monitored for aquatic species such as zooplankton, phytoplankton, and mysids, and are also monitored for the presence of invasive species such as zebra mussels and spiny waterflea. Monitoring staff also record notable cyanobacteria blooms when present. Lake Champlain's macroinvertebrate community has been sampled by the Agency, and although there are notably areas and bays of the Lake that are of considerable water quality stress and concern, the overall benthic fauna, and most particularly Crustacea/Mollusca was found to be incredibly rich and diverse. In addition, the Agency has collected zebra mussel veliger and settled juvenile data from 1994 to the present, as well as zooplankton and phytoplankton data from 1992 to the present for Lake Champlain. Lake Champlain monitoring by the Agency is supported by the Vermont Lay Monitoring Network. This citizen monitoring program is mainly based on trophic parameters and monitors approximately 25 Lake Champlain stations per year, though locations do vary from year to year with monitor availability. There are currently 17 stations being monitored in 2015. All Lake Champlain stations are sampled for chlorophyll-a, total phosphorus, and secchi disk transparency. All sampling occurs on a weekly basis during the summer. In regards to aquatic invasive plant monitoring, Vermont has managed the population of water chestnut, an invasive species, in the South Lake area of Champlain for many years. In addition, monitoring and management activity related to

Eurasian watermilfoil occurs in Lake Champlain, which includes the use of mechanical harvesters for control.

Lake Bomoseen: Monitoring on Lake Bomoseen is conducted by the Agency and is focused on water quality parameters and aquatic invasive species. The water quality data can be accessed through the Division's integrated system - https://anrweb.vt.gov/DEC/IWIS/ReportSearch.aspx. The Spring Phosphorus Program collects spring-overturn nutrient and physical and chemical data on Vermont lakes and ponds 20 acres in size or larger, which includes Lake Bomoseen. Parameters that are monitored include total phosphorus, total nitrogen, and multiprobe profiles (temperature and dissolved oxygen). Lake Bomoseen has been sampled 18 times since 1977 as part of this long-term project. The most recent visit was in 2011. In addition, Lake Bomoseen's macroinvertebrate community has been sampled by the Agency in 1988, 1989, 1990 and again in 2007 and 2008. Lake Bomoseen was found to harbor a rich community of macroinvertebrates as a result of well-buffered soils and bedrock. Similar to Lake Champlain monitoring, the Lake Bomoseen monitoring by the Agency is also supported by the Vermont Lay Monitoring Network. All stations are sampled for chlorophyll-a, total phosphorus, and Secchi disk transparency. Sampling occurs on a weekly basis during the summer. Lake Bomoseen has been monitored annually by volunteers in this program since 1992. In regards to aquatic invasive plant monitoring, the Agency tracks the occurrence of aquatic invasive species across the State and periodically conducts plant surveys, including on Lake Bomoseen. These data are not held electronically but are available from the Agency upon request.

13. Lake Champlain is impaired for phosphorus and the U.S. Environmental Protection Agency (EPA) is currently adopting a total maximum daily load (TMDL) for phosphorus for the Lake. Lake Champlain is also impaired for mercury, and EPA approved a regional mercury TMDL for the Lake on December 20, 2007. Lake Champlain and the lower reaches of its larger tributaries are also listed as impaired on of the State 303(d) list of impaired waters - Part A for fish consumption due to high levels of PCBs. Finally, sections of Lake Champlain are listed on the Part E list of Surface Waters Altered by Invasive Aquatic Species as infested by Eurasian watermilfoil, zebra mussels, and water chestnuts. Additionally, the Castleton River and Lake Bomoseen are listed on the Part E list as infested by Eurasian watermilfoil, and Lake Bomoseen is also listed on Part E for zebra mussels.

Fish, Aquatic Biota, and Wildlife

14. Vermont –listed rare, threatened, or endangered (RTE) species exist within portions of the project area. RTE wildlife species of special concern include the state endangered Timber Rattlesnake (*Crotalus horridus*) and state threatened Eastern Ratsnake (*Pantherophis alleghaniensis*). State rare species that are of special concern include the Eastern Ribbonsnake (*Thamnophis sauritus*), Musk Turtle (*Sternotherus odoratus*), and Wood Turtle (*Glyptemys insculpta),* all of which are potentially present within specific segments of the overland project alignment. Bridle Shiner (*Notropis bifrenatus*), a Vermont-listed rare fish species of special concern has been recorded in Mud Brook in Fair Haven, Vermont. The project area includes wildlife habitat considered to be suitable for the state and federally endangered Indiana Bat (*Myostic sodalist*), specifically along the overland transmission line route within the towns of Benson, West Haven, and Fair Haven, Vermont. The project area includes wildlife habitat considered to be

suitable for the state endangered and federally threatened Northern Long-Eared Bat (*Myostis septentrionalis)*. The section of the Hubbardton River to be crossed by the Project provides habitat for the state endangered Fluted-shell is (*Lasmigona costata*), which is also likely to be present in that area of the river.

15. Portions of the project area include wildlife habitat considered important or necessary habitat, specifically along the overland transmission line route within sections of riparian/wetland habitat in the towns of Benson, West Haven, Fair Haven, Castleton, and Mt. Holly, Vermont.

16. Portions of the project area contain significant wetland dependent wildlife habitat. The impacts to this habitat are addressed through Individual Wetland Permit [application] #2013-280.

17. The Project covers a large area and contains fisheries habitat. The fisheries habitat is located within Lake Champlain, Lake Bomoseen, and perennial streams crossed by the Project. The section of the Hubbardton River to be crossed by the Project provides habitat for the rare Silver Lamprey (*Lchthyomyzon* unicuspis) and the uncommon Eastern Silvery Minnow (*Hybognathus* regius), where these species are likely to be present. Additionally, within Lake Champlain there are important reefs and shoals which could be considered significant fisheries habitat because they are utilized for habitat and spawning. These reefs and shoals are important and necessary habitat for multiple species, including Lake Trout (*Salvelinus namaycush*), Lake Whitefish (*Coregonus clupeaformis*), Lake Herring (cisco) (*Coregonus artedi*), and Rainbow Smelt (*Osmerus mordax*). Not only are these areas important for spawning, but species like Slimy Sculpin (*Cottus cognatus*) (an important food source for Lake Trout), rely on these rocky habitats to live. These areas consist of rocks with interstitial spaces (small open spaces between rocks) where fish eggs can settle in. Reefs and shoals within Lake Champlain include but may not be limited to Motte Reef, Middle Reef, Sister Shoal, Hogback Reef, Colchester Reef and Shoals, Saxton Reef, Quaker Smith Reef, Sloop I, Scotch Bonnet, and Rock I. Lake Champlain provides habitat for and contains the following threatened and/or endangered mussel species, including the Giant Floater (*Pyganodon grandis*), Pink Heelsplitter (*Potamilus alatus*), Fragile Papershell (*Leptodea fragilis*), Pocketbook (*Lampsilis ovata*), Cylindrical Papershell (*Anodontoides ferussacianus*), and the Black Sandshell (*Ligumia recta*). None of these mussels were found to be present within the Project area based on surveys completed by the Applicant.

18. In addition to sensitive wetland dependent wildlife habitat, the project area contains other significant wildlife habitat, including deer wintering habitat.

<u>Recreational and Other Water Uses, and Land Uses</u>

19. Recreational uses of waters affected by this Project include boating, fishing, hunting, swimming, wildlife observation, sea-plane use, and additional boating-related recreation, including scuba diving and water skiing. Recreational uses specific to Lake Bomoseen in the project area include boating, fishing, swimming, wildlife observation, and additional boating-related recreation. Recreational uses specific to Lake Champlain in the project area include boating, fishing, hunting, swimming, wildlife observation, sea-plane use, and additional boating-related recreation, including scuba diving and water skiing.

Recreational uses of rivers, streams, and wetlands located within the project area generally include boating, fishing, hunting, swimming, and wildlife observation.

20. An additional use specific to northern Lake Champlain includes the production of fish species at the State of Vermont Ed Weed Fish Culture Station located in Grand Isle, Vermont operated by the Vermont Department of Fish & Wildlife (DFW) for stocking fish in Lake Champlain for the purpose of supporting recreational fishing in the Lake. Specifically, the Ed Weed Fish Culture Station pumps water from a deep water intake located within Lake Champlain for use in the fish hatchery operations. Species raised at the hatchery include brown trout, rainbow trout, steelhead rainbow trout, lake trout, landlocked Atlantic salmon, and walleye. The hatchery stocks approximately 1,070,000 fish annually into Lake Champlain to restore fish populations and to maintain recreational angling opportunities. DFW invests approximately $1,250,000 annually at the Ed Weed Fish Culture Station to produce these fish. The deep water intake used by the Ed Weed Fish Culture Station is utilized by the Grand Isle Consolidated Water District, which also uses the raw water intake for a potable water supply for the residents of Grand Isle County, Vermont.

21. Additionally, property owners along Lake Champlain utilize individual water intakes for either potable water supply or for irrigation. Property owners along Lake Bomoseen also utilize individual water intakes for either potable water supply or for irrigation. Lake Champlain and Lake Bomoseen are both used for commerce, including marina and recreational boating services, transportation (e.g. ferries), and other tourism-related commercial enterprises. Lake Champlain is also currently utilized for several utility crossings that exist on the lake bottom as identified in Project Lake Encroachment Permit [application] #2015-030.

22. Land uses within the watersheds generally include agriculture, silviculture, development, commerce, transportation, tourism, natural areas, and wetlands.

B. Project Description

General Project Description

23. The purpose of the Project is to deliver clean, renewable power from Canada into 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 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 New England states.

24. The Project consists of the installation of an electric transmission line which will involve clearing of vegetation and trenching as well as HDD construction activities along the overland project route. Entry and exit points along the aquatic project route will involve HDD construction activities, and in-lake installation will involve pre-installation route clearing with a grapnel system, and trenching and direct cable lay, which will include use of jet plow and shear plow equipment as well as diver assisted installation, where required.

25. The following summarizes the information found in Section 7 of the Certification application. Specific components of the Project include:

The aquatic project route is discussed in detail in Appendix IJ of the Certification application. The aquatic project route is generally proposed in deeper sections of Lake Champlain away from the shoreline. Certain areas, such as known fisheries, steep slopes, and archaeological resources, have been avoided to the extent possible during route design. The proposed aquatic portion of the project route, approximately 97 miles in length, will be buried to a target depth of 3-4 ft, in the bed of Lake Champlain except at water depths of greater than 150 ft. 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 Lake Champlain (i.e. greater than 150 ft.). Protective coverings will be installed over the cables in these areas to reduce the risk to infrastructure by a dropped or dragged anchor. The Project will enter Lake Champlain in Alburgh, Vermont and exit Lake Champlain in Benson, Vermont (via transitional HDD's) on the following Applicant controlled properties: 55 Bay Road, Alburgh, Vermont (Alburgh Parcel ID: BY055); and 229 Stony Point Road, Benson, Vermont (Benson Parcel ID: 4-31.5).

The Alburgh HDD launch area is set back approximately 100 ft. from the shoreline of Lake Champlain. As described in Appendix IJ of the Certification application #2015-030 , the proposed entrance route involves an approximate 0.6-mile HDD from the launch site in a southwesterly direction where the boring will emerge on land in a receiving pit at the existing DFW Korean War Veterans Access Area (Access Area or causeway) off of US Route 2 in Alburgh, Vermont. A manhole and fiber optic hand hole will be constructed at the Access Area for cable splicing and future access. A second HDD will extend from the manhole area approximately 0.2-miles in a southwesterly direction to an exit point in Lake Champlain. A receiver casing or temporary cofferdam will 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, Vermont to a receiver casing or coffer dam located within the Lake. The Benson HDD launch area is set back over 400 ft. from the shoreline of Lake Champlain.

While the entry and exit points to Lake Champlain are proposed to remain fixed, the aquatic routing as shown in the Lake Route Series Plans as provided in Appendix IJ of the Certification application, 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. However, all adjustments must comply with the conditions of this Certification, the PSB Stipulation, and all other necessary permits and certifications.

The cables within the overland project route will be buried underground beginning at the United States - Canada border in Alburgh, Vermont to the Lake Champlain entry point, and from the Lake Champlain exit point in Benson, Vermont to the converter station in Ludlow, Vermont. There are two locations where the cables will not be buried, which are where the Project crosses the Black River and where the Project crosses a stream along East Lake Road in Ludlow, Vermont. At these two locations the cables

will be installed in two10 inch diameter steel pipes which will be attached to the bridge and culvert structures at these crossings. 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 impacts to rivers and streams, wetlands, shorelines, and existing infrastructure as depicted on the Natural Resource Map Series in Appendix IIF of the Certification application.

Along town roads in Benson and Ludlow, Vermont, the cables will be installed within the existing roadways.

Along the Vermont Agency of Transportation (VTrans) road and railroad ROWs, some limited in-road / railroad installation is proposed; however, the cables have 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 for the overland project route is located entirely within public road and railroad ROWs, except where the cables will be installed on the parcels controlled by the Applicant at the Lake Champlain shoreline transitions in Alburgh and Benson, Vermont and at the new proposed converter station site in Ludlow, Vermont. 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 ft. wide along one side of the Permanent Project Corridor, although temporary workspace requirements and configurations vary considerably along the overland project route as depicted in the EPSC plan filed as part of the Construction Stormwater Permit application #7354-INDC and as provided in Appendix IC of the Certification application. 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 are provided in Appendix IC of the Certification application and present typical dimensions and configurations of the cable installation and standard construction methods. The two HVDC cables will be laid side-by-side (approximately 12 to 36 inches apart) in a trench approximately 4 to 6 ft. deep to provide for at least 3.5 ft. 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 ft.

Impacts to Lake Resources

26. The potential for impacts to lake resources as result of the Project will be limited to Lake Bomoseen and Lake Champlain.

27. Lake Encroachment Permit [application] #2015-011 that covers the portion of the overland project route that will involve HDD underneath Lake Bomoseen is expected to have limited to no impacts to the Lake. Impacts on public waters of Lake Bomoseen are limited to the potential for inadvertent returns of drilling

fluids during the HDD under the lake bed and from the potential material spills during HDD construction under the Lake at the staging areas in the vicinity of the Lake.

28. Lake Encroachment Permit [application] #2015-030 covers the project route located within and below the waters of Lake Champlain. Impacts of the Project on public waters of Lake Champlain include temporary water quality impacts during construction, where sediment and constituents within the sediment will be temporarily disturbed and resuspended in the water column. Additional impacts include the potential for inadvertent returns of drilling fluids during the HDD under the Lake at entry and exit points and the potential for material spills during construction both on land at staging areas near the Lake and on the Lake during construction. Additional impacts to the Lake include fill associated with proposed protective coverings of the cable where necessary and the fill associated with the transmission line cables installed in the Lake and lake bottom. Following construction, during operation of the transmission line, the line will produce heat and a magnetic field, resulting in limited thermal impacts and magnetic impacts respectively. The Project will also result in limited impacts to fish and wildlife habitat within the Lake in locations where the cable is installed and may result in impacts to known cultural resources identified by the Applicant in their application. The potential exists for impacts related to aquatic invasive species (AIS) transport and introduction into Lake Champlain due to project equipment traveling to Lake Champlain from other water bodies. Risk of AIS transport and introduction as a result of the Project, including construction and operation, is to be minimized through the implementation of an approved Aquatic Invasive Species Management and Control Plan ("AIS Plan"), and as referenced in Lake Encroachment Permit [application] #2015-030.

<u>Impacts to Wetland Resources</u>

29. Impacts to Class II Wetlands are evaluated in detail under Individual Wetland Permit [application] #2013-280.

30. Proposed impacts to Class II wetlands and wetland buffers include trenching and filling, temporary grading, and temporary and permanent clearing of woody vegetation. All impacts will occur in wetlands adjacent to and within public road or railroad ROWs. Generally, the Project's impacts on wetlands are localized to narrow areas within the Permanent Project Corridor and/or Temporary Workspaces alongside the existing road and railroad ROWs, and much of the area will be restored to previous conditions. Below is a summary Class II wetland impacts.

Table 1: Summary of Class II Wetland Impacts

Class II Wetland Impacts in Square Feet and (Acres)					
Permanent Fill Impacts	Temporary Earthwork	Temporary Clearing	Temporary Matting	Permanent Forest Conversion	Total Impacts
0 (0)	25,886 (0.59)	42,823 (0.98)	64,168 (1.47)	25,673 (0.59)	158,550 (3.64)

31. Proposed impacts to non-jurisdictional Class III wetlands include trenching and filling to place the pipe, temporary matting, and temporary or permanent clearing of woody vegetation. Proposed Class III impacts total 37,161 sq. ft. or 0.85 acres.

Impacts to Stream Resources

32. Impacts to streams are evaluated in detail under Individual Stream Alteration Permit [application] #SA-06-0001.

33. Proposed impacts to streams are expected to be only temporary in duration. This Project will utilize five crossing methods as identified in Appendix II of this Certification. Eighteen of 52 perennial streams will be crossed using the low impact horizontal directional drilling (HDD) technique. HDD construction methods involve installation of the cables below the bed of the stream, which avoids impacts to the stream channel. Additional impacts include the potential for inadvertent returns of drilling fluids during the HDD under the streams and the potential for material spills during construction on land at HDD staging areas near the streams during construction. State ROW crossings will utilize open trench excavation, over culvert crossings, duct banks, and aerial crossings. The final method of stream crossing will be an "at culvert" crossing, similar to an open trench excavation, but in which the lines will be placed below municipal infrastructure with temporary impacts to crossing structures. The greatest stream impacts will be associated with the open trench excavations since open cuts will include streambank and streambed disturbance.

Table 2: Summary of Impacts to Streams

Project Component	Proposed Stream Impact Amount					
	Permanent (s.f.)	Permanent (Acres)	Temporary (s.f.)	Temporary (Acres)	Total (s.f.)	Total (Acres)
Overland Transmission Line Component	**0**	**0**	**17, 564**	**0.40**	**17,564**	**0.40**

Impacts to Physical, Chemical, and Biological Water Conditions

34. Potential impacts to physical, chemical, and biological water conditions on Lake Bomoseen are evaluated under Lake Encroachment Permit [application] #2015-011 and potential impacts to physical, chemical, and biological water conditions on Lake Champlain are evaluated under Lake Encroachment Permit [application] #2015-030. Impacts to physical, chemical, and biological water conditions in Lake Bomoseen are generally not expected, and will be limited to the potential for impacts from HDD construction methods where an inadvertent return of drilling fluids is possible to the Lake or from the potential for materials spills at nearby HDD staging areas. Any potential for such impacts would be expected to be temporary, and only during construction. Impacts to physical, chemical, and biological water conditions in Lake Champlain are expected to be temporary and limited to in-lake disturbance that will occur during construction activities. Following installation, the physical impact due to the long-term presence of the cables on the Lake bottom and resulting heat from operation of the cables is expected to be minimal, as the cables will be either trenched into the Lake bottom, laid with protective covers, or bottom-laid in waters greater than 150 feet in depth.

35. Potential stormwater impacts to physical, chemical, and biological water conditions are evaluated under [Draft] Individual Stormwater Construction Permit #7354-INDC and Stormwater Operational Permit [application] #7354-9015. Stormwater discharges from the Project related construction activity and from impervious surfaces along the overland route have the potential to transport stormwater-related pollutants to receiving waters, including but not limited to sediment and nutrients.

Impacts to Fish, Aquatic Biota, and Wildlife

36. Pursuant to 30 V.S.A. § 248, project impacts to wildlife are investigated in Public Service Board Docket No. 8400.

37. Impacts to fisheries habitat include potential impacts to spawning areas within Lake Champlain such as deep shoals and reefs that are important and necessary habitat for multiple species, including Lake Trout (*Salvelinus namaycush*), Lake Whitefish (*Coregonus clupeaformis*), Lake Herring (cisco) (*Coregonus artedi*), and Rainbow Smelt (*Osmerus mordax*). Not only are these areas important for spawning, but species like Slimy Sculpin (*Cottus cognatus*) (an important food source for lake trout), rely on these rocky habitats to live. Impacts to the identified shoals and reefs are expected be avoided entirely by the Project per the PSB Stipulation, including avoidance of Motte Reef, Middle Reef, Sister Shoal, Hogback Reef, Colchester Reef and Shoals, Saxton Reef, Quaker Smith Reef, Sloop I, Scotch Bonnet, and Rock I. Permanent impacts to Lake Champlain, and related fish and wildlife habitat include the long-term placement of the cables on the lake bottom or within the bed of the lake, including where protective covering will be used on top of the cables to protect the cable. Additional impacts to Lake Champlain and related fish and wildlife habitat bas a result of the Project are expected to be temporary and limited to the immediate work area during installation. These impacts will be primarily related to temporary sediment resuspension during installation, which will include chemical constituents within the existing lake bed sediment that will be resuspended with the sediment. There may also be limited temporary impacts to fish

and wildlife habitat within the immediate work area where lake bottom disturbance will be necessary for installation.

Other fisheries habitats include areas within Lake Bomoseen where the transmission cables will cross below the lake bed, however because the cables will be installed below the bed of Lake Bomoseen, impacts are generally not expected, and will be limited to the potential for impacts from HDD construction methods where an inadvertent return of drilling fluids is possible to the Lake or from the potential for materials spills at nearby HDD staging areas. In addition, fisheries habitat that exists on rivers, streams, and tributaries is to be crossed by HDD or will be crossed by open trench excavation, all located along the overland component of the Project route. HDD construction methods will minimize and avoid risk of impacts on larger perennial streams and rivers, and impacts on remaining perennial streams and rivers related to open trench excavation are expected to be temporary. The proposed crossing of Mud Brook will utilize HDD construction methods, and therefore the potential for impacts to the rare Bridle Shiner are not expected, and impacts are limited to the potential for an inadvertent return of HDD drilling fluids and material spills at nearby HDD staging areas during construction. Intermittent and ephemeral streams to be crossed along the Project route do not provide fisheries habitat.

38. As noted in above, the project area includes wildlife habitat considered important or necessary habitat, specifically along the overland transmission line route within sections of riparian/riverine/wetland habitat in the towns of Benson, West Haven, Fair Haven, Castleton, and Mt. Holly, Vermont. Inventories indicate the overland transmission line route traverses portions of the known habitats of the Timber Rattlesnake, Eastern Ratsnake, Eastern Ribbonsnake, Musk Turtle, and Wood turtle. While impacts to the habitat itself is expected to be only temporary, there is a potential for injury or harm to those identified RTE wildlife species during construction due to encounters with heavy construction/trenching equipment and entrapment of species in open trenches.

    The project area includes wildlife habitat considered to be suitable for the state and federally endangered Indiana Bat, specifically along the overland transmission line route within the towns of Benson, West Haven, and Fair Haven. Inventories of potential roost trees that may be used by roosting Indiana Bats have been identified. The applicant proposes to maintain all of the potential roost trees. Any divergence from this approach requires additional evaluations as prescribed in the Stipulation.

    The project area includes wildlife habitat considered to be suitable for the state endangered and federally threatened Northern Long-Eared Bat. The proposed project will remove less than 1% of the forested habitat along the proposed overland route. As a result, the DFW believes that the likelihood of take from felling trees is low enough to be considered negligible.

    Otherwise, overall impacts to the wildlife habitat considered important and necessary are expected to be minimal, as the Project route is primarily located within existing transportation ROWs.

39. Impacts to significant wetland dependent wildlife habitat are investigated in Individual Wetland Permit [application] #2013-280. Significant wildlife habitat was found within 37 wetlands proposed for impact. Of those 37, six are considered high value wetland-dependent wildlife habitat. No wetlands were found to serve as critical breeding habitat vernal pools for amphibians. There is no proposed tree clearing in

wetlands providing deer wintering habitat. Wetland migratory bird habitat is present within the vicinity of the Project but activities will be within existing road or railway ROWs that already provide low-quality habitat for migratory birds.

40. Other potential impacts to fish, aquatic biota, and wildlife and/or their habitat are related to sediment disturbance with lakes and streams during the construction period. The section of the Hubbardton River to be crossed by the Project provides habitat for the state endangered Fluted-shell is (*Lasmigona costata*), the rare Silver Lamprey (*Lchthyomyzon* unicuspis), and the uncommon Eastern Silvery Minnow (*Hybognathus* regius), which are also likely to be present in that area of the river. Impacts are expected to be avoided in this location by use of HDD construction methods

41. Within Lake Champlain, project activities, including pre-installation route clearing; cable installation, including direct bottom-lay, burial by jet plow, and shear plow installation methods; and HDD lake entry points can result in a direct disturbance as well as higher localized turbidity levels. Fish spawning, eggs, and recently hatched fish (fry) are very susceptible to in-lake and/or in-stream disturbance and resulting water quality issues such as high turbidity levels. These spawning activities within Lake Champlain generally occur during early spring, but a few fish species spawn in the late fall and their eggs overwinter in the lake sediments. Within rivers, streams, or tributaries along the overland route, where temporary trenching is required to bury the transmission line, there is also potential to impact spawning activities, which generally occur during spring and fall, species dependent.

<u>Impacts to Recreational and Other Water Uses, and Land Uses</u>

42. Wetlands. No wetlands impacted by the Project were found to provide significant levels of recreational value, economic benefit, or education and research in natural sciences per the evaluation standards set forth in the Vermont Wetland Rules §§ 5.7 and 5.8, so there is no impact from the Project on these wetland values. Nine wetlands were found to provide significant levels of open space and aesthetic value. VWR § 5.9. These nine wetlands will be impacted by trench and fill activities within their buffers, temporary clearing of already disturbed areas, and small portions of vegetation conversion. However, due to the underground nature of the line, the ability to restore the wetlands to their previous condition, and the proximity of clearing to the roadway, there will be no undue adverse impacts to aesthetics of these wetlands.

43. Lake Champlain. Impacts to recreational and other uses on and around Lake Champlain will be primarily associated with the Project's construction phase, where in-lake construction activity along with equipment storage, staging, and transport may temporarily interfere physically with existing recreational and commercial uses such as use of the Korean War Veterans Vermont Department of Fish and Wildlife Access Area in Alburgh, Vermont, boating, fishing, swimming, sea-plane use, wildlife viewing, and other boating-related recreation, including scuba diving and water skiing. In addition, the Project's construction phase, involving pre-installation route clearing and cable installation, may impact uses due to temporary changes in water quality resulting from suspended sediment, which is expected to be of short duration and localized to the project work areas.

Following project construction, and during long-term operation of the Project, impacts to recreational and other related land uses on and around Lake Champlain are expected to be minimal. The lines may have minor impacts on compass navigation within the immediate vicinity of the transmission line due to magnetic impacts; however, any potential impacts will be minimized because the transmission line will be buried, covered, or located in deeper waters. Thermal impacts related to operation of the transmission line are not expected to have impacts on recreational or other uses of Lake Champlain. Finally, having exposed transmission cables running along the bottom in shallow water areas of Lake Champlain could create boating hazards. Exposed transmission lines can be caught with boat anchors. Anglers commonly fish for Lake Trout (*Salvelinus namaycush*) in the main portion of Lake Champlain and during the summer lake trout are found along the bottom in deep cold water (>75 ft.), and anglers use downriggers to get their lure deep enough to catch a Lake Trout. A common technique used for Lake Trout in Lake Champlain and other large lakes is to bounce the cannon ball that is a weight associated with downriggers along the bottom in soft bottom areas. This is commonly done in waters less than 150 ft. deep. Having an exposed transmission line running along the lake bottom in water shallower than 150 ft. would adversely impact this common angling technique. However, these potential impacts are minimized by burial or coverage of the transmission line in waters less than 150 ft. deep.

As stated previously, another use of Lake Champlain is for the production of fish at the DFW Ed Weed Fish Culture Station. Sediment resuspension during cable installation could potentially cause increases in turbidity at the hatchery's deep water intake that is used for fish culture. Potential impacts could be exacerbated if installation occurs concurrent with a Lake Champlain seiche event, which can also increase sediment resuspension and turbidity in the area of the intake. However, no significant impacts to the Ed Weed Fish Culture Station are expected because, pursuant to the PSB Stipulation, the Applicant must comply with conditions and restrictions designed to avoid and minimize impacts to the hatchery, including conditions regarding how far away from the deep water intake in-lake construction activities must be (i.e. at least 300 ft.), monitoring for seiche events, and taking corrective actions to address exceedances of action thresholds developed by the Agency.

<u>Avoidance and Minimization</u>

44. The Project was designed to minimize environmental impacts and to maintain and protect designated and existing uses. Project avoidance and minimization are described in greater detail in the application for this Certification and supporting materials, in the other permits/[applications] referenced in Section I of this Certification, and in Section III of this Certification. A general summary of project avoidance and minimization is also described below:

    The routing of the Permanent Project Corridor for the overland portion of the transmission line route is primarily within existing transportation ROWs avoiding environmental impacts where practicable, in consideration of other constraints such as water resources, RTE species and habitat, significant natural communities, important fish and wildlife habitat, terrain and topography, outcrops and bedrock, existing infrastructure, and other constructability considerations. Where environmental impact avoidance was not practicable, attempts have been made to narrow and/or shift the temporary workspace, reroute the cable alignment around resources, confine temporary impacts to the 12-foot-wide Permanent Project Corridor,

and utilize existing roads or railroads for construction access where possible. HDDs are used in specific instances to avoid impacts to large rivers, streams, waterbodies (Lake Bomoseen), and infrastructure, and several HDDs will contribute to the avoidance of Class II wetlands. Where possible, HDD staging areas were set back from wetlands, buffer zones, and waterbodies (Lake Bomoseen and Lake Champlain). The Project avoids any impacts resulting in permanent wetland fill. Temporary impacts to wetlands are further minimized through use of Best Management Practices, including but not limited to the use of construction mats. Since a large portion of the Permanent Project Corridor is located within actively maintained transportation ROWs, and HDD areas will not require vegetation management since they are buried sufficiently deep, wetland and buffer impacts associated with ongoing vegetation management for the Project have been avoided to a large extent.

The routing of the Permanent Project Corridor within Lake Champlain, was primarily designed to avoid important fish and wildlife habitat, including identified reefs and shoals; infrastructure (e.g. water intakes, utilities); and cultural resources, in consideration of other constraints such as RTE species or habitat, significant natural communities, terrain and topography, outcrops of bedrock, existing infrastructure, and other constructability considerations. HDD construction will be used to avoid disturbance to immediate shoreline areas along Lake Champlain including in both Alburgh, Vermont and Benson, Vermont. Depending on lake depth, the type of lake sediment/substrate, environmental resources, various methods of installation will be used to avoid and minimize impacts to lake water quality during construction. In addition, the routing of the Permanent Project Corridor within Lake Champlain was designed to avoid and minimize impacts to existing utility infrastructure, including existing transmission lines and water intakes. The Project route and Applicant's construction methods considers the location of the DFW Ed Weed Fish Culture Station deep water intake and hatchery operations to avoid and minimize potential impacts to the DFW Ed Weed Fish Culture Station during construction of the Project.

Mitigation

45. As part of the application for a Certificate of Public Good under 30 V.S.A. § 248, Docket No. 8400, the Applicant has entered into memorandum of agreement/understanding with the Agency entitled, "Stipulation between Champlain VT, LLC, the Vermont Public Service Department, the Vermont Agency of Natural Resources, and the Vermont Division of Historic Preservation," which includes conditions regarding avoidance and minimization of impacts to RTE wildlife species, bats, fisheries, plants, floodplains and river corridors, Lake Champlain; conditions regarding impacts related to greenhouse gases, blasting (groundwater), waste management and hazardous materials; and conditions specific to and related to collateral ANR permits, including a water quality monitoring plan and additional permitting items raised in ANR's pre-filed testimony.

46. To compensate for unavoidable impacts to wetlands, the applicant proposes to make a payment to the Ducks Unlimited - Vermont In-Lieu Fee Program.

C. Vermont Water Quality Standards, including the Anti-degradation Policy

Vermont Water Quality Standards Classifications

47. Under VWPCPR § 13.11(g)(3), when issuing a Section 401 Water Quality Certification, the Secretary must find "that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards." The water quality standards applicable to this permit are the Vermont Water Quality Standards, Environmental Protection Rule Chapter 29(a) (Effective October 30, 2014).

48. VWQS § 1-03 includes the State's Anti-degradation Policy, and the Policy is implemented according to the Agency's 2010 Interim Anti-Degradation Implementation Procedure (Procedure). Section X of the Procedure specifically applies to Section 401 Water Quality Certifications.

Anti-Degradation Policy and Procedure

49. Under the Anti-degradation Policy and Procedure, "[w]aters whose existing ambient water quality exceeds (i.e. is better than) the applicable minimum water quality criteria and indices for the class to which the waterbody is assigned shall be considered high quality water" (Procedure § X(F)(1)(a)). The Secretary is to "presume that all waters are high quality for at least one criterion and/or index for some portion of the year" (Procedure § X(F)(1)(c)). High quality waters require review under Tier 2 of the Procedure (Procedure § X(F)). Tier 2 requires that high quality waters "shall be managed to maintain and protect the higher water quality and minimize risk to existing and designated uses," and that "[i]n all cases, the level of water quality necessary to maintain and protect all existing uses as well as applicable water quality criteria shall be maintained" (VWQS § 1-03(C)(1)). Under Tier 2 a limited reduction in the existing higher quality of high quality waters is only allowed if the project satisfies the socio-economic justification test (VWQS § 1-03(C)(2); Procedure § X(F)(4)).

50. A Tier 2 review of this Project is conducted below in Section III of this Certification.

51. As provided in the Procedure, in reviewing an application "the Secretary shall determine whether the proposed discharge will result in a limited reduction in water quality in a high quality water by utilizing all credible and relevant information and the best professional judgment of Agency staff" (Procedure § X(F)(2)(b)).

52. This Project does not affect any Outstanding Resource Waters and therefore, does not require review under Tier 3 of the Procedure for the protection of Outstanding Resource Waters (Procedure § X(E)).

53. A separate Tier 1 review is not required for this Project because the maintenance and protection of existing uses and the level of water quality necessary to protect those existing uses is included in a Tier 2 review.

III. Analysis

1. The Agency has conducted an anti-degradation review in accordance with the Anti-degradation Policy and Procedure. The Agency has evaluated the nature of the activities and discharges and the resulting potential effects of the pollutants that could possibly be discharged and affect aquatic biota and habitat, wildlife and plant life, recreational uses, and the existing physical, chemical, and biological condition of the Project's receiving waters.

Presumptions

2. Under Section X(D) of the Procedure, certain permitted discharges and activities automatically satisfy a Tier 2 review, including:

    a. "Discharges that meet the requirements of a BMP or treatment and control manual that takes into consideration anti-degradation requirements during its adoption"

    b. "A discharge that is seeking authorization to operate under a general permit when the Tier 2 analysis is performed at the time of the development of the general permit"

    c. "Discharges that result in no measurable reduction in the physical, chemical or biological quality of a surface water"

    d. "Stream alteration activities resulting in channel geometry and fluvial processes where bed and bank erosion are neither increased nor transferred to other stream locations, and where floodplain function is maintained or restored over time"

3. The discharges covered under Operational Stormwater Permit [application] #7354-9015, must comply with the requirements of the 2002 Vermont Stormwater Management Manual and therefore, satisfy the presumption in Section X(D)(1)(a) of the Procedure.

4. The discharges covered under [Draft] Individual Construction Stormwater Permit #7354-INDC, and amendments thereto, must comply with the requirements of the Vermont Standards and Specifications for Erosion Prevention and Sediment Control and therefore, satisfy the presumption in Section X(D)(1)(a) of the Procedure.

5. The stream alteration activities and activities in floodplains regulated under Stream Alteration Permit [application] #SA-06-0001 and Floodplain Permit [application] #FP-4-0001-IND shall result in channel geometry and fluvial processes in which bed and bank erosion are neither increased nor transferred to other stream locations and shall maintain/restore floodplain function over time and therefore, satisfy the presumption in Section X(D)(1)(d) of the Procedure.

The Project will not Result in a Limited Lowering of Water Quality

6. Under Section X(F) of the Procedure, the Secretary has considered the following factors and determined that the Project will not result in a limited lowering of the water quality of high quality waters.

Lakes

7. Avoidance and minimization of impacts:

   Lake Bomoseen. The overland portion of the transmission line route, which includes the Lake Bomoseen crossing location was designed within an existing road ROW, and in consideration of other constraints such as other water resources, RTE species or habitat, significant natural communities, terrain and topography, outcrops or bedrock, existing infrastructure, and other constructability considerations. Impacts to Lake Bomoseen as a result of the Project are generally not expected, as the cables are proposed to cross underneath the bed of Lake Bomoseen using HDD construction methods which will avoid impacts within the Lake. Impacts are limited to the potential for an inadvertent return of drilling fluid during HDD construction or from a materials spill at HDD staging areas that are at relatively distant locations from the Lake which will also prevent impacts to the immediate shoreline areas from construction activity. Additionally, as required by Lake Encroachment Permit [application] #2015-011, and any amendments thereto, the Applicant must comply with the spill, prevention, control, and countermeasure (SPCC) plan titled "New England Clean Power Link Project Overall Oil and Hazardous Materials Spill Prevention and Contingency Plan," and the HDD inadvertent return contingency plan titled "New England Clean Power Link Project Horizontal Directional Drilling Inadvertent Return Contingency Plan". Construction activity at staging areas adjacent to Lake Bomoseen will also be completed in accordance with an Erosion Prevention and Sediment Control (EPSC) Plan, included in Appendix IC of the Certification application, and as included in [Draft] Individual Construction Stormwater Discharge Permit #7354-INDC, and any amendments thereto, which is designed to prevent or minimize the discharge of stormwater pollutants from construction activity to waters.

   Lake Champlain. Similar to Lake Bomoseen, the staging areas for the HDD at Lake Champlain entry points will be located over 150 ft. from shore in Alburgh, Vermont and over 300 ft. from shore in Benson, Vermont, which will prevent impacts to the Lake and which will prevent impacts to the immediate shoreline areas from construction activity. An additional HDD will be staged at the DFW Korean War Veterans Access Area approximately 50 ft. from the Lake, however shoreline habitat impacts are less of a concern in this location, as the area is already predominantly developed and best management practices identified in the EPSC Plan are expected to be sufficient to protect water quality during construction. As with Lake Bomoseen, the Applicant must adhere to the "New England Clean Power Link Project Overall Oil and Hazardous Materials Spill Prevention and Contingency Plan" and the "New England Clean Power Link Project Horizontal Directional Drilling Inadvertent Return Contingency Plan" as conditions of Lake Encroachment Permit [application] #2015-030, and any amendments thereto. HDD coffer dams and/or HDD receiver casings will be installed to control for and contain sediment and HDD drilling fluids where HDD activities will enter Lake Champlain.

Construction activity at staging areas adjacent to Lake Champlain will be completed in accordance with an EPSC Plan, included in Appendix IC of the Certification application, and as included in [Draft] Individual Construction Stormwater Discharge Permit #7354-INDC, and any amendments thereto, which is designed to prevent or minimize the discharge of stormwater pollutants from construction activity to waters.

Permanent impacts to Lake Champlain include the long-term placement of the cables on the lake bottom or within the bed of the lake, including where protective covering will be used on top of the cables to protect the cable. The permanent impacts associated with the placement of the cables and protective coverings is not expected to be significant as the project route identified by the Applicant will avoid placement in locations where significant fish and wildlife habitat has been identified. Additional impacts to Lake Champlain as a result of the Project are expected to be temporary and limited to the immediate work area during installation. These impacts will be primarily related to temporary sediment resuspension during installation, which will include chemical constituents within the existing lake bed sediment that will be resuspended with the sediment. There may also be limited temporary impacts to fish and wildlife habitat within the immediate work area where lake bottom disturbance will be necessary for installation. These temporary impacts to fish and wildlife habitat will be further limited by adherence to restricted seasonal work windows as identified in the PSB Stipulation, designed to avoid impacts to fish and wildlife habitat during seasonal spawning. As required by Lake Encroachment Permit [application] #2015-030, and any amendments thereto, the Applicant must comply with the "New England Clean Power Link – Lake Champlain Construction Phase Water Quality Monitoring Program," designed to ensure compliance with the Vermont Water Quality Standards during construction. In order to avoid any potential impacts from the introduction or transport of aquatic invasive species, the Applicant must also comply with the AIS Plan, as included in Appendix IJ of the Certification application.

Following construction, impacts to Lake Champlain as a result of the Project are expected to be minimal and primarily related to potential thermal and magnetic impacts resulting from operation of the transmission line on the lake bottom. Thermal and magnetic impacts will be prevented and minimized through burial of the transmission cables in the sediment and through use of protective coverings in locations of bedrock or utilities at less than 150 ft. lake depth. Thermal impacts are not expected where the cables are buried and where the cables are covered, and in addition magnetic impacts will also be minimized. Minimal thermal and magnetic impacts are expected where the cables are directly laid on the lake bottom without protective coverings at lake depths of 150 ft. or greater. Pursuant to Lake Encroachment Permit [application] #2015-030, and any amendments thereto, the Applicant must also monitor temperature impacts from the operation of the cables following installation in accordance with the "Conceptual Operational Monitoring Study of Temperature Changes Associated with NECPL."

In addition, the routing of the Permanent Project Corridor within Lake Champlain was designed to avoid and minimize impacts to existing utility infrastructure, including existing transmission lines and water intakes. In locations of existing infrastructure, protective coverings may be used to separate the new transmission line from existing infrastructure. The Project route and Applicant's construction methods also considers the location of the DFW Ed Weed Fish Culture Station deep water intake and hatchery

operations to avoid and minimize potential impacts to the DFW Ed Weed Fish Culture Station during construction of the Project. Project installation between MP 24.3 and MP 25will not involve pre-installation route clearing and cable installation will involve directly laying the cable on the lake bottom to minimize sediment resuspension, or moved further away should trenching be necessary. The Project route is also to be adjusted per the PSB Stipulation, such that the cables will not be placed over the deep water intake pipe and will be located a minimum of 300 feet to the west of the hatchery deep water intake, or 400 feet if pre-installation route clearing or trenching is determined to be necessary. Water quality monitoring and corrective action provisions are also noted for Project construction between MP 24.3 and MP 24 to avoid and minimize impacts, as identified in the PSB Stipulation.

8. If the Applicant complies with Lake Encroachment Permits [applications] #2015-011 and #2015-030, and the requirements of this Certification, and any amendment thereto, the existing water quality and uses of the lakes affected by this Project should be protected and maintained.

Streams

9. Avoidance and minimization of impacts: The overland portion of the transmission line route, which includes the stream and river crossing locations was designed within existing transportation ROWs, and in consideration of other constraints such as other water resources, RTE species or habitat, significant natural communities, terrain and topography, outcrops or bedrock, existing infrastructure, and other constructability considerations. Pursuant to Stream Alteration Permit [application] #SA-06-0001, and any amendments thereto, all stream crossings are to be conducted between July 1 and October 1 of the calendar year; exceptions may be made for HDD crossings after site specific consultation with the River Management Program and DFW regional fisheries biologist. As such, these seasonal restrictions will avoid and minimize the noted potential impacts to fish and wildlife habitat within the streams and rivers. In the immediate area of a trenched crossing, the stream will be temporarily dewatered causing near total loss of any macroinvertebrate population and displacement of fish populations. However, macroinvertebrates will reestablish within one year and the fish community should recover and return to restored area from displaced location within days or a few weeks. Thus, the Project will result in temporary impacts only and such impacts will be limited to 0.4 acres of stream channels in total associated with trenching perpendicular to the stream channels for Project installation.

   18 of the 52 perennial stream crossings proposed for this Project will be crossed using the HDD construction method and will result in no changes to the form or function of the streams in their current state. Open trench excavation crossings are of a sufficient depth to account for geomorphic changes anticipated for the life of this Project and will minimize necessary maintenance associated with vertical stream adjustments. Pursuant to Stream Alteration Permit [application] #SA-06-0001, and any amendments thereto, individual geomorphic assessments are to be conducted at each perennial stream crossing during the construction of this Project to determine the final depth of the transmission cable to account for vertical adjustments in the stream profile.

   The EPSC Plan approved under [Draft] Individual Construction Stormwater Discharge Permit #7354-INDC, and any amendments thereto, is designed to prevent or minimize the discharge of stormwater

pollutants from construction activity to waters. The stormwater treatment systems identified in Operational Stormwater Discharge Permit [application] #7354-9015, and any amendments thereto, are designed to manage, treat, and control the discharge of stormwater runoff from impervious surfaces to waters.

Stream Alteration Permit SA-06-000, any amendments thereto, requires that the transmission cables be set a minimum of 5 feet below the stable stream bed elevation for all crossings. Conditions require that a protocol be developed to ascertain the stable bed elevation and that the selected protocol is approved by Agency's River Management Program prior to the start of construction.

The flood hazard area and river corridor crossing specifications proposed/approved under Individual State Floodplain Permit [application] #FP-4-0001-IND, and any amendments thereto, meet the No Adverse Impact standards of the Flood Hazard Area & River Corridor Rule (Environmental Protection Rule Chapter 29). Specifically, the project has been designed to not increase flood elevations, velocities, or fluvial erosion. State Floodplain Permit [application] #FP-04-0001-IND, and any amendments thereto, will be/is conditioned to require that the cable to be set a minimum of five feet below the natural stream bed elevation for all stream crossings that utilize the open trench excavation method. The natural stream bed elevation is located on the longitudinal profile of the stream that would be established naturally in the absence of the road stream crossing.

10. If the Applicant complies with the Stream Alteration Permit [application] #SA-06-0001, Individual State Floodplain Permit [application] #FP-4-0001-IND, and the requirements of this Certification, and any amendments thereto, no change is expected in physical or chemical water quality that would result in a reduction in biological integrity in the streams affected by the Project and existing uses within the streams should be protected and maintained.

Wetlands

11. Avoidance and minimization of impacts: Temporary impacts to Class II wetlands are limited to trench and fill activities, clearing of woody vegetation, placement of construction matting, and temporary grading for access. Permanent impacts to wetlands are limited to the conversion of forested wetland to shrub-scrub community type.

    The routing of the Permanent Project Corridor was primarily designed within existing transportation ROWs around wetlands and buffer zones in consideration of other constraints such as other water resources, RTE species or habitat, significant natural communities, terrain and topography, outcrops or bedrock, existing infrastructure, and other constructability considerations. Where wetland or buffer zone avoidance was not practicable, the Applicant minimized impacts by narrowing and/or shifting the Temporary Workspace, routing the cable alignment around wetlands, confining temporary impacts to the 12-foot-wide Permanent Project Corridor, and utilizing existing roads or railroads for construction access. The Project will use HDD construction to avoid many Class II wetlands, including: V-CN-W-104 (MP 113.8), V-FH-W-9 (MP 111.6), V-CN-W-113 (MP 114.3), T-RU-W7 (MP 126.5), T-MH-W4 (MP 145.4) and T-MH-W55 (MP 138.8). Where possible, HDD staging areas have been designed to be set back from wetlands and buffer zones. The Project avoids any impacts resulting in permanent

wetland fill. The EPSC Plan approved under [Draft] Individual Construction Stormwater Discharge Permit #7354-INDC, and any amendments thereto, is designed to prevent or minimize the discharge of stormwater pollutants from construction activity to waters, including wetlands. The stormwater treatment systems identified in Operational Stormwater Discharge Permit [application] #7354-9015, and any amendments thereto, are designed to manage, treat, and control the discharge of stormwater runoff from impervious surfaces to waters, including wetlands.

Additionally, to avoid temporary impacts to wetlands within the Temporary Workspace and Permanent Project Corridor, construction mats will be placed over vegetation to avoid rutting or soil compaction from machinery and impacts from temporary soil stockpiling. After construction, construction mats will be removed and these areas will be allowed to regenerate to pre-existing conditions. Since a large portion of the Permanent Project Corridor is located within actively maintained road and railroad ROWs, and HDD areas will not require vegetation management since they are buried sufficiently deep, wetland and buffer impacts associated with ongoing vegetation management for the Project have been avoided to a large extent.

All contractors' equipment will be cleaned so as to contain no observable soil or vegetation prior to work in wetlands and buffer zones to prevent the spread of invasive species. If the equipment utilized on the Project site is suspected to have encountered pre-existing non-native invasive species populations within the Project area, the equipment and any construction mats will be cleaned such that it is free of excess soil and vegetation prior to leaving the Project area.

The initial wetland clearing will be completed either during dry conditions, when the ground is frozen, or with the use of construction mats. Wetland and buffer zone areas that require ongoing maintenance outside of the existing clear zones along the Permanent Project Corridor shall be conducted during dry or frozen conditions, or if vegetation management needs to occur outside of dry or frozen ground conditions, hand cutting methods will be used.

The ongoing maintenance of vegetation over and adjacent to the permanent corridor are addressed in the avoidance and minimization measures above, the conditions within Vermont Wetlands Permit [application] #2015-280, and any amendments thereto, and in the "New England Clean Power Link Project Vegetation Management Plan" included in Appendix IE of the Certification application.

The "New England Clean Power Link Project Vegetation Management Plan" included in Appendix IE of the Certification application specifies the initial cutting and prescriptive management for the overland route of the project. The management plan specifies the reduction of construction areas based on environmental constraints, limited cutting of the permanent project corridor and the monitoring of invasive plants within wetlands and riparian buffers. Much of the details of the plan are also specified in the EPSC Plan details included in Appendix 1c of the Certification application. Once construction areas have revegetated, the Applicant will be required to monitor for non-native invasive species per the PSB Stipulation.

12. If the Applicant complies with Vermont Wetlands Permit [application] #2015-280 and the requirements of this Certification, and any amendments thereto, the Project will not result in an undue adverse impact

on the significant functions and values of Class II wetlands and there is a reasonable assurance that the Project will not violate applicable water quality standards.

Fisheries and Wildlife

13. Avoidance and minimization of impacts:

Plants. In order to avoid and minimize impacts to RTE plant populations, the Applicant shall comply with the PSB Stipulation, which provides requirements for an updated RTE plant population survey by a qualified botanist prior to construction and which requires implementation of specific avoidance and minimization measures, including but not limited to the narrowing of work areas, time limitations on placement of construction matting where RTE plant populations are located, additional plant-specific mitigation requirements, adherence to the "New England Clean Power Link Vegetation Management Plan," and post-construction non-native species monitoring and control requirements. In addition, per the PSB Stipulation, if impacts to threatened or endangered plant populations are expected occur, a takings permit will be required.

Wildlife. In order to avoid and minimize impacts to RTE wildlife species of special concern including the Timber Rattlesnake, Eastern Ratsnake, Eastern Ribbonsnake, Musk Turtle, and Wood Turtle, which are potentially present within the Project route, the Applicant shall comply with the PSB Stipulation, which provides requirements for a revised avoidance and minimization plan., that includes minimization measures such as the use of natural fiber woven erosion control matting when necessary for stabilization of earth disturbance, which is less likely to result in wildlife entrapment as compared to non-natural fiber non-woven erosion control matting products. Open trenches without temporary coverings in areas within 1,000 feet of major named rivers will be inspected for entrapped wood turtles prior to construction activities each morning as an avoidance measure and the Applicant is expected to take additional avoidance and minimization measures as identified in the PSB Stipulation to avoid impacts to RTE wildlife species of special concern. Impacts to wetland migratory birds will be avoided by situating the corridor within existing transportation infrastructure ROWs.

In order to avoid and minimize impacts to wildlife habitat considered to be suitable for the state and federally endangered Indiana Bat, specifically along the overland transmission line route within the towns of Benson, West Haven, and Fair Haven, inventories of potential roost trees that may be used by roosting Indiana Bats have been identified. The Applicant proposes to maintain all of the potential roost trees. Any divergence from this approach requires additional evaluations as prescribed in the PSB Stipulation.

The project area also includes wildlife habitat considered to be suitable for the state endangered and federally threatened Northern Long-Eared Bat. Because the proposed project will remove less than 1% of the forested habitat along the proposed overland route, the DFW believes that the likelihood of take from felling trees is low enough to be considered negligible and no further avoidance and minimization measures will be necessary.

Fish. Pursuant to the PSB Stipulation, the aquatic portion of the transmission line route, which is limited to the portion located within Lake Champlain, the Applicant must avoid important fish and wildlife habitat, including identified reefs and shoals. The PSB Stipulation identifies seasonal restricted work windows to protect fish spawning habitat and further requires that woody debris, trees, stumps, historical sawn logs, and rock and boulders encountered during route clearing activities or installation must be left in Lake Champlain whenever feasible so as to protect existing fish and wildlife habitat within the Lake.

14. Special conditions of the PSB Stipulation: Pursuant to the PSB Stipulation, the Lake Champlain transmission line route must avoid identified shoals and reefs in Lake Champlain, and must avoid other spawning reefs and shoals unless the Agency determines that re-routing would result in greater impacts to other environmental resources or finds that it is infeasible due to water depths, geological conditions, or proximity to the New York border, the Vermont shoreline, or archaeological resources.

15. If the Applicant complies with the requirements of this Certification, the PSB Stipulation, and Vermont Wetlands Permit [application] #2015-280, [Draft] Individual Construction Stormwater Discharge Permit #7354-INDC, Operational Stormwater Discharge Permit [application] #7354-9015, Lake Encroachment Permit [application] #2015-030; and any amendments thereto, Vermont RTE species are expected to be fully protected.

Cumulative Impacts

16. Activity's cumulative effect on lake resources and water quality: The portion of the transmission line that will cross below Lake Bomoseen will have no additional cumulative impact. The Lake Champlain segment of the project route is expected to have impacts on water quality and fish and wildlife habitat, however impacts are expected to be temporary, limited to project construction, and limited to immediate work areas, and are not expected to exceed Vermont Water Quality Standards.. Additional minor impacts related to thermal and magnetic impacts during operation of the transmission line are also expected, however these thermal impacts are not expected to exceed Vermont Water Quality Standards and the magnetic impacts are expected to be near immeasurable. The temporary and minor cumulative impacts to Lake Champlain are expected to be outweighed by the public benefits the Project will have on water quality and fish and wildlife habitat as specified in Lake Encroachment Permit [application] #2015-030.

17. Cumulative impacts on wetland resources: The Project has been designed to meet the Vermont Wetland Rule standards of no undue adverse impact to protected wetland functions which include surface and groundwater protection; wildlife habitat; and rare, threatened and endangered species habitat. Of the total area of wetland identified within the project area, 23% will be subject to impact. Only 4% of wetlands within the project area will be converted from forested wetland to shrub-scrub wetland. There will be no wetland loss associated with the Project. The citing of the project corridor along existing road ROWs has reduced the cumulative effects of the Project on wetland resources. Compliance with Vermont Wetlands Permit [application] #2015-280 will ensure that there will be no additional cumulative impacts on wetland resources.

18. Cumulative impacts on streams and floodplains: If the conditions of the Stream Alteration Permit [application] #SA-06-0001are followed it is expected that stream equilibrium will be preserved in stable stream reaches, limiting cumulative impacts to temporary disturbance associated with construction disturbance. As identified in the Individual State Floodplain Permit [application] #FP-4-0001-IND, the Project has been designed to meet the No Adverse Impact Standards of the Flood Hazard Area & River Corridor Rule. Specifically, the cable follows existing road ROWs, and will span river corridors below grade at a width and depth that will accommodate river and stream adjustments toward equilibrium conditions.

19. Cumulative impacts on aquatic biota and fisheries: In the immediate area of trenched crossings, streams will be temporarily dewatered causing near total loss of any macroinvertebrate population and displacement of fish populations. Macroinvertebrates will reestablish within one year and the fish community should is expected to recover within days or a few weeks where they will returning to restored areas from displaced locations, and therefore there are not expected to be long-term cumulative impacts on aquatic biota or stream fish communities. Cable installation within Lake Champlain will result in temporary disturbance of the lake bottom, which will cause a temporary impact on water quality, aquatic biota, and fisheries, however impacts are expected to be temporary, limited to project construction, and limited to immediate work areas, and are not expected to exceed Vermont Water Quality Standards. Aquatic biota within Lake Champlain impacted by cable installation are expected to reestablish within one year and the fish community is expected to return to the immediate Project area following construction.

IV. Conditions

The Secretary has examined the application, and this decision is based upon an evaluation of the information contained within the application and other pertinent information that is relevant to the Agency's responsibilities under Section 401 of the federal Clean Water Act. The Agency certifies that there is a reasonable assurance that construction and operation of the New England Clean Power Link, as proposed by the Applicant and in accordance with the following conditions, will not cause a violation of the Vermont Water Quality Standards and will be in compliance with sections 301, 302, 303, 306, and 307 of the federal Clean Water Act, 33 U.S.C. § 1341, as amended, and other appropriate requirements of state law. Therefore, this Certification is granted pursuant to the following conditions:

A. The Applicant shall comply with all terms and conditions of this Certification.

B. The reasonable assurances provided by this Certification are contingent upon the Applicant obtaining and complying with Lake Encroachment Permit #2015-011 and all amendments and renewals thereto, Lake Encroachment Permit #2015-030 and all amendments and renewals thereto, Stream Alteration Permit #SA-06-0001 and all amendments and renewals thereto, Wetlands Permit #2013-280 and all amendments and renewals thereto, Floodplain Permit #FP-4-0001-IND and all amendments and renewals thereto, Individual Construction Stormwater Permit #7354-INDC and all amendments and renewals thereto, Operational Stormwater Permit #7354-9015 and all amendments and renewals thereto, and the PSB Stipulation and all amendments and renewals thereto.

C. The conditions of the following permits and stipulations are incorporated by reference as conditions of this Certification: Lake Encroachment Permit #2015-011 and all amendments and renewals thereto, Lake Encroachment Permit #2015-030 and all amendments and renewals thereto, Stream Alteration Permit #SA-06-0001 and all amendments and renewals thereto, Wetlands Permit #2013-280 and all amendments and renewals thereto, Floodplain Permit #FP-4-0001-IND and all amendments and renewals thereto, Individual Construction Stormwater Permit #7354-INDC and all amendments and renewals thereto, Operational Stormwater Permit #7354-9015 and all amendments and renewals thereto, and the PSB Stipulation and all amendments and renewals thereto.

D. The Applicant shall give the Agency advance notice of the date on which construction of the Project will commence and the date on which construction of the Project will be completed as well as the date operation of the Project will commence.

E. The Applicant shall provide written notice to the Agency, including the Director of the Watershed Management Division of any proposed change to the Project that would have a significant or material effect on the findings, conclusions, or conditions of this Certification, including any changes to the construction, operation, or schedule of the Project. The Applicant shall not make any such change without approval from the Agency.

F. The Applicant shall allow authorized Agency representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the Project and determining compliance with this Certification.

G. The Agency may reopen and alter or amend the conditions of this Certification over the life of the Project when such action is necessary to assure compliance with the Vermont Water Quality Standards and to respond to any changes in the classification or management objectives for the affected waters. Any amendment that results in a change of conditions for the Project shall be subject to VWPCPR § 13.11(c) (Public Notice) and VWPCRP §§ 13.11(d), (e), and (f) (Public Hearing).

H. This Certification does not relieve the Applicant of the responsibility to comply with all other applicable federal, state, and local laws, regulations, and permits.

V. Effective Date and Expiration of Certification

This certification shall become effective on the date of issuance, and the conditions of this Certification shall become conditions of the federal permit (33 U.S.C. § 1341(d)). If the federal authority denies a permit, this Certification shall become null and void. Otherwise, it runs for the term of the federal license or permi

VI. Enforcement

A. Upon receipt of information that water quality standards are being violated as a consequence of the Project's construction or operation or that one or more certification conditions has not been complied with, the Secretary, after consultation with the Applicant and notification of the appropriate federal

permitting agency, may, after notice and opportunity for a public hearing, modify this Certification and provide a copy of such modification to the Applicant and the federal permitting agency.

B. Certification conditions are subject to enforcement mechanisms available to the federal agency issuing the permit and to the state of Vermont. Other mechanisms under Vermont state law may also be used to correct or prevent adverse water quality impacts from construction or operation of activities for which certification has been issued.

VII. Appeals

Renewable Energy Projects – Right to Appeal to Public Service Board
If this decision relates to a renewable energy plant for which a certificate of public good is required under 30 V.S.A. § 248, any appeal of this decision must be filed with the Vermont Public Service Board pursuant to 10 V.S.A. § 8506. This section does not apply to a facility that is subject to 10 V.S.A. § 1004 (dams before the Federal Energy Regulatory Commission), 10 V.S.A. § 1006 (certification of hydroelectric projects) or 10 V.S.A. Chapter 43 (dams). Any appeal under this section must be filed with the Clerk of the Public Service Board within 30 days of the date of this decision; the appellant must file with the Clerk an original and six copies of its appeal. The appellant shall provide notice of the filing of an appeal in accordance with 10 V.S.A. § 8504(c)(2), and shall also serve a copy of the Notice of Appeal on the Vermont Department of Public Service. For further information, see the Rules and General Orders of the Public Service Board, available on line at www.psb.vermont.gov. The address for the Public Service Board is 112 State Street, Montpelier, Vermont, 05620-2701 (Tel. # 802-828-2358).

All Other Projects – Right to Appeal to Environmental Court
Pursuant to 10 V.S.A. Chapter 220, any appeal of this decision must be filed with the clerk of the Environmental Division of the Superior Court within 30 days of the date of the decision. The Notice of Appeal must specify the parties taking the appeal and the statutory provision under which each party claims party status; must designate the act or decision appealed from; must name the Environmental Division; and must be signed by the appellant or the appellant's attorney. In addition, the appeal must give the address or location and description of the property, project, or facility with which the appeal is concerned and the name of the applicant or any permit involved in the appeal. The appellant must also serve a copy of the Notice of Appeal in accordance with Rule 5(b)(4)(B) of the Vermont Rules for Environmental Court Proceedings. For further information, see the Vermont Rules for Environmental Court Proceedings, available online at www.vermontjudiciary.org. The address for the Environmental Division is: 32 Cherry St.; 2nd Floor, Suite 303; Burlington, VT 05401 (Tel. # 802-828-1660).

Dated this ___ day of _____ 2015

By _____
Pete LaFlamme, Director
Watershed Management Division

cc: Distribution List

APPENDIX I – Wetlands Identified

Wetlands Identified							
Wetland ID	Size (s.f.)	Size (Acres)	Cowardian Type(s)	Hydrology	Functions Provided	Wetland Class	Other Description
V-AL-W-2	17,400	0.4	PEM/ PFO	Saturation (A3); Drainage Patters (B10)	1P, 2P, 6P, 10P	II	Contiguous with Lake Champlain
V-BE-W-1	3,310	0.08	PSS	Water-Stained Leaves (B9); Saturation (A3); Drainage Patters (B10)	1L, 2L, 10P	II	Contiguous with Lake Champlain
V-BE-W-2	3,930	0.09	PFO	Saturation (A3); Sediment Deposits (B2); Water-stained leaves (B9)	1P, 2P, 10P	II	Small wetland in distinct topographical break along a stream
V-BE-W-14	1,480	0.03	PSS/PFO	Water-Stained Leaves (B9); Saturation (A3); Inundation Visible on Aerial (B7)	1P, 2H, 3P, 4H	II	Part of large mapped VSWI; Inundated in center with seeps
V-BE-W-100	740	0.02	PEM	Saturation (A3); Water-stained Leaves (B9); Drainage Patters (B10)	1P, 2P, 10P	II	Emergent wetland adjacent to VHD-mapped stream
V-BE-W-101	910	0.02	PEM	Water-stained Leaves (B9); Drainage Patters (B10)	1L	III	Small emergent wetland within active pasture
V-WH-W-101	140	0	PEM	Water-stained Leaves (B9); Drainage Patters (B10)	1L, 2L	III	Small emergent wetland in pasture field
V-WH-W-100	100	0	PEM	Water-stained Leaves (B9); Drainage Patters (B10)	1L, 2L	III	Small emergent wetland between active agricultural fields
V-WH-W-5	1,450	0.03	PEM	Surface Water (A1); Saturation (A3)	1H, 2P	II	Large wetland extends to mapped VSWI: wetland restoration project with plantings

V-WH-W-6	120	0	PEM	Surface Water (A1); Saturation (A3)	1H, 2P	II	Large wetland extends to mapped VSWI: wetland restoration project with plantings
V-WH-W-8	6,360	0.15	PEM	Surface Water (A1); Saturation (A3); Drainage Patterns (B10)	1H, 2P	II	Large wetland extends outside of ROW; saturated to surface
V-WH-W-10	1,800	0.04	PEM	Saturation (A3); Drainage Patterns (B10)	1P, 2P	II	Wetland saturated to surface; drainage patterns
V-WH-AW-10	7,150	0.16	PEM	Saturation (A3); Drainage Patterns (B10)	1P, 2P	II	Wetland saturated to surface; drainage patterns
V-WH-W-11	1,220	0.03	PEM	Surface Water (A1); High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	1P, 2P, 4P	II	Large wetland extends outside ROW; saturated to surface
V-FH-W-22	1,130	0.03	PEM	Surface Water (A1); High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	1L	III	Small isolated feature in depression along 22a and driveway; saturated to the surface; partially mowed
V-FH-W-21	8,780	0.2	PEM/PSS	Surface Water (A1); High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	1H,2H,4P	II	Wetland drains across 22a via culvert; large mapped VSWI to the south of road
V-FH-W-19	9,070	0.21	PEM	High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	1H, 2H, 4P	II	Wetland extends to topographical depression; ponded water
V-FH-W-29	920	0.02	PEM / PSS	Saturation (A3)	1L, 2L	III	Small topographical depression wetland; saturated to surface
V-FH-W-5	6,290	0.14	PEM	Surface Water (A1); Saturation (A3); Water-stained Leaves (B9)	1L, 2L	II	Saturated to surface; drainage channels
V-FH-W-4	85,510	1.96	PEM / PFO / PSS	Surface Water (A1); Saturation (A3); Water-stained Leaves (B9); Drainage Patterns (B10)	1P, 2P, 4P	II	Large mapped VSWI; seepage wetland; saturated to surface; drainage channels; drains toward stream V-FH-S-5
V-FH-W-6	5,320	0.12	PEM	Saturation (A3)	1P, 2L	II	Small wetland; saturated to surface; depression

V-CN-W-103	25,930	0.6	PEM / PSS	Surface Water (A1); Saturation (A3); Water-stained Leaves (B9)	1P, 2P	II	Large mapped VSWI wetland; topographical depression; drains under Route 4 via culvert
V-CN-W-104	119,100	2.73	PFO / PEM / PSS	Surface Water (A1); Saturation (A3); Water-stained Leaves (B9)	1P, 2P, 4P, 6P, 9P	II	Large mapped VSWI wetland; drains under route 4 via culverts. Habitat for two small populations of state threatened plant.
V-CN-W-113	30,220	0.69	PEM / PSS / PFO	Saturation (A3)	1P, 2P	II	Large mapped VSWI complex; extends outside of study area; drains under Route 4
V-CN-W-115	17,290	0.4	PEM	Surface Water (A1); Saturation (A3)	1P, 2P	II	Wetland located in topographical depression; saturated to surface
V-CN-W-11	5,940	0.14	PEM/PSS/PFO	Saturation (A3); Water-stained Leaves (B9)	1P, 2P	II	Seep wetland; drains toward the east; extends into forested area
V-CN-W-12	12,060	0.28	PEM/PSS	High Water Table (A2); Saturation (A3)	1H, 2H,10P	II	Large mapped VSWI; drains under Route 4 via culverts; saturated to surface; drainage patterns
V-CN-W-15	21,510	0.49	PEM/PSS	Saturation (A3); Drainage Patterns (B10)	1P, 2P	II	Wetland extends to VSWI; saturated to surface
V-CN-W-3/6	9,900	0.23	PEM/PSS	High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	1H, 2H	II	Seep wetland; located in topographical depression; saturated to surface
V-CN-W-1	12,780	0.29	PEM / PSS	Standing Water (A1); High Water Table (A2); Saturation (A3); Water-Stained Leaves (B9)	1P, 2P	III	Wetland located in field; saturated to surface; slight topographical depression
T-WR-W8	6,720	0.15	PSS/PEM	Saturated (A3); Water-Stained Leaves (B9); Drainage Patterns (B10); Geomorphic Position (D2)	2P	III	Exits a larger forested wetland; drainage patterns; natural spring and seep flowing toward Rt. 4. Does not meet Class II, because associated stream is small in size and intermittent.
T-WR-W7	1,380	0.03	PEM	Saturated (A3); Water-Stained Leaves (B9); Algal Mat (B4)	2P	III	Small wetland depression; ditch-like.

T-RU-W8	22,590	0.52	PEM/PFO	Saturated (A3); Water-Stained Leaves (B9); Drainage Patterns (B10); Geomorphic Position (D2)	2P	III	Isolated wetland bound by Rt. 4; a forest; and agricultural field; with a forested seep.
T-RU-W4	223,760	5.14	PEM/PSS	Water-Stained Leaves (B9); Saturation (A3)	1H, 2H, 4H, 9P	II	Large wetland in VSWI parallel to Rt. 4; bound by corn field to south; on the Otter Creek floodplain.
T-CL-W11	2,340	0.05	PFO	Saturated (A3); Water-Stained Leaves (B9)	1P, 4P	III	Small isolated depression adjacent to forested upland.
T-CL-W12	1,190	0.03	PEM	Saturated (A3); Water-Stained Leaves (B9)	2P	III	Small isolated wetland that drains from forest into culvert under road.
T-CL-W7	11,020	0.25	PFO/PEM	Water-Stained Leaves (B9); Saturation (A3)	1P, 2P, 4P	II	Wetland on both sides of the road; a swale on one side; a Phragmites stand on the other; saturated to the surface.
T-CL-W5	2,700	0.06	PEM	Saturated (A3); Water-Stained Leaves (B9)	1P, 2P	III	Ditch-like swale adjacent to forested upland; flows into culvert; saturated to the surface.
T-CL-W2	770	0.02	PFO/PEM	Saturated (A3); Water-Stained Leaves (B9); Drainage Patterns (B10); Geomorphic Position (D2)	1L, 2P	III	Small wetland adjacent to large VSWI complex; drains median; disperses on upland slope.
T-CL-W1	2,550	0.06	PEM	Water-Stained Leaves (B9); Saturation (A3)	1L, 2L, 6P	II	Wetland adjacent to forest buffer along agricultural land; located under the VELCO ROW. Very small rare to uncommon (S2S3) plant population.
T-CL-W15	280	0.01	PEM	Water-Stained Leaves (B9); Drainage Patterns (B10); Geomorphic Position (D2); Saturation (A3)	2H, 4P,	II	PEM wetland with drainage patterns; connects to large VSWI wetland complex.
T-CL-W18	910	0.02	PFO	Water-Stained Leaves (B9); Saturation (A3)	2H, 4H	II	Narrow forested wetland strip at road toe of slope; part of large VSWI complex.
T-CL-W20	2,420	0.06	PFO	Water-Stained Leaves (B9); Saturation (A3)	4P, 9P	II	Forested wetlands on both sides of road; 10% slope; may connect to large VSWI wetland complex.

T-CL-W22	34,150	0.78	PEM	Saturation (A3)	2P, 4H, 9P	II	PEM wetland at highway toe of slope; part of larger VSWI wetland complex/depression.
V-SH-W-7	1,690	0.04	PEM/PSS	High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	2P	II	Wetland located on ledge; saturated to surface; drains to V-SH-S-11
V-SH-W-201	5,410	0.12	PFO	Surface Water (A1); High Water Table (A2); Drainage Patterns (B10); Geomorphic Position (D2)	1L, 2P	II	Fringe wetland to T-SH-S1; widens as slope flattens; adjacent modification from Railroad. Delineated feature, contrary to "A" in ID.
V-SH-W-202	680	0.02	PSS/PFO	Saturation (A3); Water-Stained Leaves (B9)	2P	III	Isolated feature; adjacent modifications from railroad; depressional area. Delineated feature, contrary to "A" in ID.
T-SH-W6	1,860	0.04	PFO	Surface Water (A1); High Water Table (A2); Saturation (A3)	2P	III	Isolated forested wetland
T-SH-W9	9,180	0.21	PFO	Saturation (A3); Water-Stained Leaves (B9)	4P	II	large seep with high amount of sedimentation/perennial stream
T-SH-W10	4,000	0.09	PFO	Saturation (A3)	1L, 2P, 4L	II	Hillside seep with drainage patterns
T-SH-W12	770	0.02	PEM	Saturation (A3)	2L	III	Small depressional wetland
T-SH-W13	11,760	0.27	PSS	Saturation (A3); High Water Table (A2)	1P, 2P, 4P	II	forested wetland abutting RR both side of RR
T-WA-W3	6,638	0.15	PFO	Saturation (A3)	1P, 2P, 4L	II	large marginal wetland along RR bank and managed forest area; connected to larger wetland feature
T-WA-W3b	2,526	0.06	PEM	Surface Water (A1); High Water Table (A2); Saturation (A3)	1P, 2P, 4L	III	large marginal wetland along RR bank and managed forest area
T-WA-W4	8,620	0.2	PFO	Saturation (A3)	1L, 2P, 10P	II	multiple intermittent/ephemeral drainages up slope drain to wetland
T-WA-W6	1,300	0.03	PFO	Saturation (A3); Drainage Paterns (B10)	2L	III	isolated hillside seep
T-WA-W9	1,270	0.03	PEM	Saturation (A3)	1L, 2P, 10L	II	seep associated with int stream
T-WA-W10	1,050	0.02	PEM	Saturation (A3)	2P, 1L	II	Isolated hillslope seep

V-WA-W-102	60	0.00	PEM/ PSS	Saturation (A3); Sediment Deposits (B2); Iron deposits (B5); Water-stained leaves (B9)	1L, 2P	II	Emergent wetland (scrub shrub out side of study area) drains to culvert under Rt 103
V-WA-W-101	2,300	0.05	PEM/ PFO	Saturation (A3); Water-stained Leaves (B9); Drainage Patterns (B10)	1P, 2H, 10P	II	Emergent/ forested wetland adjacent to stream located outside of study area
T-MH-W55	550	0.01	PSS	Saturation (A3); High Water Table (A2); Saturation Visible on Aerial Imagery (C9)	1P, 2P, 4P	II	PSS wetlands on both sides of road; drainage patterns.
T-MH-W56	540	0.01	PEM	Saturation (A3); Drainage Patterns (B10)	1L, 2L	II	Wetland drainage to jurisdictional ditch; at the bottom of a sloped and mowed lawn; part of VSWI wetland. Class II due to proximity to VSWI wetland, but not functionally significant due to the "Low" Function and Value rating.
T-MH-W53 NORTH	230	0.01	PFO	Saturated (A3); Water-Stained Leaves (B9)	1P, 2P, 3P, 4P	II	Forested hillslope; drains to jurisdictional ditch.
T-MH-W54	630	0.01	PEM	Saturated (A3)	2L, 4L	III	Small wetland on a hillslope seep; drains to jurisdictional ditch.
T-MH-W50	5,380	0.12	PEM/PSS	Saturation (A3); Water-Stained Leaves (B9); Drainage Patterns (B10)	1P, 2P, 3P, 4P	II	Wetland drains to jurisdictional ditch.
T-MH-W48-North	130	0	PEM	Saturated (A3); Drainage Patterns (B10)	2L, 4L	III	Very small PEM wetland on both sides of road; drains to VSWI complex.
T-MH-W51	290	0.01	PSS	High Water Table (A2); Saturated (A3)	1L, 2L, 4L	III	Small isolated wetland that drains through a culvert to a small stream.
T-MH-W52	2,140	0.05	PEM	Saturated (A3); High Water Table (A2); Water-Stained Leaves (B9)	1L, 2P, 4L	III	PEM wetland that drains to jurisdictional ditch which drains through a culvert to a small stream.
T-MH-W45	8,460	0.19	PSS/PEM	Water-Stained Leaves (B9); Drainage Patterns	1P, 2L, 4P	II	PSS wetland along road; drains to VSWI wetland.

				(B10); Saturation (A3)			
T-MH-W41	2,510	0.06	PEM	Water-Stained Leaves (B9); Saturation (A3)	1P, 2P	II	Marginal roadside PEM wetlands on both sides of road; southern section drains to VSWI wetland.
T-MH-W38	1,060	0.02	PSS/PFO	Water-Stained Leaves (B9); Saturation (A3)	1H, 2L, 4P, 6P	II	Wetlands on both sides of Rt. 103; comprise the northern boundary of a larger wetland complex; comprised of forest and lawn. Relatively large population of rare (S2) plant in several locations of wetland.
T-MH-W37	440	0.01	PSS	Drainage Patterns (B10); Water-Stained Leaves (B9); Saturation (A3)	1H, 2P, 3P, 4P	II	PSS wetland on both sides of highway; encompasses ephemeral stream
T-MH-W34	360	0.01	PSS	High Water Table (A2); Saturated (A3)	1L, 2L, 4L	III	Very small isolated PSS wetland.
T-MH-W35 NORTH	130	0	PSS	Saturated (A3); Water-Stained Leaves (B9); Drainage Patterns (B10)	2L, 4L	III	Very small isolated wetland on north side of road; drainage patterns; forested hillslope.
T-MH-W36	900	0.02	PSS	Saturated (A3); Water-Stained Leaves (B9); Drainage Patterns (B10)	1L, 2L, 4L, 6P	III	Forested sideslope seep; drainage patterns from roadside ditch. Small population of rare to uncommon (S2S3) plant in roadside ditch.
T-MH-W33	950	0.02	PSS	Drainage Patterns (B10); Saturation (A3)	1L, 2P, 4P	II	Roadside wetland; PEM/PSS; drainage patterns present; south section borders VSWI wetland.
T-MH-W32	570	0.01	PEM	Saturated (A3); Drainage Patterns (B10); Saturation Visible on Aerial (C9)	1L, 2P, 4L	III	PEM wetland on both sides of road; surrounds intermittent stream which drains south under road.
T-MH-W31	970	0.02	PEM	Saturation (A3)	1L, 2L, 4L	III	Wetland seep (man-made from road cut); naturalized.
T-MH-W30	300	0.01	PEM	Saturated (A3); Drainage Patterns (B10); Saturation Visible on Aerial (C9)	1L, 2P, 4L	III	Depressional area receiving water from culvert upslope; drains to ditch; lawn to north; floodplain to south.

T-MH-W28	4,740	0.11	PSS	High Water Table (A2); Saturation (A3); Drainage Patterns (B10)	1H, 2H, 10P	II	Wetland on both sides of highway; saturated to the surface; bound by railroad tracks on the south side; connects to large wet field on north side; connects to VSWI wetland off-ROW.
T-MH-W23	220	0.01	PEM/PSS	High Water Table (A2); Geomorphic Position (D2); Drainage Patterns (B10); Saturation (A3)	1P, 2P	II	Wetlands on both sides of Rt. 103; bound by railroad tracks and PEM on south side; PSS on north side with drainage patterns.
T-MH-W21	2,520	0.06	PSS	Saturated (A3); High Water Table (A2); Water-Stained Leaves (B9); Drainage Patterns (B10)	1P, 2L	III	Roadside PSS wetland; split by driveway; saturated to surface.
T-MH-W20	1,180	0.03	PEM/PSS	Surface Water (A1); Saturation (A3)	1P, 2L, 6P	II	Wetland on both sides of Rt. 103; drains from north to south and collects in depression at railroad boundary. Roadside ditch in wetland provides habitat for rare (S2) plant.
T-MH-W17	3,420	0.08	PEM	Saturated (A3); High Water Table (A2); Water-Stained Leaves (B9); Geomorphic Position (D2); Drainage Patterns (B10)	1P, 2L	III	PEM wetland; saturated to the surface; overlaps VSWI wetland; ditch-like characteristics.
T-MH-W16	6,570	0.15	PEM	Saturated (A3); High Water Table (A2); Water-Stained Leaves (B9); Geomorphic Position (D2)	1P, 2P, 4L	III	PEM wetland; drains to jurisdictional ditch; saturated to the surface.
T-MH-W9	1,060	0.02	PSS	High Water Table (A2); Geomorphic Position (D2); Drainage Patterns (B10)	1P, 2P, 4P	II	Wetland saturated to the surface; borders intermittent stream on south side; borders non-jurisdictional ditch to the north; connects to a VSWI wetland.
T-MH-W6	110	0	PSS	High Water Table (A2); Saturated	1P, 2L	III	Saturated to surface; drains to jurisdictional ditch to east.

				(A3); Drift Deposits (B3)			
T-MH-W2	340	0.01	PEM	Saturated (A3); High Water Table (A2)	2L, 4L	III	Very small PEM wetland on a hillslope between highway and railroad tracks.
T-MH-W3	440	0.01	PEM	Saturated (A3); High Water Table (A2)	1L, 2L, 4L	III	Small PEM wetland; saturated to surface; sulfur odor; drains to roadside ditch
T-LU-W13	11,140	0.26	PEM	Water-Stained Leaves (B9); High Water Table (A2); Drainage Patterns (B10); Geomorphic Position (D2)	1H, 2L, 3P,6P	II	Large PEM wetland; saturated to the surface; intermittent stream present; complex connected through culverts. Small rare (S2) plant population.
T-LU-W1	140	0	PEM	Saturated (A3)	2L	III	Small; isolated seep in a residential lawn; mowed downslope.

APPENDIX II –Perennial Stream Crossings Identified

Perennial Stream Crossings Identified									
Mile Post[1]	**Stream ID**	**Stream / River Name**	**Right of Way**	**Town**	**Average OHW[2] Width (feet)**	**Existing Structure Width [3] (feet)**	**Drainage Area[4] (square miles)**	**FEMA Floodplain / Floodway**	**Proposed Crossing Method[5]**
99.0	V-BE-AS-3	Unnamed Tributary (UT) to Lake Champlain	North Lake Road	Benson	3	2.0	< 0.5	-	At Culvert
100.7	V-BE-S-8	UT to Hubbardton River	Old North Lake Road	Benson	7	2.0	0.11	Zone A	Replace Culvert

101.2	V-BE-AS-10	UT to Hubbard ton River	Old North Lake Road	Benson	5	3.0	<0.5	-	At Culvert
102.2	V-BE-S-100	UT to Hubbard ton River	VT Route 22A	Benson	3	2.0	<0.5	-	OTE
103.1	V-BE-S-102	UT to Hubbard ton River	VT Route 22A	Benson	3	6.0	1.27	Zone A	Over Culvert
104.7	V-BE-S-106	Hubbard ton River	VT Route 22A	Benson	25	2 x 15.0	33.4	Zone A	HDD
105.1	V-BE-S-109	UT to Hubbard ton River	VT Route 22A	Benson	4	2.5	<0.5	Zone A	OTE
106.2	V-WH-S-4	UT to Poultney River	VT Route 22A	West Haven	5	2.5	<0.5	-	OTE
108.1	V-WH-S-2	UT to Poultney River	VT Route 22A	West Haven	4.5	2.0	0.67	-	At Culvert
108.4	V-FH-S-25	UT to Poultney River	VT Route 22A	Fair Haven	5	4.0	<0.5	-	HDD
109.6	V-FH-S-17	UT to Mud Brook	VT Route 22A	Fair Haven	3	4.0	<0.5	-	At Culvert
110.2	V-FH-S-13	Mud Brook	US Route 4	Fair Haven	18	7.0	7.63	Zone A	HDD
111.0	V-FH-S-5	UT to Mud Brook	US Route 4	Fair Haven	4	4.0	<0.5	-	At Culvert
111.8	V-FH-S-10	UT to Castleton River	US Route 4	Fair Haven	2	4.0	<0.5	-	At Culvert

113.2	V-CN-S-101	UT to Castleton River	US Route 4	Castleton	3.5	5.0	0.52	-	OTE
115.4	V-CN-S-12	UT to Castleton River	US Route 4	Castleton	16	4.0	0.73	Zone A	HDD
116.5	V-CN-S-8	North Breton Brook	US Route 4	Castleton	26	-	13.6	Zone AE, Floodway	HDD
117.7	V-CN-S-4	UT to Castleton River	US Route 4	Castleton	5	4.0	<0.5	-	At Culvert
119.6	T-IR-S4	UT to Castleton River	US Route 4	Ira	5	4.0	0.63	-	At Culvert
121.1	T-WR-S34	UT to Castleton River	US Route 4	West Rutland	3	3.0	<0.5	-	At Culvert
121.6	T-WR-S29	Castleton River	US Route 4	West Rutland	30	-	16.6	Zone A	HDD
123.3	T-WR-S18	UT to Clarendon River	US Route 4	West Rutland	10	4.0	1.37	Zone AE	HDD
123.8	T-WR-S36	Clarendon River	US Route 4	Rutland	30	-	43.9	Zone A	HDD
126.6	T-RU-S2	Otter Creek	US Route 4	Rutland	100	-	235	Zone AE, Floodway	HDD
128.1	T-CL-S6	Cold River	US Route 7	Clarendon	75	-	36.4	Zone A	HDD
128.3	T-CL-S8	UT to Otter Creek	US Route 7	Clarendon	3	4.0	<0.5	-	HDD
128.7	T-CL-S4	UT to Otter Creek	US Route 7	Clarendon	15	4.0	<0.5	-	OTE

129.6	T-CLS2	UT to Otter Creek	US Route 7	Clarendon	10	12.0	4.44	Zone A	HDD
132.7	V-SH-S-16	UT to Mill River	VT Route 103	Shrewsbury	3	3.0	<0.5	-	At Culvert
133.4	V-SH-S-14	UT to Mill River	VT Route 103	Shrewsbury	25	8.0	1.23	-	Over Culvert
134.4	T-SH-S2	UT to Mill River	Green Mountain Railroad	Shrewsbury	25	15.0	2.32	Zone AE	HDD
135.5	T-SH-S3	UT to Mill River	Green Mountain Railroad	Shrewsbury	20	14.0	2.45	Zone AE, Floodway	OTE
136.1	T-SH-S7	UT to Mill River	Green Mountain Railroad	Shrewsbury	3	3.0	<0.5	-	OTE
136.9	T-WA-S1	Freeman Brook	Green Mountain Railroad	Wallingford	30	-	11.9	Zone A	HDD
137.8	V-WA-S-106	UT to Mill River	VT Route 103	Wallingford	3.5	2.0	<0.5	-	OTE
137.9	V-WA-S-105	UT to Mill River	VT Route 103	Wallingford	3	2.5	<0.5	-	At Culvert
139.3	T-MH-S37	UT to Mill River	VT Route 103	Mount Holly	6	4.0	0.4	-	HDD
140.4	T-MH-S28	UT to Mill River	VT Route 103	Mount Holly	25	-	5.57	Zone A	OTE
141.8	T-MH-AS-23	UT to Mill River	VT Route 103	Mount Holly	4	5.5	<0.5	-	At Culvert
142.9	T-MH-AS-2-	UT to Mill River	VT Route 103	Mount Holly	4	5.0	0.64	-	At Culvert
143.2	T-MH-AS-45	UT to Mill River	VT Route 103	Mount Holly	5	5.0	0.22		At Culvert

144.8	T-MH-S14	UT to Branch Brook	VT Route 103	Mount Holly	12	0.0	2.1	-	Over Culvert
145.4	T-MH-S10	Branch Brook	VT Route 103	Mount Holly	30	-	10.8	Zone A	HDD
146.4	T-MH-S1	UT to Branch Brook	VT Route 103	Mount Holly	7	6.0	0.12	-	At Culvert
147.9	T-LU-S4	Coleman Brook	VT Route 103	Ludlow	15	4.0	1.28	Zone AE	HDD
148.2	T-LU-S2	Branch Brook	VT Route 100	Ludlow	59	-	15.8	Zone AE, Floodway	HDD
148.5	T-LU-S5	UT to Black River	VT Route 100	Ludlow	3	3.5	0.5	Zone AE	Duct Bank
149.0	T-LU-S1	Black River	East Lake Road	Ludlow	50	-	38.3	Zone AE, Floodway	Aerial
150.4	T-LU-S21	UT to Black River	East Lake Road	Ludlow	2	2.7	<0.5	-	At Culvert
150.5	T-LU-S20	UT to Black River	East Lake Road	Ludlow	10	7.0	0.64	-	Aerial
151.5	T-LU-S15	UT to Black River	Pettiner Hill Road	Ludlow	6	3.3	<0.5	-	At Culvert
151.6	T-LU-S12	UT to Black River	Pettiner Hill Road	Ludlow	4	2.0	<0.5	-	At Culvert

1. Mile post data from TRC 11/20/2014 per Stream Alteration Permit Application #SA-06-0001.
2. U.S. Army Corps of Engineers (USACE). 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05.
3. Existing structure size is taken from the VTrans Bridge and Culvert Inventory (when available), from field delineations, or other sources. Structures missing dimensions are represented as (-).
4. Watershed size was determined from Vermont ANR River Management Program mapping and US Geological Survey StreamStats website.
5. Crossing methods per 20% plans. Aerial – Hang from Existing Structure; At Culvert – Segment of existing culvert to be cut and replaced following installation of cable; HDD – Horizontal Directional Drill; OTE – Open Trench Excavation;

Over Culvert – Existing culvert to remain undisturbed and cable installed in embankment above culvert; Replace Culvert – Existing culvert to be replaced with a new structure.

APPENDIX 2

Summary of Perennial Stream/River Crossings Identified

Perennial Stream Crossings Identified									
Mile Post[1]	**Stream ID**	**Stream / River Name**	**Right of Way**	**Town**	**Average OHW[2] Width (feet)**	**Existing Structure Width [3] (feet)**	**Drainage Area[4] (square miles)**	**FEMA Floodplain / Floodway**	**Proposed Crossing Method[5]**

6. Mile post data from TRC 11/20/2014 per Stream Alteration Permit Application #XXXXX.
7. U.S. Army Corps of Engineers (USACE). 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05.
8. Existing structure size is taken from the VTrans Bridge and Culvert Inventory (when available), from field delineations, or other sources. Structures missing dimensions are represented as (-).
9. Watershed size was determined from Vermont ANR River Management Program mapping and US Geological Survey StreamStats website.
10. Crossing methods per 20% plans. Aerial – Hang from Existing Structure; At Culvert – Segment of existing culvert to be cut and replaced following installation of cable; HDD – Horizontal Directional Drill; OTE – Open Trench Excavation; Over Culvert – Existing culvert to remain undisturbed and cable installed in embankment above culvert; Replace Culvert – Existing culvert to be replaced with a new structure.