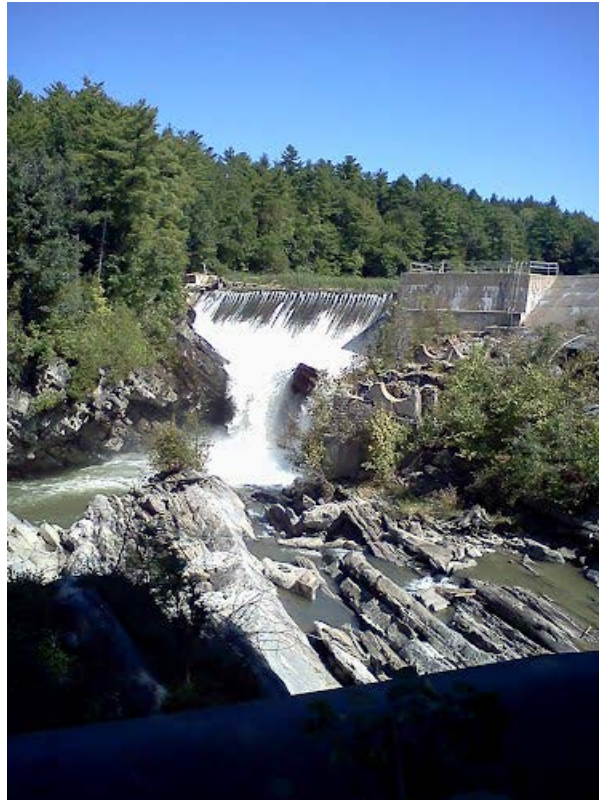


# **LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION**

## **CARVER FALLS HYDROELECTRIC PROJECT (FERC No. 11475)**



*Prepared for:*

**Green Mountain Power Corporation  
Rutland, Vermont**

*Prepared by:*

***Kleinschmidt***

Pittsfield, Maine  
[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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# LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION

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## LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION

### CARVER FALLS HYDROELECTRIC PROJECT (FERC No. 11475)

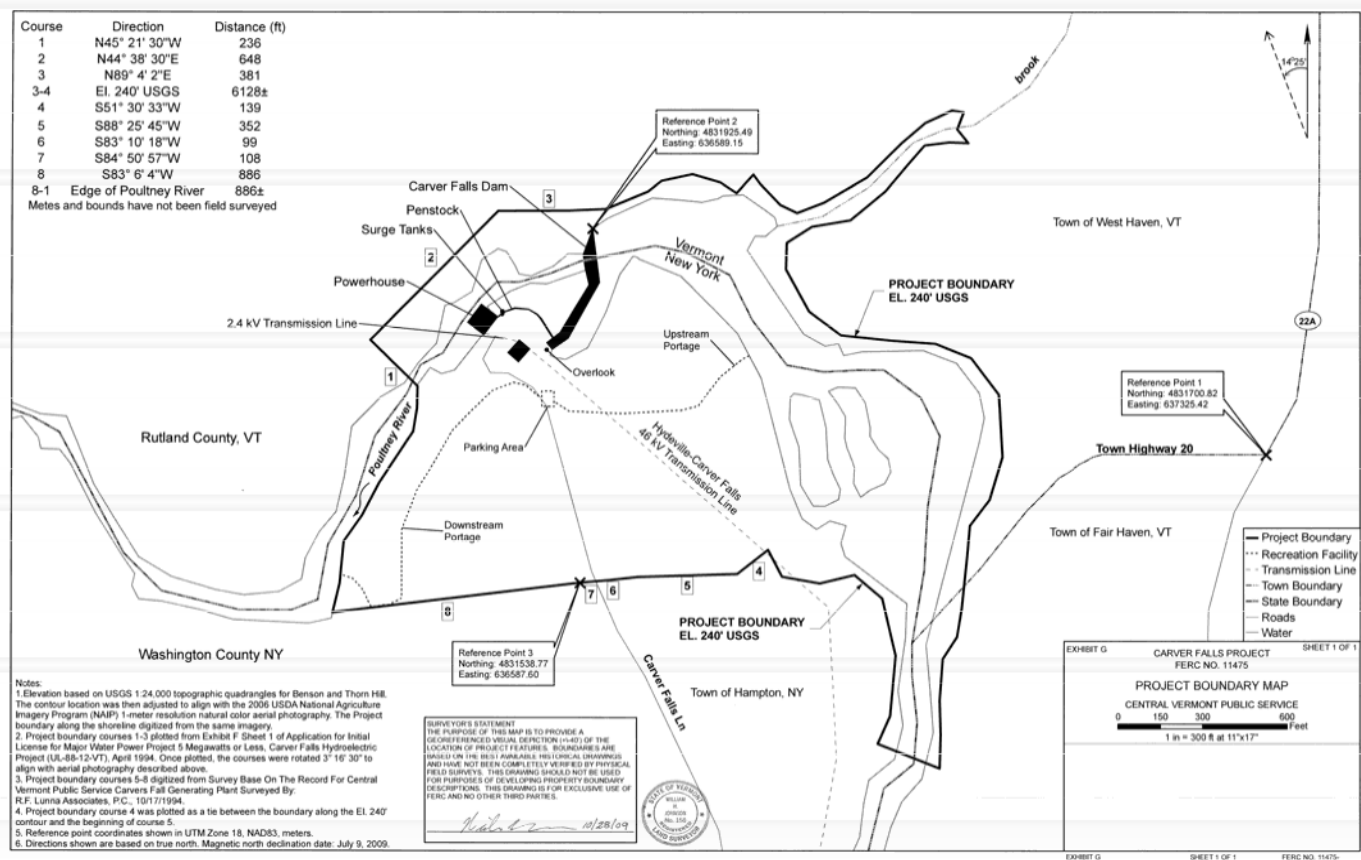
#### 1.0 FACILITY DESCRIPTION

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The Carver Falls Hydroelectric Project (FERC No. 11475) (Project) is located at river mile (RM) 3.8 on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont. The Project's hydroelectric facilities are owned and operated by the Green Mountain Power Corporation (GMP or Licensee), formerly Central Vermont Public Service Corporation (CVPS). The river forms a portion of the state border between Vermont and New York and drains into the southern end of Lake Champlain. The Nature Conservancy's Lower Poultney River Natural Area is located approximately 1.5 – 2.0 miles downstream.

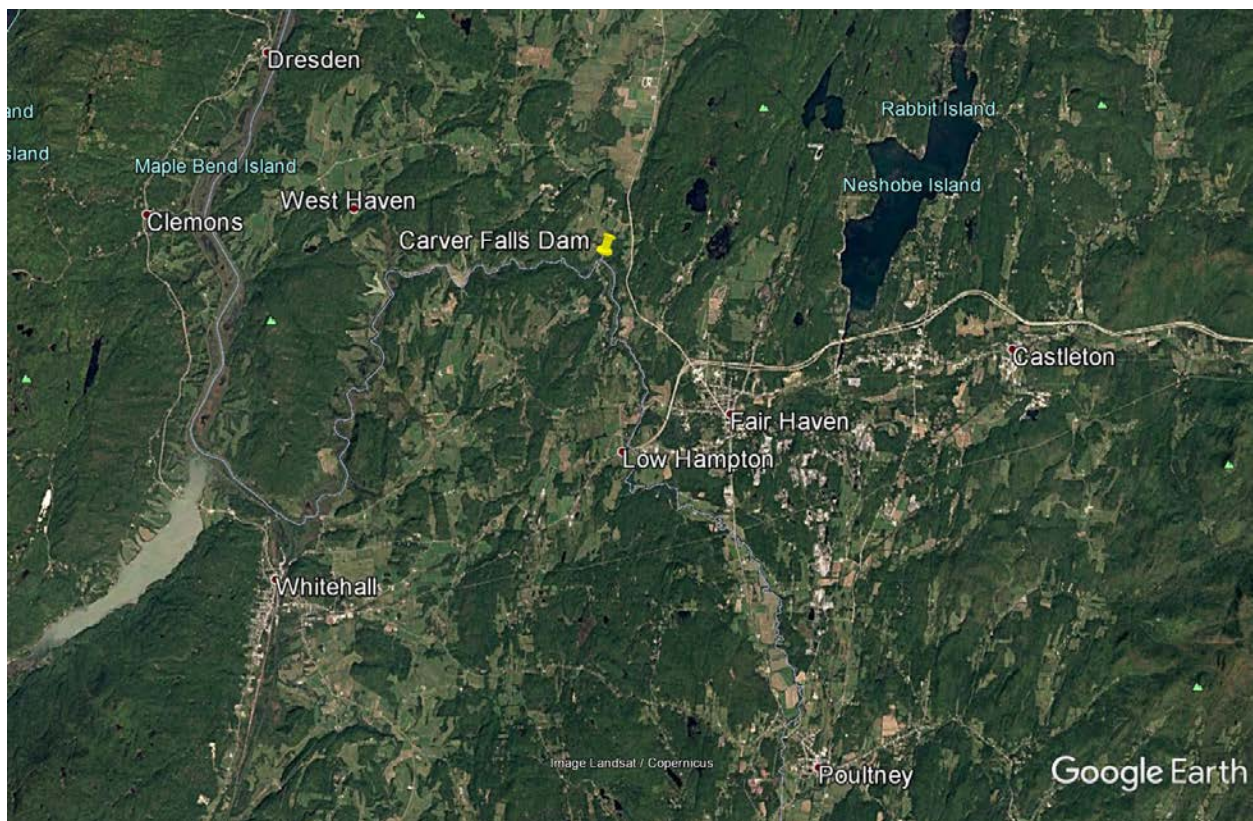


**FIGURE 1 PHOTO OF PROJECT/IDENTIFICATION OF PROJECT PARTS**



**FIGURE 2 CARVER FALLS SITE DIAGRAM**





**FIGURE 3      GEOGRAPHIC OVERVIEW OF PROJECT LOCATION**

## **1.1      GEOGRAPHIC LOCATION**

Carver Falls is the highest major falls in Vermont and contains two falls at the head of a limestone gorge. The falls have been altered by hydropower development since 1894. For 100 years before that date, they were harnessed to drive mill operations. The river above the falls lies in a ravine 100 feet deep. Below the falls, the ravine is 200 feet deep. A cave in a limestone cliff above the ravine is located about one mile below the falls.

The Lower Poultney River is one of four Outstanding Resource Waters (ORW) in Vermont. Based on this designation, the Vermont Agency of Natural Resources (VANR) developed a management plan for the Lower Poultney River that established the following goal: “For that portion of the Lower Poultney River within Vermont borders, the State will seek to manage certain activities affecting the water quality, flows, course, current, and cross-section of the Lower Poultney River to preserve and enhance the exceptional natural, cultural, scenic, and recreational values of the river and river corridor.”

## **1.2 PROJECT DESCRIPTION**

The Project dam is located at the top of the 80-foot drop of Carver Falls, with one abutment on the Vermont shore of the river and the other abutment on the New York side of the river.

The powerhouse, located several hundred feet downstream of the falls, is on the New York side of the river. The Project impounds a 10-acre reservoir that extends 2400-feet<sup>1</sup> upstream with an elevation of 233.3-feet above mean sea level (msl), and gross usable storage capacity of 18 acre-feet. The dam is 514-feet-long, with two spillway sections. The northern spillway is 110-feet-long and topped with 6-foot flashboards. The southern spillway is 146-feet-long and topped with 1.5-foot flashboards. Abutting the south side of the concrete spillway section is a sluiceway consisting of a 10-foot stop log section and a 6-foot by 9-foot broome gate. The steel penstock is 220-feet-long and 7-feet in diameter. It bifurcates into two 132-foot-long, 3 to 4-foot diameter penstocks. Two steel surge tanks are located approximately 20-feet below the point of bifurcation, one for each penstock. A butterfly valve is located in the 4-foot penstock below the surge tank. Both surge tanks are 44-feet-high and have respective diameters of 72-inches and 48-inches.

The bypassed reach is 700-feet-long and includes the bedrock gorge occupied by the falls and the plunge pool at its base. It also includes immediately adjoining areas on the left bank of the river that are presently occupied by the electrical substation and other Project facilities.

The powerhouse contains two turbine generating units, one with a capacity of 1,451 kW and the other with a capacity of 800 kW, as well as appurtenant facilities. Project power is transmitted through a 275-foot-long, 2.4-kilovolt transmission line connected to the regional grid.

The Project operates in a run-of-river mode to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Poultney River. When the Project is not operating, all flows are spilled at the dam. GMP provides the following bypassed reach flow release schedule for the preservation of walleye spawning habitat: 18.5 cfs between May 16 - March 31 and 50 cfs between April 1 - May 15 or instantaneous inflow, if less. Bypass conservation flows, except for uncontrolled leakage, is released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods (noted below), any

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<sup>1</sup> The 2012 LIHI Application used 1770 feet, however confirmation on the distance was not found, therefore 2400 feet is used based on the information provided in the Vermont Water Quality Certification.

portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during the period November through March.

Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway is provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release commences at 9:00am and continues through the daylight hours.

### **1.3 REGULATORY STATUS**

The Project received an Order on Offer of Settlement and Issuing Original FERC License in 2009 and License Amendments in 2011 and 2012. The Settlement is the product of negotiations begun after appeals were filed by VANR and the Vermont NRC on the water quality certification issued by the New York State Department of Environmental Conservation (NYSDEC).



**TABLE 1 FACILITY DESCRIPTION INFORMATION FOR CARVER FALLS HYDROELECTRIC PROJECT (LIHI # 107)**

<b>INFORMATION TYPE</b>	<b>VARIABLE DESCRIPTION</b>	<b>RESPONSE (AND REFERENCE TO FURTHER DETAILS)</b>
<b><i>Name of the Facility</i></b>	Facility name (use FERC project name if possible)	Carver Falls Hydroelectric Project (FERC No. 11475) (Project).
<b><i>Location</i></b>	River name (USGS proper name)	Poultney River
	River basin name	Poultney-Mettawee River Basin
	Nearest town, county, and state	Town of Hampton, Washington County New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont
	River mile of dam above next major river	River Mile (RM) 3.8
	Geographic latitude	South Dam: 43.6271 North Dam: 43.6277
	Geographic longitude	South Dam: -73.3068 North Dam: -73.3066
<b><i>Facility Owner</i></b>	Application contact names (IMPORTANT: you must also complete the Facilities Contact Form):	Jason Lisai – Green Mountain Power Corporation  John Greenan – Green Mountain Power Corporation  Andy Qua – Kleinschmidt Associates  Katie Sellers – Kleinschmidt Associates  Please see Section 4.0 for the Facility Contacts Form.
	- Facility owner (individual and company names)	Green Mountain Power Corporation (GMP or Licensee)
	- Operating affiliate (if different from owner)	N/A
	- Representative in LIHI certification	John Greenan, GMP
<b><i>Regulatory Status</i></b>	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates	FERC No. 11475. 30-year License issued on February 25, 2009 and expires on January 31, 2039.
	FERC License type or special classification (e.g., "qualified conduit")	Minor Project License
	Water Quality Certificate identifier and issuance date, plus source agency name	The Project has two Water Quality Certifications (WQC):  -A WQC was issued by the New York State Department of Environmental

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		<p>Conservation (NYSDEC) on April 21, 1995, modified on December 13, 1996.</p> <p>-A WQC was issued by the VANR, through its Vermont Department of Environmental Conservation (Vermont DEC), on December 5, 2008. The WQC was amended on October 20, 2010 to accommodate for rehabilitation of Unit No. 1 in 2011 and again on June 29, 2012.</p>
	<p>Hyperlinks to key electronic records on FERC e-library website (e.g., most recent Commission Orders, WQC, ESA documents, etc.)</p>	<p>1996 Settlement Agreement and Modification to New York WQC:  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11843068">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11843068</a></p> <p>1997 Environmental Assessment  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3073462">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3073462</a></p> <p>2008 Vermont WQC: Please see Appendix C (Not available online).</p> <p>2009 License:  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11949503">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11949503</a></p> <p>2011 Order Amending License:  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12530266">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12530266</a></p> <p>2012 Order Amending License:  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13111136">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13111136</a></p> <p>Transfer of License:  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13064046">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13064046</a></p> <p>2010 Vermont WQC Amendment: Please see Appendix C (Not available online).</p> <p>2012 Vermont WQC Amendment: Please see Appendix C (Not available online).</p>
	Date of initial operation (past or future for operational applications)	The Project first started generating power in 1894.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
<b><i>Power Plant Characteristics</i></b>	Total name-plate capacity (MW)	2.251 MW  The powerhouse contains two turbine generating units, one with a capacity of 1.451 MW and the other with a capacity of 0.800 MW.
	Average annual generation (MWh)	6,578 MWh. This is the average taken from the annual generation reports from the last five years - 2010 to 2016.
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	The powerhouse contains one 1.451-MW turbine generating unit and one 0.80-MW turbine generating unit for a total installed capacity of 2.251 MW.  Turbines: No 1.: -Manufacturer = Norcan Hydraulic Turbine Inc. -Maximum hydraulic capacity = 206 cfs  No 2.: -Manufacturer = American Hydro -Maximum hydraulic capacity = 92 cfs  Generators: No 1.: -Manufacturer = Allis-Chalmers -Nameplate capacity = 1.451 MW  No 2.: -Manufacturer = Westinghouse -Nameplate capacity = 0.800 MW  The total maximum hydraulic capacity is 298 cfs and total minimum is approximately 30 cfs. In order to maintain existing bypass flow conditions during periods of low inflow, GMP shuts down both units when inflow is less than or equal to the bypass conservation flow plus 30 cfs, i.e., 48.5 cfs or 80 cfs, seasonally. The 6 foot by 9 foot broome gate has a discharge capacity of up to approximately 1,200 cfs.
	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	The Project operates in a run-of-river mode to preserve water quality, aquatic and

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		<p>riparian habitats, and aesthetic and recreational flows in the Poultney River.</p> <p>GMP provides a bypassed reach flow of 18.5 cfs between May 16 and March 31 and 50 cfs between April 1 and May 15, or instantaneous inflow, if less.</p> <p>Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway is provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release shall commence at 9:00 a.m. and continue through the daylight hours.</p>
	Dates and types of major equipment upgrades	N/A
	Dates, purpose, and type of any recent operational changes	N/A
	Plans, authorization, and regulatory activities for any facility upgrades	There are no plans at this time for Project upgrades.
<i>Characteristics of Dam, Diversion, or Conduit</i>	Date of construction	Originally built in 1894, with considerable modifications completed over the years. In 1927 following the flood, a new section of the dam was added and additional repairs and an expansion occurred following the flood in 1940.
	Dam height	<p>-Stone masonry section with concrete cap (northern spillway): 28-ft-high topped with a 6.0-ft-high steel skin-plate/lumber flashboard system.</p> <p>-Concrete section (southern spillway): approximately 28-ft-high (max) topped with a 1.5-ft hinged steel flashboard system.</p>
	Spillway elevation and hydraulic capacity	The northern spillway crest elevation is located at 227.8 ft. and the southern spillway crest elevation is located at 231.8 ft. The spillway's hydraulic capacity number is not readily available but can be supplied at a later time if required.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
	Tailwater elevation	Normal tail water elevation is 114.5 ft.
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	<p>A 7-foot-diameter, 200-foot-long steel penstock. The penstock bifurcates into two separate penstocks each 132-feet-long. One penstock is 4 feet by 132 feet and the other is 5 feet by 132 feet.</p> <p>Two steel surge tanks are located approximately 20 feet below the point of bifurcation, one for each penstock. Both surge tanks are 44-feet-high and have respective diameters of 72 inches and 48 inches.</p>
	Dates and types of major, generation-related infrastructure improvements	No new infrastructure improvements have occurred since the 2012 LIHI Certification.
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	The purpose of this facility is to generate power to be supplied to the local grid.
	Water source	Poultney River
	Water discharge location or facility	Poultney River
<b>Characteristics of Reservoir and Watershed</b>	Gross volume and surface area at full pool	At full pool of 233.3 feet, the Project has a 10-acre reservoir with 18 acre-feet of gross usable storage.
	Maximum water surface elevation (ft. MSL)	The maximum water surface elevation within the impoundment is 233.3 feet msl.
	Maximum and minimum volume and water surface elevations for designated power pool, if available	No power pool present. Run-of-river Project.
	Upstream dam(s) by name, ownership, FERC number (if applicable), and river mile	<p>There are no dams located upstream of the Carvers Falls dam on the Poultney River.</p> <p>There are several dams in the watershed that control the outlets of lakes, including Lake Bomoseen, Sunset Lake, Glen Lake, and Lake Hortonia. Except for Lake Bomoseen Dam, outflow from these dams is not normally manipulated.</p>
	Downstream dam(s) by name, ownership, FERC number (if applicable), and river mile	<p>There are no dams located downstream of the Carvers Falls dam on the Poultney River.</p> <p>The Carver Falls Project boundary is included in Appendix A.</p>



INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	No operating agreements are in effect with other surrounding facilities.
	Area inside FERC project boundary, where appropriate	The area inside the FERC Project boundary is approximately 99.3 acres.
<b>Hydrologic Setting</b>	Average annual flow at the dam	<p>The 2012 License Amendment Application<sup>2</sup> estimates the average annual flow is 263 cfs at the dam. This flow is derived from the U.S. Geological Survey (USGS) Gage No. 04280000 Poultney River, located less than a mile downstream of the Project below Fair Haven, VT. The gage accurately represents outflows from the Project, therefore drainage area at the gage (187 square miles) was used without proration to represent flows at the Project (drainage area 186 square miles).</p> <p>Maximum and minimum recorded flows were 14,800 cfs (July 20, 1945) and 2.1 cfs (August 8, 1965 and September 13, 1977).</p>
	Average monthly flows	<p>Average monthly flows (2010-2015) as measured at USGS Gage 04280000 Poultney River below Fair Haven, VT:</p> <p>Jan: 247 cfs  Feb: 157 cfs  March: 454 cfs  April: 595 cfs  May: 380 cfs  June: 232 cfs  July: 141 cfs  Aug: 141 cfs  Sept: 107 cfs  Oct: 226 cfs  Nov: 191 cfs  Dec: 328 cfs</p>
	Location and name of relevant stream gauging stations above and below the facility	Flow at the dam is calculated by using estimates from the U.S. Geological Survey gage: Poultney River below Fair Haven, Vermont, Gage No. 04280000. The gage is located less than a mile downstream of the Project. The gage accurately represents

<sup>2</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12888493>

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		outflows from the Project, therefore drainage area at the gage (187 square miles) was used without proration to represent flows at the Project (drainage area 186 square miles).
	Watershed area at the dam	The drainage area of the river at the dam is 186 square miles.
<i>Designated Zones of Effect</i>	Number of zones of effect	<p>There are three zones of effect: 1) Impoundment, 2) Bypassed Reach, and 3) Downstream.</p> <p>The Impoundment ZOE inundates approximately 30.5 acres or approximately 2,400-feet of Poultney River upstream of Carver Falls Dam.</p> <p>The Project Bypassed Reach ZOE is approximately 700-feet-long or approximately 3.5 acres extending from the dam to the end of powerhouse which connects to the tailrace.</p> <p>The Downstream ZOE is approximately 65.3 acres starting from the Poultney Powerhouse and stretching 3.8 miles<sup>3</sup> downstream.</p>
	Upstream and downstream locations by river miles	<p>The Impoundment ZOE stretches from RM 3.8, 2,400-feet upstream to RM 4.25.</p> <p>The Bypassed Reach ZOE stretches from RM 3.8, 700-feet downstream to the powerhouse at RM 3.67.</p> <p>The Downstream ZOE stretches from RM 3.67 to RM 0 or the confluence with Lake Champlain.</p>
	Type of waterbody (river, impoundment, by-passed reach, etc.)	Impoundment Bypassed Reach Downstream
	Delimiting structures	The Impoundment ZOE includes waters stretching from Carver Falls Dam approximately 2,400-feet upstream.

<sup>3</sup> The measurement of 3.8 miles from the powerhouse comes from the description of 3.8 miles to the confluence where the Poultney River meets Lake Champlain.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		<p>The Bypassed Reach ZOE includes waters stretching from the Carver Falls Dam 700-feet downstream to the tailrace where the powerhouse is located.</p> <p>The Downstream ZOE stretches from the Carver Falls powerhouse to the confluence of Lake Champlain.</p>
	Designated uses by state water quality agency	<p>The Poultney River is designated as Class B Waters in the State of Vermont. Designated uses include aquatic biota, wildlife, and aquatic habitat, aesthetics, public water supply, irrigation of crops and other agricultural uses swimming, and recreation.</p> <p>The State of New York classifies the Poultney River from Lake Champlain to Carver Falls as Class C waters. The Poultney River above Carver Falls is also classified as a Class C water. Class C waters in the State of New York are designated for supporting fisheries and for non-contact activities.</p> <p>The Lower Poultney River is one of 4 waters designated as a Vermont Outstanding Resource Water (ORW)<sup>4</sup>. The lower portion of the Poultney River beginning at Poultney/Fair Haven town line and continuing downstream to its confluence with Lake Champlain is designated as an ORW because of the area's exceptional natural, cultural, and scenic values<sup>5</sup>. Carver Falls dam is located within this ORW area.</p>
<b><i>Additional Contact Information</i></b>	Names, addresses, phone numbers, and e-mail for local state and federal resource agencies	Please see section 4.0 for the Project Contacts Form
	Names, addresses, phone numbers, and e-mail for local non-governmental stakeholders	Please see section 4.0 for the Project Contacts Form

<sup>4</sup> [http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_OutstandingResourceWatersOfVermont.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_OutstandingResourceWatersOfVermont.pdf)

<sup>5</sup> [https://anrweb.vt.gov/PubDocs/DEC/WSMD/Mapp/Docs/mp\\_ORW-LowerPoultneyRiverMgmtPlan\\_August1992.pdf](https://anrweb.vt.gov/PubDocs/DEC/WSMD/Mapp/Docs/mp_ORW-LowerPoultneyRiverMgmtPlan_August1992.pdf)

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
<i>Photographs and Maps</i>	Photographs of key features of the facility and each of the designated zones of effect	Please see Appendix A for photographs of key features of the facility and identification of each ZOE, and for Project boundary and drawings.
	Maps, aerial photos, and/or plan view diagrams of facility area and river basin	Please see Appendix B for aerial photos of facility area and river basin.

## 2.0 STANDARDS MATRICES

### 2.1 IMPOUNDMENT ZOE

Criterion		Alternative Standards				
		1	2	3	4	Plus
A.	Ecological Flow Regimes	X				
B.	Water Quality		X			
C.	Upstream Fish Passage	X				
D.	Downstream Fish Passage	X				
E.	Watershed and Shoreline Protection		X			
F.	Threatened and Endangered Species Protection		X			
G.	Cultural and Historic Resources Protection		X			
H.	Recreational Resources		X			

### 2.2 BYPASSED REACH ZOE

Criterion		Alternative Standards				
		1	2	3	4	Plus
A.	Ecological Flow Regimes		X			
B.	Water Quality		X			
C.	Upstream Fish Passage	X				
D.	Downstream Fish Passage	X				
E.	Watershed and Shoreline Protection		X			
F.	Threatened and Endangered Species Protection		X			
G.	Cultural and Historic Resources Protection		X			
H.	Recreational Resources		X			

### 2.3 DOWNSTREAM ZOE

Criterion		Alternative Standards				
		1	2	3	4	Plus
A.	Ecological Flow Regimes	X				
B.	Water Quality		X			
C.	Upstream Fish Passage	X				
D.	Downstream Fish Passage	X				
E.	Watershed and Shoreline Protection		X			
F.	Threatened and Endangered Species Protection		X			
G.	Cultural and Historic Resources Protection		X			
H.	Recreational Resources		X			



### 3.0 SUPPORTING INFORMATION

#### 3.1 ECOLOGICAL FLOWS STANDARDS: IMPOUNDMENT ZOE

CRITERION	STANDARD	INSTRUCTIONS
A	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.</li> <li>• If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.</li> <li>• In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.</li> <li>• For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – <b>NOTE:</b> this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.</li> </ul>

- The Impoundment ZOE does not have a bypassed reach.
- The NYSDEC issued a WQC for the Project on April 21, 1995 and modified it on December 13, 1996. The Vermont DEC issued a WQC for the Project on December 5, 2008 (Appendix A and B respectively of the License: <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11949503>). As prescribed within New York WQC Conditions 2 and 3 and Vermont WQC Condition B (Article 402 of the 2009 License), the Project operates in a true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. When the facility is not operating, all flows are spilled at the dam.
- In accordance with License Article 401, New York Condition 4, and Vermont WQC Condition E, the Licensee developed a Flow Management Plan (<https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12200798>) which was approved by FERC on January 21, 2010 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12249930>).

In the plan, the Licensee reviews run-of-river operation, bypassed reach flows, flashboard replacement and impoundment refill, and monitoring and reporting at the Project. GMP ensures compliance with run-of-river operation requirements are achieved by monitoring the impoundment level and controlling it by making changes to turbine output, as appropriate. When inflows are at or below the design flow plus the minimum bypass flow (254+18.5 cfs) the impoundment will remain constant except following flashboard removal or failure or scheduled dam maintenance. GMP does not permit the elevation of the Project impoundment to drop below one inch above the top of the flashboards (on the southern spillway) when flashboards are in the raised position, or drop below one inch

above the crest of the dam when flashboards are down. Changes in operation are made at the GMP control center in Rutland, Vermont with on-site assistance provided by the power production worker (PPW) located at the Project. If inflows exceed the station capacity the broome gate is opened to keep the pond elevation below 233.8 feet. Once inflows exceed the Project capacity (turbines and broome gate), excess water is spilled over the flashboards.

During flashboard replacement or other situations in which the drawdown of the impoundment is necessary, minimum flows in the bypassed reach are maintained through the operation of the broome gate. In order to provide the required aesthetic flow releases, the Project PPWs make operational adjustments as necessary based on river inflows. A pond level sensor at the dam provides real time impoundment elevation data to the control center in Rutland.

The recorded flows for the Project are determined by the USGS Gage No. 04280000, located less than a mile downstream of the dam. The gage flows are representative of the Project flows and are generally used without proration to depict flows at the Project. Impoundment elevation data is measured by a pressure transducer on the dam, and the readings are transmitted to the GMP control center where hourly records of impoundment elevation are maintained. An alarm system is also integrated to alert GMP of low water levels in the impoundment. GMP monitors Project operations data such as real-time elevations and generation output through the Supervisory Control and Data Acquisition (SCADA) system. In the event of an equipment malfunction, such as a turbine generating unit tripping offline, personnel are dispatched to the site to monitor and operate the Project.

- The Project's run-of-river operations create a stable impoundment environment. To protect wetlands and wildlife during occasional impoundment drawdowns, the Licensee undergoes agency consultation with the Vermont DEC, NYSDEC, and U.S. Fish and Wildlife Service (USFWS) prior to drawdowns to ensure protection of the upstream resources.
- Project operations data was provided to Vermont DEC on October 3, 2018 for verification of Project run-of-river and Water Quality Certificate compliance (see Appendix C for email exchange).

### **3.1.1 FLOW DEVIATIONS**

- Article 402 of the FERC License requires Project operation and minimum flows consistent with the certification conditions, but allows for temporary modifications to Project operation for emergency conditions beyond the control of the Licensee. Furthermore, the License and FERC's *Order Approving Operations Compliance Plan Pursuant to Article 401(A), Water Quality Certifications Conditions Nos. 4, D, and E* (Issued January 21, 2010) require that if flows through the Project deviate from License requirements, the Licensee shall file a report with the Commission, the NYSDEC, the Vermont DEC, and USFWS within 10 days of the date the data becomes available regarding the incident, in accordance with Article 402.

An incident of nonconformance with License Article 402 occurred on May 10, 2011 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12662902>). Due to heavy rains and high flows, CVPS had been releasing excess flow over the NY spillway portion,

through the broome gate and surface sluiceway adjacent to the intake structure, while maintaining a continuous minimum flow to the bypassed reach of 50 cfs, as required by Condition 13 of the New York WQC and Condition B of the Vermont WQC. At some point during the afternoon of May 9 or early morning of May 10, the root ball of a large tree became lodged in the broome gate opening. CVPS operations staff initiated efforts to dislodge the object at approximately 6:00 AM on the morning of May 10. The CVPS control center began to lower the headpond elevation over an approximately 3 hour period by both increasing generation and increasing the gate opening. During this operation the headpond was lowered below the elevation of the spillway crest of 231.8 feet, and no spillage occurred for a period of about 2.5 to 3 hours.

During this effort the broome gate was switched to manual mode. Once the tree root was dislodged, at approximately 9:30 AM. the operator closed the broome gate and departed, unintentionally leaving the gate set to manual operation. There was no flow passing through the broome gate for approximately 2 hours, until the CVPS control center was able to regain remote control of the gate.

This resulted in a reduction in flow through the bypassed reach, to below the required 50 cfs. A bypass flow calculated at 28 cfs was maintained through the sluiceway into in the bypass reach during this period. On this date an obstruction in the broome gate opening required lowering of the headpond below the spillway elevation in order for maintenance personnel to safely access, investigate to remove the obstruction. This caused a deviation in run-of-river mode for a period of 5 to 6 hours. Once the obstruction was removed, the broome gate was fully closed and left on manual mode for a two hour period due to operator error. Closure of the broome gate, with no spill over the dam resulted in reduced flow through the bypass reach, violating the 50 cfs required by the New York and Vermont WQC. The gate was reopened within 2 hours, rectifying the situation.

On June 17, 2011, FERC determined this incident to be a violation of the License (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12687261>) and determined that Project power production was in excess of the Project's authorized installed capacity. Within 30 days, the Licensee responded to the notice of nonconformance on July 14, 2011 and included a report on installed capacity (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12707172>).

- An incident of nonconformance with Article 402 occurred on July 6, 2015 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13933131>). During the overnight hours of July 5, the Control Center started a gradual maintenance drawdown of the Project impoundment to facilitate safe worker access in order to complete maintenance repairs of the six-foot flashboard system, on the north spillway crest. On July 6 at 1:14 AM, the Control Center attempted to adjust the broom gate opening and received a thermal trip alarm, making remote operation of the gate unavailable. The Control Center immediately dispatched a station PPW to check and reset the gate control. At 1:50 AM, the Control Center received a Unit trip alarm, causing an emergency shutdown of the unit, resulting in a deviation of run-of-river operation with only approximately 50 cfs discharge through the Project (via broome gate). The PPW arrived on site shortly thereafter, and was directed to assess and start Unit 1. At 2:23 AM, 33 minutes after tripping off-line, Unit 1 was put back in service with the load set at 500 kW to resume the gradual drawdown of the impoundment. After this time, the PPW reset the broom gate control and remained on site until 4 AM to observe Project

operations. FERC replied on January 13, 2016 that the incident was not a violation (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14114533>).

- An additional incident of nonconformance with Article 402 occurred on April 4, 2016 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14203415>). Between approximately 9-10 PM, Poultney River inflows to the Project dropped off rapidly from approximately 275 cfs to 63 cfs. During this timeframe, Control Center personnel noted the Unit 2 operating load to automatically reduce from full load to minimum load and a corresponding 0.2 ft. elevation drop in the impoundment. The Control Center operator proceeded to shut down Unit 2 and divert all inflows (63 cfs) over the dam crest. From 10-11 PM, inflows to the Project rebounded steadily and reached approximately 235 cfs at 11 PM. The Control Center operator attempted to restart Unit 2 at 11 PM but could not as the unit locked-out at this time due to an incomplete shutdown error at 10 PM. The Control Center dispatched a station PPW to site, and on April 5 at 1:17 AM, Unit 2 was returned to service in normal run-of-river operation at full load. Poultney River inflows to the Project at this time were approximately 275 cfs. FERC replied on August 25, 2016, that they would not consider this a violation (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14337923>).

### 3.2 ECOLOGICAL FLOWS STANDARDS: BYPASSED REACH ZOE

CRITERION	STANDARD	INSTRUCTIONS
A	2	<p><u>Agency Recommendation (see Appendix A for definitions):</u></p> <ul style="list-style-type: none"> <li>• Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).</li> <li>• Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.</li> <li>• Explain how the recommendation relates to agency management goals and objectives for fish and wildlife.</li> <li>• Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).</li> </ul>

- The NYSDEC issued a WQC for the Project on April 21, 1995 and modified it on December 13, 1996. The Vermont DEC issued a WQC for the Project on December 5, 2008 (Appendix A and B respectively of the License: <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11949503>). As prescribed within the New York WQC Conditions 2 and 3 and Vermont WQC Condition B (Article 402 of the 2009 License), the Project operates in a true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. When the facility is not operating, all flows are spilled at the dam.

In accordance with the New York WQC Condition 3 and Vermont WQC Condition B (License Article 402), GMP provides a bypass flow release of 18.5 cfs from May 16 – March 31 and a bypass flow release of 50 cfs from April 1 – May 15, or instantaneous inflow, if less.

Bypass conservation flows, except for uncontrolled leakage, are released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods (noted below), any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during the period November through March.

In accordance with the New York WQC Condition 16 and Vermont WQC Condition B (License Article 402), aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway are provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release commences at 9:00 a.m. and continues through the daylight hours.

Additionally, in accordance with Vermont WQC Condition C, during the refilling of the Project impoundment after flashboard replacement, an approved dam maintenance operation, or an emergency drawdown, GMP releases at least 90 percent of instantaneous



inflow below the Project. While the impoundment is being refilled, bypass flow requirements are still met at all times.

- The lower Poultney River is an important spawning area for walleye from Lake Champlain. East Bay, located 3 miles below the Project, is presently the only Vermont tributary to Lake Champlain that has a walleye spawning run which is large enough to be used as an egg source for the Lake Champlain Fry and Fingerling Project. Resource agencies therefore coordinated with the Licensee during the Project licensing process to determine what the best bypassed reach flow regime is to protect walleye and walleye spawning habitat.

CVPS conducted a bypass demonstration of flows for walleye on July 12, 1993. Water was discharged into the bypassed reach by opening the broome gate at the dam. Flows were observed from 11.4 cfs (leakage at time of assessment) to 23.6 cfs. Water depth was measured from 0.3 to 1.3 feet throughout the bypassed reach consisting of a bedrock pool and ledge run at the base of the dam, ledge falls, an upper plunge pool, a lower plunge pool and a riffle area. A release of 26.3 cfs provided a water depth variation from 0.3 to 1.3 feet for walleye passage. A release of 18.5 cfs provided a range of depths from 0.2 to 1.2 feet, with a thalweg greater than or equal to 0.8 feet. It was determined that while a review of existing literature indicated that water depth of 12 inches is sufficient for passage of walleye, a release of 50 cfs would provide more optimum spawning depth and conditions. As recommended by VANR, NYSDEC, and New York Rivers United (NYRU), FERC recommended that the Licensee release a minimum flow of 50 cfs to the bypassed reach from April 1 through May 15 to enhance walleye passage. As determined within the bypass demonstration, a minimum flow of 18.5 cfs from May 16 through March 31 was determined to provide adequate aquatic habitat and to meet water quality standards within the bypassed reach for the remainder of the calendar year. As stated within the 2008 Vermont WQC, the 18.5 cfs flow provides minimally acceptable conditions in the bypass for fish habitat and movement, but is deemed adequate given the limited length of the bypass and under run-of-river operation. In the Environmental Assessment, it was determined that the minimum flow release of 18.5 cfs to the bypassed reach would ensure that New York water quality standards are met and that compliance with Vermont water quality standards is continued. The U.S. Department of Interior (DOI) letter dated May 13, 1996<sup>6</sup>, concluded that an intermediate flow of 18.5 cfs, between leakage (11.4 cfs) and best conditions (26.3 cfs), would provide acceptable general aquatic habitat and zone of passage conditions.

- As an Outstanding Resource Water, the lower Poultney River was managed so to preserve and enhance the exceptional natural, cultural, scenic, and recreational values of the river and river corridor.
- Within the 1997 Environmental Assessment, FERC determined that run-of-river operations would enhance the downstream fisheries located at and below Coggman's Bridge by increasing flow velocities, water depth, and wetted perimeter along the river shoreline. Additionally, run-of-river operations paired with bypassed reach releases would benefit walleye and trout habitat by supplying more stable flow velocities and water depth that imitate the natural conditions of the river.

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<sup>6</sup> <https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=8272046>

- Project operations data was provided to Vermont DEC on October 3, 2018 for verification of Project run-of-river and Water Quality Certificate compliance (see Appendix C for email exchange).

### 3.3 ECOLOGICAL FLOWS STANDARDS: DOWNSTREAM ZOE

CRITERION	STANDARD	INSTRUCTIONS
A	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.</li> <li>• If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.</li> <li>• In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.</li> <li>• For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – <b>NOTE:</b> this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.</li> </ul>

- The Downstream ZOE does not have a bypassed reach.
- The NYSDEC issued a WQC for the Project on April 21, 1995, and modified on December 13, 1996. The Vermont DEC issued a WQC for the Project on December 5, 2008. (Appendix A and B respectively of the License: <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11949503>). As prescribed within New York WQC Conditions 2 and 3 and Vermont WQC Condition B (Article 402 of the 2009 License), the Project operates in a true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. When the facility is not operating, all flows are spilled at the dam. During normal Project operations, flows below the Project tailrace are essentially unregulated.
- In accordance with License Article 401, New York Condition 4, and Vermont WQC Condition E, the Licensee developed a Flow Management Plan (<https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12200798>) which was approved by FERC on January 21, 2010 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12249930>).

In the plan, the Licensee reviews run-of-river operation, bypassed reach flows, flashboard replacement and impoundment refill, and monitoring and reporting at the Project. GMP ensures compliance with run-of-river operation requirements are achieved by monitoring the impoundment level and controlling it by making changes to turbine output, as appropriate. When inflows are at or below the design flow plus the minimum bypass flow (254+18.5 cfs) the impoundment will remain constant except following flashboard removal or failure or scheduled dam maintenance. GMP does not permit the elevation of the Project impoundment to drop below one inch above the top of the flashboards (on the southern spillway) when flashboards are in the raised position, or drop below one inch above the crest of the dam when flashboards are down. Changes in operation are made at the GMP control center in Rutland, Vermont with on-site assistance provided by the PPW located at the Project. If inflows exceed the station capacity the broome gate is opened to

keep the pond elevation below 233.8 feet. Once inflows exceed the project capacity (turbines and broome gate), excess water is spilled over the flashboards.

During flashboard replacement or other situations in which the drawdown of the impoundment is necessary, minimum flows in the bypassed reach are maintained through the operation of the broome gate. In order to provide the required aesthetic flow releases, the Project PPWs make operational adjustments as necessary based on river inflows. A pond level sensor at the dam provides real time impoundment elevation data to the control center in Rutland.

The recorded flows for the Project are determined by the USGS Gage No. 04280000, located less than a mile downstream of the dam. The gage flows are representative of the Project flows and are generally used without proration to depict flows at the Project. Impoundment elevation data is measured by a pressure transducer on the dam, and the readings are transmitted to the GMP control center where hourly records of impoundment elevation are maintained. An alarm system is also integrated to alert GMP of low water levels in the impoundment. GMP monitors Project operations data such as real-time elevations and generation output through the SCADA system. In the event of an equipment malfunction, such as a turbine generating unit tripping offline, personnel are dispatched to the site to monitor and operate the Project.

- This is not a conduit project.
- Project operations data was provided to Vermont DEC on October 3, 2018 for verification of Project run-of-river and Water Quality Certificate compliance (see Appendix C for email exchange).

### 3.4 WATER QUALITY STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

CRITERION	STANDARD	INSTRUCTIONS
B	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> <li>• If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.</li> <li>• Provide a copy of the most recent Water Quality Certificate, including the date of issuance.</li> <li>• Identify any other agency recommendations related to water quality and explain their scientific or technical basis.</li> <li>• Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.</li> </ul>

- The Poultney River in the Project-affected reach is designated by the State of Vermont Water Resources Board as Class B waters. The State of New York classifies the Poultney River from Lake Champlain to Carver Falls as Class C waters. The Poultney River above Carver Falls is also classified as a Class C water.
- On September 24, 2008, the U.S. Environmental Protection Agency (USEPA) approved a list of waters considered to be impaired based on water quality monitoring efforts. The list was submitted by the Vermont Department of Environmental Conservation under Section 303(d) of the Federal Clean Water Act. On prior lists issued through 2006, the Poultney River from Carver Falls downstream to its mouth was listed as impaired for fish consumption due to elevated levels of mercury in the tissue of walleye. This reach of the Poultney River downstream of Carver Falls is no longer listed due to approval by EPA (on December 20, 2007) of a regional TMDL for mercury ([http://www.vermontcf.org/Portals/0/Uploads/Documents/LCRF\\_Carver\\_Dec2008.pdf](http://www.vermontcf.org/Portals/0/Uploads/Documents/LCRF_Carver_Dec2008.pdf)).

Per the State of Vermont 2016 303(d) List of Impaired Waters<sup>7</sup> and the State of New York 2016 Section 303(d) List of Impaired Waters<sup>8</sup>, the Poultney River is not listed as an impaired waterway.

Additionally, the State of Vermont has additionally designated the Poultney River below Carver Falls as an "Outstanding Resource Water," in recognition of its exceptional scenic quality. The lower portion of the Poultney River beginning at Poultney/Fair Haven town line and continuing downstream to its confluence with Lake Champlain is designated as an Outstanding Resource Water on the basis of exceptional natural, cultural and scenic values

([http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_OutstandingResourceWatersOfVermont.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_OutstandingResourceWatersOfVermont.pdf)).

- On July 14, 2017, VANR provided a review of the Carver Falls Project in regards to water quality. A 10.4 mile stretch from the Poultney River mouth upstream to Carvers

<sup>7</sup> [http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_mapp\\_303d\\_Part\\_A\\_2016\\_final\\_complete.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_mapp_303d_Part_A_2016_final_complete.pdf)

<sup>8</sup> [http://www.dec.ny.gov/docs/water\\_pdf/303dproplist2016.pdf](http://www.dec.ny.gov/docs/water_pdf/303dproplist2016.pdf)

Falls is listed on Part D, waters that are assessed as impaired and have a completed and EPA-approved TMDL, due to elevated levels of Mercury in Walleye. Additionally, discrete portions of the Lower Poultney (below the Castleton River) are listed on Part E, waters altered by aquatic invasive species, due to locally abundant Water Chestnut growth. Within the July 14<sup>th</sup> email, VANR confirmed that the current Project operations are not a contributing cause to the listing of portions of the Poultney River as priority waters for management action (Appendix C). The NYSDEC responded on August 29, 2017 that they are not prepared to draw any conclusions about the operation of the Project (Appendix C).

- The NYSDEC issued a WQC for the Project on April 21, 1995, and modified on December 13, 1996 (see Appendix A of the Project License). The Vermont DEC issued a WQC for the Project on December 5, 2008 and amended WQCs on October 20, 2010 and June 22, 2012 (see Appendix C of LIHI Application). The Vermont WQC is therefore less than 10 years old and considered valid. The NYDEC additionally had opportunity during the amendment process to alter and update their original 1996 WQC. Because NYDEC did not opt to amend their WQC in the recent amendment process, we therefore understand the 1996 NY WQC to continue to remain valid.

Project operations data was additionally provided to Vermont DEC on October 3, 2018 for verification of Project Water Quality Certificate compliance (see Appendix C for email exchange).

### 3.5 UPSTREAM FISH PASSAGE STANDARDS: IMPOUNDMENT ZOE

A coldwater fishery exists upstream of the Project and a warmwater fishery exists in the Impoundment. No anadromous species are recorded to have existed above the natural barrier of Carver Falls.

CRITERION	STANDARD	INSTRUCTIONS
C	1	<u>Not Applicable/De Minimis Effect:</u> <ul style="list-style-type: none"><li>• The facility does not create a barrier to upstream passage, or</li><li>• There are no migratory fish in the vicinity of the facility and the facility is nor the cause of extirpation of such species if they had been present historically</li></ul>

- The Project has no Section 18 mandatory anadromous or catadromous fish passage requirements, although, as included in License Article 403, the USFWS reserved the authority to prescribe fish passage.
- Carver Falls presents a natural barrier to the upstream movement of migratory finfish. No extirpation of species has occurred in the area because of the dam's presence.

Based upon VANR email dated May 21, 2018 (Appendix D), it is understood that American eel are present at upstream locations. It is not likely eel exist in great numbers above Carver Falls or in the Poultney River watershed as eel recruitment to Lake Champlain is very low, and the Project is well upstream of Lake Champlain. Currently there is not agency recommendation specific to downstream eel passage measures. Should an agency recommendation be made in the future, GMP will consult with agencies to address the recommendation.

### 3.6 UPSTREAM FISH PASSAGE STANDARDS: BYPASSED REACH ZOE AND DOWNSTREAM ZOES

Brown trout, rainbow smelt, eastern sand darter, channel darter, log perch, blackchin shiner, bridal shiner, and silver redhorse are some of the fish found below the Carvers Falls Project. The lower Poultney River is an important spawning area for walleye from Lake Champlain. East Bay, located 3 miles below the Project, is presently the only Vermont tributary to Lake Champlain that has a walleye spawning run which is large enough to be used as an egg source for the Lake Champlain Fry and Fingerling Project. Walleye naturally have never made it past the natural barrier of Carver Falls (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3073462>).

CRITERION	STANDARD	INSTRUCTIONS
C	1	<u>Not Applicable/De Minimis Effect:</u> <ul style="list-style-type: none"><li>• The facility does not create a barrier to upstream passage, or</li><li>• There are no migratory fish in the vicinity of the facility and the facility is nor the cause of extirpation of such species if they had been present historically</li></ul>

- The Project has no Section 18 mandatory anadromous or catadromous fish passage requirements, although, as included in License Article 403, the USFWS reserved the authority to prescribe fish passage.
- Carver Falls presents a natural unsurpassable barrier to the upstream movement of migratory finfish. No extirpation of species has occurred in the area because of the dam's presence.

Based upon VANR email dated May 21, 2018 (Appendix D), it is understood that American eel are present at upstream locations. It is not likely eel exist in great numbers above Carver Falls or in the Poultney River watershed as eel recruitment to Lake Champlain is very low, and the Project is well upstream of Lake Champlain. Currently there is not agency recommendation specific to eel passage measures. Should an agency recommendation be made in the future, GMP will consult with agencies to address the recommendation.



### 3.7 **DOWNSTREAM FISH PASSAGE AND PROTECTION STANDARDS: IMPOUNDMENT, BYPASSED REACH, DOWNSTREAM ZOE**

A coldwater fishery exists upstream of the Project and a warmwater fishery exists in the impoundment and in the river reach below the dam. Brown trout, rainbow smelt, eastern sand darter, channel darter, log perch, blackchin shiner, bridal shiner, and silver redhorse are some of the fish found below the Carvers Falls Project. The lower Poultney River additionally supports an important spawning area for walleye from Lake Champlain. East Bay, located 3 miles below the Project, is presently the only Vermont tributary to Lake Champlain that has a walleye spawning run which is large enough to be used as an egg source for the Lake Champlain Fry and Fingerling Project. Walleye naturally have never made it past the natural barrier of Carver Falls (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3073462>).

CRITERION	STANDARD	INSTRUCTIONS
D	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).</li> <li>• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

- The Project has no Section 18 mandatory anadromous or catadromous fish passage requirements, although, as included in License Article 403, the USFWS reserved the authority to prescribe fish passage.
- As stated within the VANR Water Quality Certification, coldwater species generally do not attain good survivorship in warmwater sections of rivers and lakes. While coldwater fish (brown trout) are found in limited numbers downstream of the Project, the habitat there is not suitable to support additional fish, thereby obviating the need for downstream fish passage. During the relicensing process, it was additionally concluded that relatively low water velocities in front of the Project trashracks effectively minimize impingement at the Carver Falls Project (1997 Environmental Assessment). Project intake trashracks have 1.75" clear bar spacing and additionally minimize impingement hazards for downstream migrants.

Based upon VANR email dated May 21, 2018 (Appendix D), it is understood that American eel are present at upstream locations. It is not likely eel exist in great numbers above Carver Falls or in the Poultney River watershed as eel recruitment to Lake Champlain is very low, and the Project is well upstream of Lake Champlain. Currently there is not agency recommendation specific to downstream eel passage measures. Should an agency recommendation be made in the future, GMP will consult with agencies to address the recommendation.

### 3.8 SHORELINE AND WATERSHED PROTECTION STANDARDS: IMPOUNDMENT ZOE

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
E	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> <li>• Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).</li> <li>• Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.</li> </ul>

- The area surrounding the Impoundment ZOE consists of woods, farm areas, and low intensity development on both sides of the river. Land cover units identified in the vicinity of the Project can be found in Table 2 as identified within the National Land Cover Database, 2011([http://www.mrlc.gov/nlcd11\\_leg.php](http://www.mrlc.gov/nlcd11_leg.php)). Land cover types as identified by the National Land Cover Database are additionally mapped and included in Figures 3 and 4.

A Vermont Class II Wetland and a Vermont Land Trust conservation parcel are both found within the impoundment ZOE. This section of the River is additionally classified as one of four Outstanding Resource Waters in Vermont<sup>9</sup>. This designation is based on the basis of the River's exceptional natural, cultural, and scenic values.

In accordance with the Project Vermont WQC, New York WQC, and FERC License, no shoreland management plans have been required for the Project as the Project boundary is small. The Project does operate as a run-of-river facility for the conservation of surrounding habitat and aquatic life. Run-of-river operations were prescribed within New York WQC Conditions 2 and 3 and Vermont WQC Condition B (Article 402 of the 2009 License). Continued run-of-river operations allow for the preservation of the River's exceptional natural, cultural, and scenic values.

<sup>9</sup> [http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_OutstandingResourceWatersOfVermont.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_OutstandingResourceWatersOfVermont.pdf)

### 3.9 SHORELINE AND WATERSHED PROTECTION STANDARDS: BYPASSED REACH ZOE

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
E	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> <li>• Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).</li> <li>• Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.</li> </ul>

- The area surrounding the Bypassed Reach ZOE consists of woods, farm areas, and low intensity development on both sides of the river. Land cover units identified in the vicinity of the Project can be found in Table 2 as identified within the National Land Cover Database, 2011 ([http://www.mrlc.gov/nlcd11\\_leg.php](http://www.mrlc.gov/nlcd11_leg.php)). Land cover types as identified by the National Land Cover Database as additionally mapped and included in Figures 3 and 4.

A Vermont Land Trust conservation parcel is located partially within the Bypassed Reach ZOE. This section of the River is additionally classified as one of four Outstanding Resource Waters in Vermont<sup>10</sup>. This designation is based on the basis of the River's exceptional natural, cultural, and scenic values.

In accordance with the Project Vermont WQC, New York WQC, and FERC License, no shoreland management plans have been required for the Project as the Project boundary is small. The Project does operate as a run-of-river facility for the conservation of surrounding habitat and aquatic life. Run-of-river operations were prescribed within New York WQC Conditions 2 and 3 and Vermont WQC Condition B (Article 402 of the 2009 License). Continued run-of-river operations allow for the preservation of the River's exceptional natural, cultural, and scenic values.

<sup>10</sup> [http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_OutstandingResourceWatersOfVermont.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_OutstandingResourceWatersOfVermont.pdf)

### 3.10 SHORELINE AND WATERSHED PROTECTION STANDARDS: DOWNSTREAM ZOE

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
E	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>• Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).</li><li>• Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.</li></ul>

- The area surrounding Downstream ZOE consists mostly of undeveloped and preserved wooded areas intermixed with some farm areas on both sides of the river. Land cover units identified in the vicinity of the Project can be found in Table 2 as identified within the National Land Cover Database, 2011 ([http://www.mrlc.gov/nlcd11\\_leg.php](http://www.mrlc.gov/nlcd11_leg.php)). Land cover types as identified by the National Land Cover Database as additionally mapped and included in Figures 3 and 4.

The Nature Conservancy's Lower Poultney River Natural Area makes up a majority of the Downstream ZOE area. This natural area features nearly 20 miles of natural shoreline<sup>11</sup>. This section of the River is additionally classified as one of four Outstanding Resource Waters in Vermont<sup>12</sup>. This designation is based on the basis of the River's exceptional natural, cultural, and scenic values.

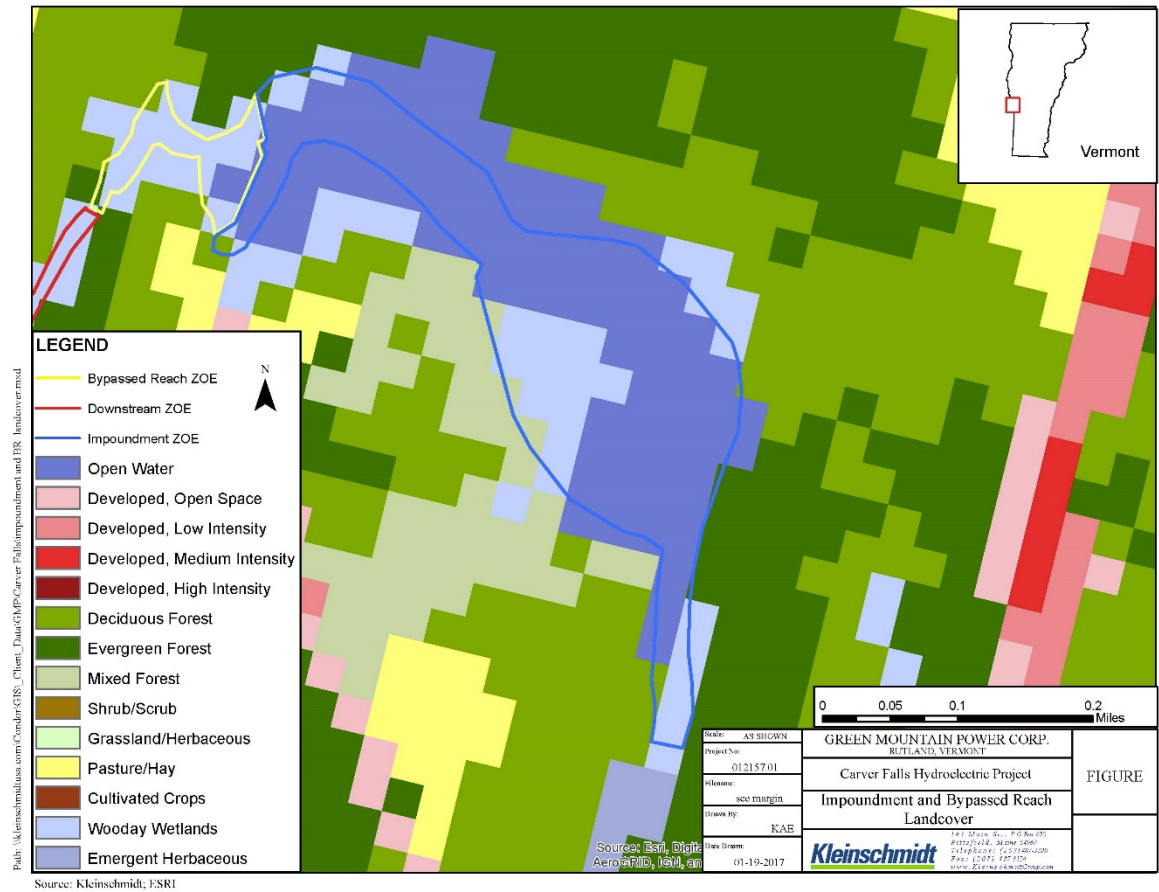
In accordance with the Project Vermont WQC, New York WQC, and FERC License, no shoreland management plans have been required for the Project as the Project boundary is small. The Project does operate as a run-of-river facility for the conservation of surrounding habitat and aquatic life. Run-of-river operations were prescribed within New York WQC Conditions 2 and 3 and Vermont WQC Condition B (Article 402 of the 2009 License). Continued run-of-river operations allow for the preservation of the River's exceptional natural, cultural, and scenic values.

<sup>11</sup> <https://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/vermont/places-preserves/lower-poultney-river-natural-area.xml>

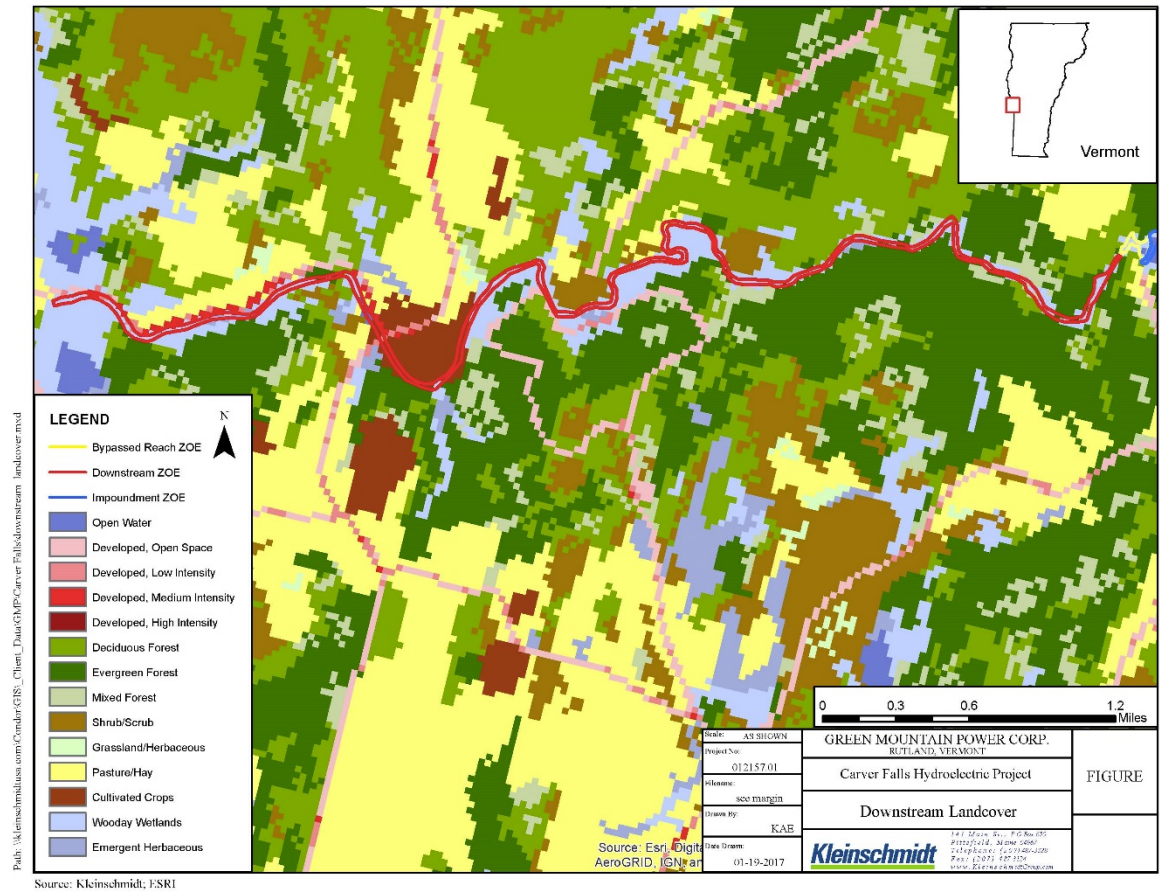
<sup>12</sup> [http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_OutstandingResourceWatersOfVermont.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_OutstandingResourceWatersOfVermont.pdf)

**TABLE 2 PROJECT LAND COVER CLASSIFICATION**

<b>CLASS\VALUE</b>	<b>DESCRIPTION</b>
11	Open Water- areas of open water, generally with less than 25% cover of vegetation or soil.
21	Developed, Open Space- areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
22	Developed, Low Intensity- areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
23	Developed, Medium Intensity -areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.
41	Deciduous Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
42	Evergreen Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
43	Mixed Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
52	Shrub/Scrub- areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
81	Pasture/Hay-areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.
82	Cultivated Crops -areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.
90	Woody Wetlands- areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
95	Emergent Herbaceous Wetlands- Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.



**FIGURE 3 CARVER FALLS IMPOUNDMENT AND BYPASSED REACH LANDCOVER**



**FIGURE 4 CARVER FALLS DOWNSTREAM LANDCOVER**



### 3.11 THREATENED AND ENDANGERED SPECIES STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

CRITERION	STANDARD	INSTRUCTIONS
F	2	<p><u>Finding of No Negative Effects:</u></p> <ul style="list-style-type: none"> <li>Identify all listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies.</li> <li>Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.</li> </ul>

- Based on a USFWS Species List populated on June 8, 2017 (Appendix E), the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened Northern long-eared bat (*Myotis septentrionalis*) may occur within the Project vicinity. In addition, the bald eagle which was delisted and removed from the federal list of endangered and threatened species in 2007, but still protected under the federal Migratory Bird Treaty Act and Bald and Golden Eagle Act, is considered a potential transient species only. Within the state of Vermont, the Indiana bat, Northern long-eared bat, and bald eagle are listed as state endangered species. Within the state of New York, the Indiana bat is listed as state endangered and the Northern long-eared bat and bald eagle are listed as state threatened species.

The peregrine falcon (*Falco peregrines*) was also identified during licensing as occurring on an occasional transient basis around the Project area. Peregrines were removed from Vermont's List in April 2005 but remain listed as an endangered species in New York, with possible breeding habitat in the vicinity of the Project area, although none have been observed there.

- Both the VANR and the NYSDEC Regional Office were emailed on June 14, 2017 to gain confirmation that the Project's operations are not negatively impacting any threatened or endangered species and to confirm listed species (Appendix E).

The VANR responded on July 14, 2017 with a review of rare, threatened and endangered species (Appendix E). And the New York Natural Heritage Program (NYNHP) provided a report of state listed and rare species found in the vicinity of the Carver Falls dam on July 11, 2017 the (Appendix E). In addition to the endangered Indiana bat, Northern long-eared bat, and bald eagle, VANR and NYNHP identified the following additional state listed species associated with the Project area:

COMMON NAME	SCIENTIFIC NAME	VERMONT STATUS	NEW YORK STATUS
Green Dragon	<i>Arisaema dracontium</i>	Threatened	N/A
Meadow Horsetail	<i>Equisetum pratense</i>	N/A	Threatened
Eastern Sand Darter	<i>Ammocrypta pellucida</i>	Threatened	Threatened
Channel Darter	<i>Percina copelandi</i>	Endangered	N/A
Cylindrical Papershell	<i>Anodontoides ferussacianus</i>	Endangered	N/A
Pocketbook	<i>Lampsilis ovata</i>	Endangered	N/A
Fluted-Shell	<i>Lasmigona costata</i>	Endangered	N/A

COMMON NAME	SCIENTIFIC NAME	VERMONT STATUS	NEW YORK STATUS
Fragile Papershell	<i>Leptodea fragilis</i>	Endangered	Unlisted
Black Sandshell	<i>Ligumia recta</i>	Endangered	N/A
Pink Heelsplitter	<i>Potamilus alatus</i>	Endangered	Unlisted
Giant Floater	<i>Pyganodon grandis</i>	Threatened	N/A

Within the July 14, 2017 email, VANR concurred that the Project should continue to negligibly impact these species if it is operated according to the conditions specified in its 401 Water Quality Certificate, particularly those specifying a run-of-river regime (Appendix E).

The NYNHP stated that it was unable to make a determination on whether or not the Project continues to not negatively affect the listed species and suggested that the NYSDEC Regional Office be contacted for this confirmation. On August 29, 2017 the NYSDEC stated that it is not prepared to draw any conclusions about the operation of the project and its effects on fish and wildlife (Appendix E). Of the species listed by NY, the Eastern Sand Darter is listed in both VT and NY as a threatened species. Given the Project operates as a run-of-river facility and the VANR believes that the Project should continue to negligibly impact listed species if operated in accordance with the WQC, it is understood that the Project will not have any different effects on Eastern Sand Darters that may be located in NY waters. The Meadow Horsetail is not a listed species in Vermont, but is a state threatened species in NY. Meadow Horsetail habitat consists of moist woods, thickets, and meadows<sup>13</sup> and may potentially have suitable habitat within the downstream Project ZOE. Because the Project operates as a run of river facility, because the areas the plant would likely be found in are mostly managed as conservation areas by the Nature Conservancy (Lower Poultney River Natural Area), and because there is no construction or alteration planned for the Project, it is expected that the Project will not have any negative effects on the Meadow Horsetail during continued operations.

- As recommended by the USFWS and included within License Article 405, GMP abides by tree removal restrictions so to avoid the potential take of Indiana bats. In accordance with Article 405, GMP avoids removing trees of 10 inch diameter breast height or larger from April 1 through October 31. If tree removal must occur between April 1 and October 31, for the purpose of access to the Project recreation sites or facilities or routine vegetation management, GMP must file with the Commission, for approval, a plan to protect the federally listed Indiana bat. The plan shall be filed at least 30 days prior to the anticipated date of tree removal.
- Federal and state Recovery Plans have been developed for the Indiana bat and bald eagle:
  - Indiana Bat Recovery Plan developed by the USFWS in 2007: [https://www.USFWS.gov/midwest/Endangered/mammals/inba/pdf/inba\\_fnldrftrecpln\\_apr07.pdf](https://www.USFWS.gov/midwest/Endangered/mammals/inba/pdf/inba_fnldrftrecpln_apr07.pdf). Applicable provisions/restrictions were incorporated into the FERC License under Article 405
  - Bald Eagle Recovery Plan developed by the USFWS in 1983: [https://www.USFWS.gov/midwest/Eagle/recovery/pdf/be\\_n\\_recplan.pdf](https://www.USFWS.gov/midwest/Eagle/recovery/pdf/be_n_recplan.pdf)

<sup>13</sup> <http://www.borealforest.org/ferns/fern5.htm>

- Vermont Fish and Wildlife drafted a recovery plan for the bald eagle, dated October 2010: [www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemID=111337](http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemID=111337)

The plan includes a bald eagle recovery initiative in the Lake Champlain region, to aid in the establishment of breeding pairs along the Lake, and through educational efforts, set the stage for necessary habitat protection for bald eagles on Lake Champlain. Efforts under this Recovery Plan are undertaken remote from the Carver Falls Project and GMP is not involved with this restoration program as the bald eagle is only a transient in the vicinity of the Carver Falls Project.

### 3.12 CULTURAL AND HISTORIC RESOURCES STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

CRITERION	STANDARD	INSTRUCTIONS
G	2	<u>Approved Plan:</u> <ul style="list-style-type: none"> <li>• Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.</li> <li>• Document that the facility is in compliance with all such plans.</li> </ul>

- License Article 406 requires implementation of the "Programmatic Agreement Among FERC, the Advisory Council on Historic Preservation and the New York and Vermont State Historic Preservation Officer (SHPO)" (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=8190586>), which was executed on September 8, 1997. In accordance with the Programmatic Agreement and License Article 406, a Historic Properties Management Plan (HPMP) was developed and approved by FERC on May 3, 2011. The HPMP addresses protective measures for the historic properties, including an evaluation of any site that will be impacted by an activity. Historic resources are evaluated during planning for any alterations to Project facilities, and in consultation with the Vermont and New York SHPOs if activities could impact those resources. Any archeological sites discovered during Project activities will also be subject to the HPMP.
- The HPMP for the Carver Falls was submitted to FERC on February 25, 2010 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12277846>), the Plan was accepted on March 25, 2011 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12599427>), and approved by FERC on May 3, 2011 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12654278>).
- As stated in the 2015 Environmental Inspection Report (<https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13953025>), the Licensee is in compliance with its requirements in regards to cultural resources.
- No Project activities have warranted a review under the HPMP since the 2012 LIHI Certification was granted.

### 3.13 RECREATIONAL RESOURCES STANDARDS: IMPOUNDMENT ZOE

CRITERION	STANDARD	INSTRUCTIONS
H	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> <li>Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.</li> <li>Document that the facility is in compliance with all such recommendations and plans.</li> </ul>

- In accordance with License Article 401, Condition L of the Vermont WQC, and Condition 12 of the New York WQC, GMP developed and maintains recreation facilities including canoe portage trail, canoe signage, canoe portage take out, and boat barrier, in the Impoundment ZOE.
- License Article 401 requires the Licensee to file, for Commission approval, a recreation plan that is consistent with the WQC conditions from Vermont DEC, condition L, and NYSDEC, condition 12.

Condition L of the Vermont WQC requires the plan to: (1) allow but not encourage access to the promontory; (2) include an implementation schedule; (3) include details on erosion control; and (4) be updated at intervals not to exceed ten years. Condition L requires that the plan be approved by the VANR. Condition 12 of the New York WQC requires the Licensee to provide cartop boat access to the impoundment with a parking area for no less than five cars, and provide a canoe portage route around the dam to a point downstream of the powerhouse. Article 401 requires the plan to include the proposed signage, trail registers, and overlook improvements described in the License application and the Licensee's March 6, 1996 additional information response. The plan is to be prepared in consultation with the VANR, NYSDEC, and USFWS.

The Recreation Plan was submitted to FERC on February 25, 2010 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12277481>), supplemented on April 12, 2010 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12314405>), and approved by FERC on June 21, 2010 (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12371001>).

- The Licensee filed the Form 80 report on April 2, 2015, as required (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13826455>).
- Within the 2015 Environmental Inspection Report (<https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13953025>) it was concluded that the Project appears to be in compliance with requirements in regards to recreational resources.

In accordance with FERC's July 27, 2015 Environmental Inspection follow-up letter (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13940418>), GMP removed/cut overgrown vegetation along the portage put-in trail access and cleared the vegetation from the signage at the take-out site so that it can be easily seen by approaching boaters. In a letter dated September 16, 2015, GMP reported the completion of these follow-up activities (<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13990601>).

### 3.14 **RECREATIONAL RESOURCES STANDARDS: BYPASSED REACH ZOE**

CRITERION	STANDARD	INSTRUCTIONS
H	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>• Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.</li><li>• Document that the facility is in compliance with all such recommendations and plans.</li></ul>

- In accordance with License Article 401, Condition L of the Vermont WQC, and Conditions 12 of the New York WQC, GMP developed and maintains recreation facilities including part 8 and interpretative sign near parking area, observation platform and interpretative display, and vista point with safety sign, in the Bypassed Reach ZOE.
- Please see Impoundment ZOE above for evidence of compliance.

### 3.15 RECREATIONAL RESOURCES STANDARDS: DOWNSTREAM ZOE

CRITERION	STANDARD	INSTRUCTIONS
H	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>• Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.</li><li>• Document that the facility is in compliance with all such recommendations and plans.</li></ul>

- In accordance with License Article 401, Condition L of the Vermont WQC, and Conditions 12 of the New York WQC, GMP developed and maintains recreation facilities including portage trail and put-in in the Downstream ZOE.
- Please see Impoundment ZOE above for evidence of compliance.

## 4.0 CONTACTS FORMS

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1. All applications for LIHI Certification must include complete contact information to be reviewed.

<b>Project Owner:</b>	
Name and Title	Jason Lisai, Generation Manager
Company	Green Mountain Power Corporation
Phone	(802) 655-8723
Email Address	<a href="mailto:Jason.Lisai@greenmountainpower.com">Jason.Lisai@greenmountainpower.com</a>
Mailing Address	163 Acorn Lane, Colchester, Vermont 05446
<b>Consulting Firm / Agent for LIHI Program (if different from above):</b>	
Name and Title	Andy Qua, Katie Sellers
Company	Kleinschmidt Associates
Phone	207-416-1246; 207-416-1218
Email Address	<a href="mailto:Andy.Qua@KleinschmidtGroup.com">Andy.Qua@KleinschmidtGroup.com</a> <a href="mailto:Katie.Sellers@KleinschmidtGroup.com">Katie.Sellers@KleinschmidtGroup.com</a>
Mailing Address	P.O. Box 650, Pittsfield, Maine 04967
<b>Compliance Contact (responsible for LIHI Program requirements):</b>	
Name and Title	John Greenan, Environmental Engineer
Company	Green Mountain Power Corporation
Phone	(802) 770-3213
Email Address	<a href="mailto:John.Greenan@greenmountainpower.com">John.Greenan@greenmountainpower.com</a>
Mailing Address	2152 Post Road, Rutland, Vermont 05701
<b>Party responsible for accounts payable:</b>	
Name and Title	John Greenan, Environmental Engineer
Company	Green Mountain Power Company
Phone	(802) 770-3213
Email Address	<a href="mailto:John.Greenan@greenmountainpower.com">John.Greenan@greenmountainpower.com</a> ; <a href="mailto:invoices@greenmountainpower.com">invoices@greenmountainpower.com</a>
Mailing Address	Accounts Payable Processor, 2152 Post Road, Rutland, Vermont 05701



**2. Applicant must identify the most current and relevant state, federal, provincial, and tribal resource agency contacts (copy and repeat the following table as needed).**

<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality <u>X</u> , Fish/Wildlife Resources __, Watersheds <u>X</u> , T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	Vermont Department of Environmental Conservation
Name and Title	Eric Davis, River Ecologist
Phone	802-490-6180
Email address	<a href="mailto:Eric.Davis@vermont.gov">Eric.Davis@vermont.gov</a>
Mailing Address	Watershed Management Division, Main Building - 2 <sup>nd</sup> Floor, One National Life Drive, Montpelier, VT 05620

<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality <u>X</u> , Fish/Wildlife Resources __, Watersheds <u>X</u> , T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	Vermont Department of Environmental Conservation
Name and Title	Peter McHugh, Streamflow Protection Biologist
Phone	802-622-4305
Email address	<a href="mailto:Peter.Mchugh@vermont.gov">Peter.Mchugh@vermont.gov</a>
Mailing Address	One National Life Drive Davis 2 Montpelier, VT 05620-3702

<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality <u>X</u> , Fish/Wildlife Resources __, Watersheds <u>X</u> , T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	Vermont Fish and Wildlife Department
Name and Title	Bob Popp, Department Botanist
Phone	802-476-0127
Email address	<a href="mailto:Bob.Popp@vermont.gov">Bob.Popp@vermont.gov</a>
Mailing Address	5 Perry Street Suite 40 Barre, Vermont 05641

<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality <u>X</u> , Fish/Wildlife Resources __, Watersheds <u>X</u> , T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	Vermont Department of Environmental Conservation
Name and Title	Everett Marshall, Biologist/Information Manager
Phone	802-371-7333
Email address	<a href="mailto:Everett.Marshall@vermont.gov">Everett.Marshall@vermont.gov</a>
Mailing Address	One National Life Drive Davis 2 Montpelier, VT 05620-3702

<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality <u>X</u> , Fish/Wildlife Resources __, Watersheds <u>X</u> , T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	Vermont Fish and Wildlife Department
Name and Title	Tim Appleton, Wildlife Biologist
Phone	802-476-0198
Email address	<a href="mailto:Tim.Appleton@vermont.gov">Tim.Appleton@vermont.gov</a>

Mailing Address	5 Perry Street Suite 40 Barre, Vermont 05641
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<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality <u>X</u> , Fish/Wildlife Resources <u>  </u> , Watersheds <u>X</u> , T/E Spp. <u>  </u> , Cultural/Historic Resources <u>  </u> , Recreation <u>X</u> ):	
Agency Name	Vermont Department of Environmental Conservation
Name and Title	Chet Mackenzie, Fisheries Biologist
Phone	802-786-3864
Email address	<a href="mailto:Chet.Mackenzie@Vermont.gov">Chet.Mackenzie@Vermont.gov</a>
Mailing Address	271 North Main Street Suite 215, Rutland VT 05701

<b>Agency Contact</b> (Check area of responsibility: Flows <u>  </u> , Water Quality <u>  </u> , Fish/Wildlife Resources <u>X</u> , Watersheds <u>  </u> , T/E Spp. <u>  </u> , Cultural/Historic Resources <u>  </u> , Recreation <u>  </u> ):	
Agency Name	SUNY College of Environmental Science and Forestry in Partnership with New York Department of Environmental Conservation, Natural Heritage Program
Name and Title	Nicholas Conrad, Information Resources Coordinator
Phone	518-402-8935
Email address	<a href="mailto:NaturalHeritage@dec.ny.gov">NaturalHeritage@dec.ny.gov</a>
Mailing Address	625 Broadway Albany, NY 12233-4757

<b>Agency Contact</b> (Check area of responsibility: Flows <u>  </u> , Water Quality <u>  </u> , Fish/Wildlife Resources <u>X</u> , Watersheds <u>  </u> , T/E Spp. <u>  </u> , Cultural/Historic Resources <u>  </u> , Recreation <u>  </u> ):	
Agency Name	New York State Department of Environmental Conservation, Division of Fish and Wildlife
Name and Title	Lance Durfey, Region 5 Fisheries Manager
Phone	518-897-1290
Email address	<a href="mailto:Lance.Durfey@dec.ny.gov">Lance.Durfey@dec.ny.gov</a>
Mailing Address	PO BOX 296 1115 Route 86 Ray Brook, NY 12977

<b>Agency Contact</b> (Check area of responsibility: Flows <u>  </u> , Water Quality <u>  </u> , Fish/Wildlife Resources <u>X</u> , Watersheds <u>  </u> , T/E Spp. <u>X</u> , Cultural/Historic Resources <u>  </u> , Recreation <u>  </u> ):	
Agency Name	U.S. Fish and Wildlife Service
Name and Title	Melissa Grader, Wildlife Biologist
Phone	413-548-8002
Email address	<a href="mailto:Melissa_Grader@fws.gov">Melissa_Grader@fws.gov</a>
Mailing Address	New England Field Office 70 Commercial Street, Suite 300 Concord, NH 03301

## **5.0 SWORN STATEMENT**

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## Sworn Statement and Waiver Form

All applications for LIHI Certification must include the following sworn statement before they can be reviewed by LIHI:

### SWORN STATEMENT

As an Authorized Representative of Green Mountain Power Corporation, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.

### PLEASE INSERT ONLY FOR PRE-OPERATIONAL CERTIFICATIONS (See Section 4.5.3):

For applications for pre-operational certification of a "new" facility the applicant must also acknowledge that the Institute may suspend or revoke the certification should the impacts of the project, once operational, fail to comply with the certification criteria.

Company Name: Green Mountain Power Corporation (Carver Falls Hydroelectric Project)

Authorize Representative Name: John Greenan

Title: Environmental Engineer

Authorized Signature: John C. Greenan

Date: 3 OCT 18

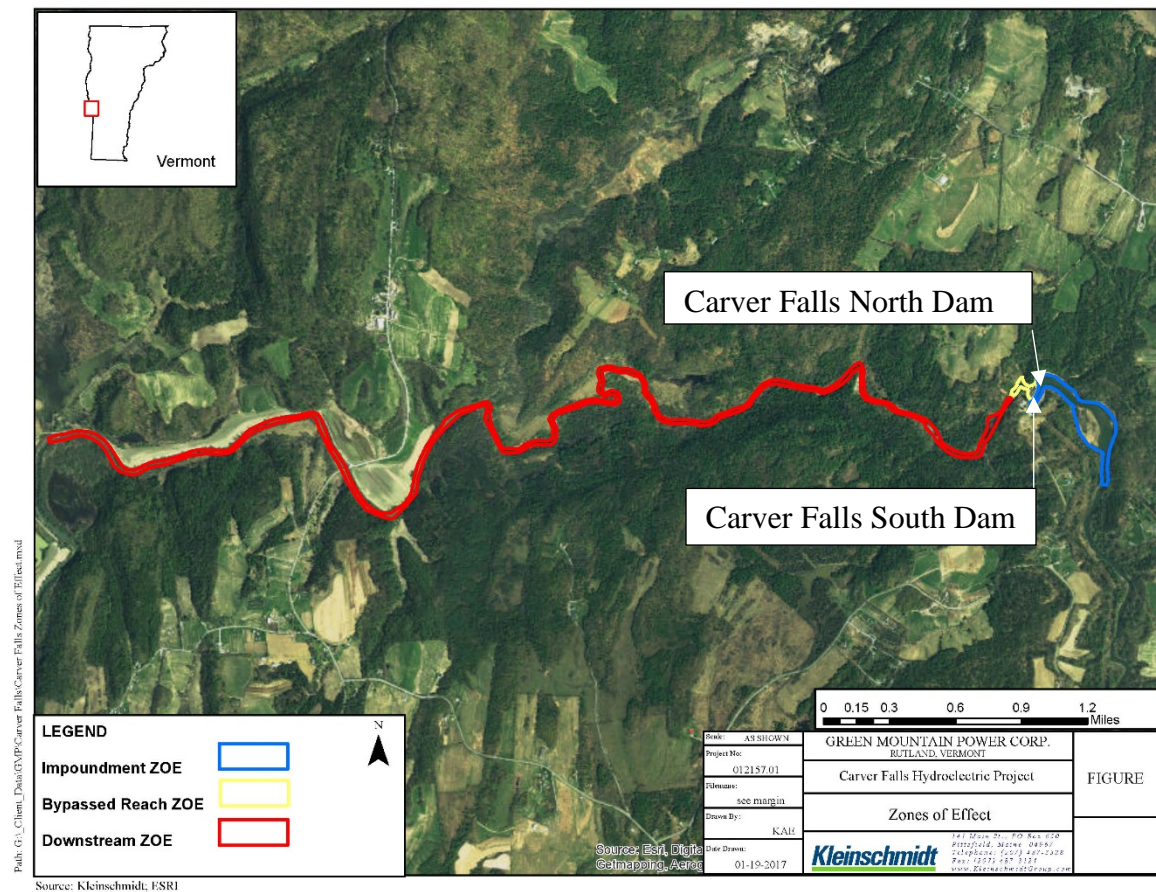
## **6.0 REFERENCES**

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USUSFWS (U.S. Fish and Wildlife Service). 2017. National Wetlands Inventory.  
<https://www.USFWS.gov/wetlands/Data/Mapper.html>. Accessed February 9, 2017

**APPENDIX A**

**PROJECT ZOE, DRAWINGS, AND PHOTOS**



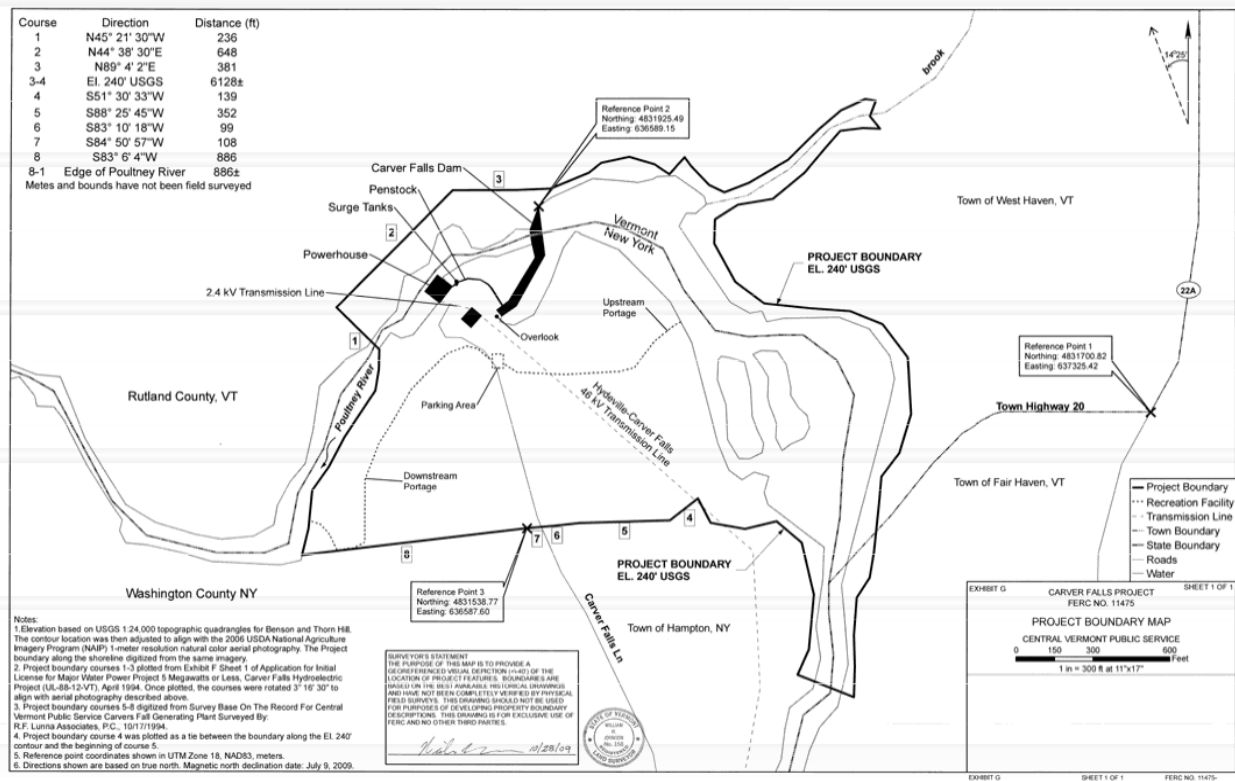
**FIGURE 1 CARVER FALLS ZONES OF EFFECT**





**FIGURE 4      OVERVIEW OF CARVER FALLS HYDROELECTRIC PROJECT**





**FIGURE 5** **DIAGRAM OF THE CARVER FALLS PROJECT**



**PHOTO 1      BOAT BARRIER (RESERVOIR DRAWN DOWN FOR FLASHBOARD INSTALLATION)**



**PHOTO 2      PORTAGE TAKE-OUT SIGNAGE**





**PHOTO 3      OBSERVATION PLATFORM WITH INTERPRETATIVE DISPLAY**



**PHOTO 4      RELEASE FROM SOUTH DAM WITH PENSTOCK IN FOREGROUND**





**PHOTO 5      STAFF GAGE AT DAM (RESERVOIR DRAWN DOWN FOR FLASHBOARD INSTALLATION ON NORTH DAM)**



**PHOTO 6      DAM SHOWING NEW FLASHBOARDS ON NORTH DAM WITH PENSTOCK IN FOREGROUND**





**PHOTO 7      PART 8 AND INTERPRETATIVE SIGN INSTALLED NEAR THE PARKING AREA**



**PHOTO 8      SECURED, FENCED SUBSTATION WITH PROJECT AND SAFETY SIGNS**





**PHOTO 9**      **VISTA POINT SAFETY SIGN**



**PHOTO 10**      **VIEW ALONG PORTAGE TRAIL PUT-IN**



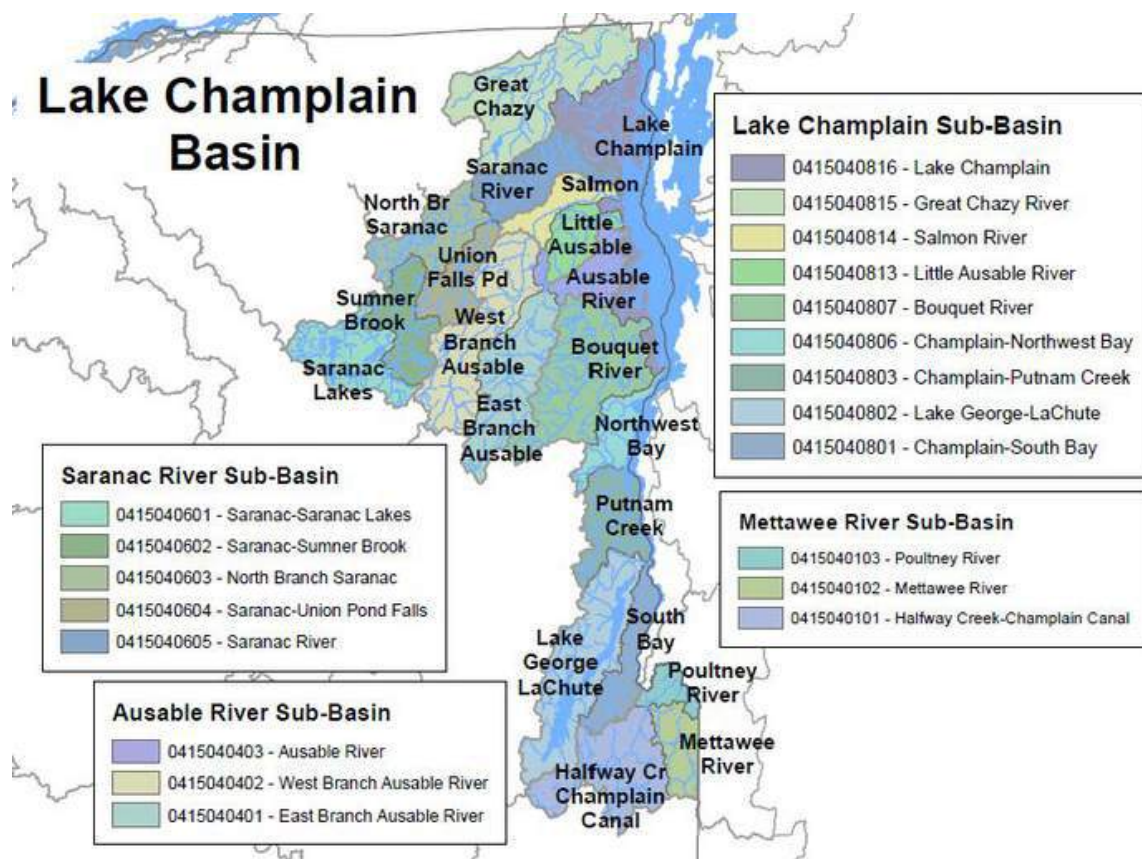


**PHOTO 11      PORTAGE PUT-IN LOOKING AT POULTNEY RIVER, DOWNSTREAM OF DAM FROM  
END OF PORTAGE TRAIL**

**APPENDIX B**

**FACILITY AREA RIVER BASIN**

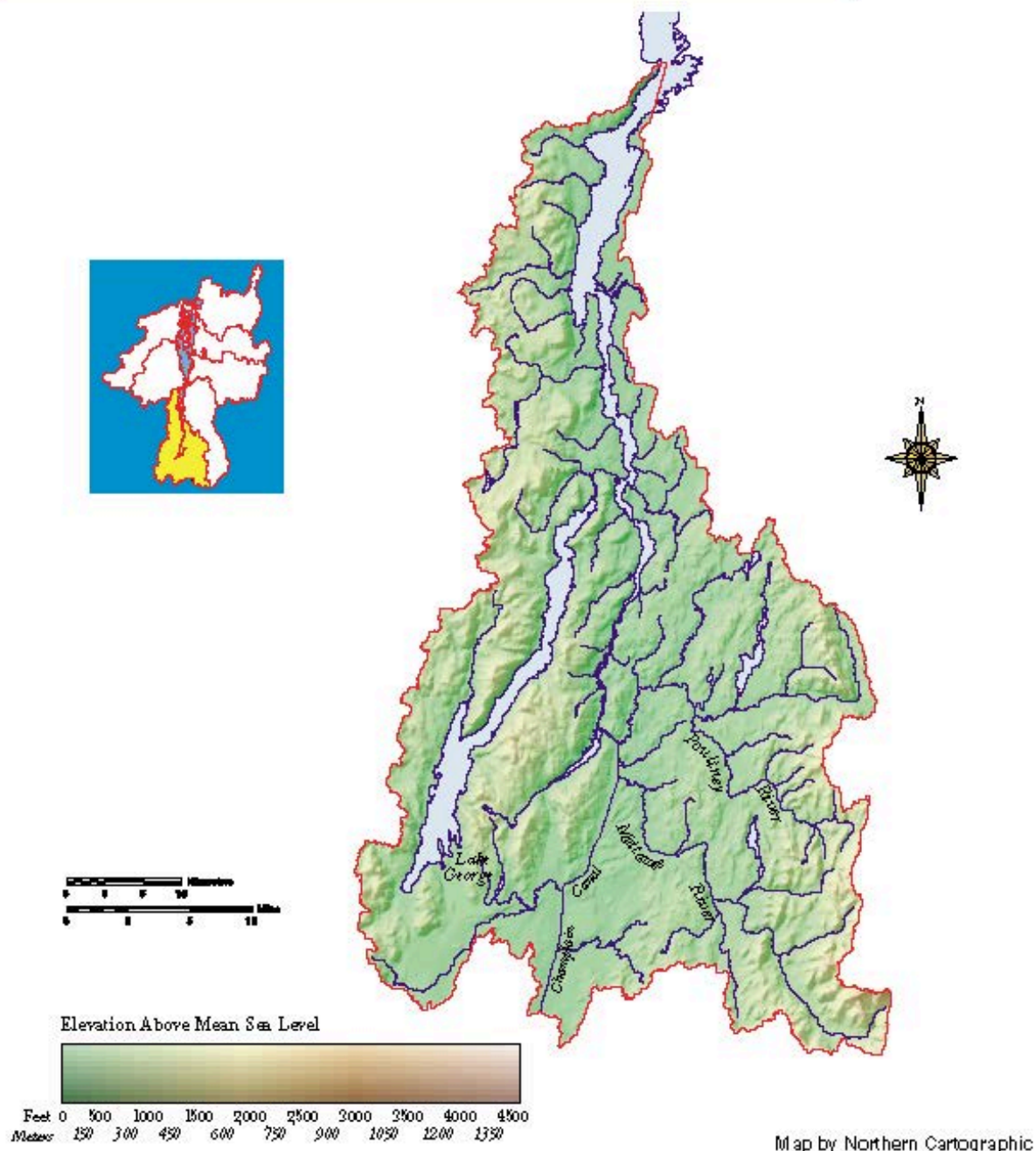




Source: NYDEC

**FIGURE 4 LAKE CHAMPLAIN BASIN**

## Poultney-Mettawee/South Lake Basin



Source: [http://atlas.lcbp.org/HTML/nat\\_poultney.htm](http://atlas.lcbp.org/HTML/nat_poultney.htm)

**FIGURE 5** POULTNEY-METTAWEE/SOUTH LAKE BASIN

**APPENDIX C**  
**WATER QUALITY**

**Water Quality Certification  
(33 U.S.C. §1341)**

In the matter of:      Central Vermont Public Service Corporation  
77 Grove Street  
Rutland, VT 05701

**APPLICATION FOR CARVER FALLS HYDROELECTRIC PROJECT**

The Vermont Department of Environmental Conservation (the Department) has reviewed a water quality certification application dated December 7, 2007 and filed by the Central Vermont Public Service Corporation (CVPS, the applicant) for the Carver Falls Hydroelectric Project. The supporting documentation for the application includes the applicant's Federal Energy Regulatory Commission (FERC) license application filed with FERC under a cover letter dated April 22, 1994; the April 21, 1995, New York State water quality certification; the March 4, 1996, FERC Additional Information Request (AIR) response; a settlement agreement between the applicant, New York Rivers United and the New York State Department of Environmental Conservation, dated December 5, 1996 (NYS settlement agreement); the FERC Environmental Assessment (EA) dated March 13, 1997; and a submittal addressing flashboard design filed by e-mail on September 12, 2008.

The current application is subject to review under the Vermont Water Quality Standards adopted by the Water Resources Board on January 25, 2006 (Standards). Standards became effective on February 9, 2006 (Standards, Section 1-01. Applicability and Definitions).

The Department held a public hearing on November 24, 2008 under the rules governing certification and received testimony during the hearing and, as written filings, until November 25, 2008.

The Department, based on the application and record before it, makes the following findings and conclusions.

**Findings**

**Background and General Setting**

1. The Carver Falls Hydroelectric Project is located at river mile 3.8 on the Poultney River. In this area, the Poultney River flows east to west, forming the border between New York (to the south) and Vermont (to the north). The interstate boundary is located in the middle of the river channel. The project is located in the towns of West Haven, Vermont and Hampton, New York.
2. The Poultney River drains portions of Rutland County, Vermont and Washington County, New York. The watershed is located at the northern tip of the Taconic Mountain Range where it meets the upper Champlain Valley. Land cover primarily consists of deciduous forest and agricultural land, with several towns and small villages interspersed. Major tributaries include the Castleton River, which rises in the eastern part of the watershed and enters the Poultney River above the project, and the Hubbardton River, which drains the northwestern portion of the

basin and enters the Poultney River downriver from the project. The Poultney River is the southernmost of 32 major Lake Champlain tributaries.

3. Of the Poultney River's 286 square mile watershed, the project utilizes runoff from an area of 186 square miles.
4. The project is currently unlicensed. On September 29, 1988, the Federal Energy Regulatory Commission issued a finding of jurisdiction under the Federal Power Act for the Carver Falls Hydroelectric Project and ordered the applicant to file a license application within 18 months. The applicant appealed the federal decision, which was upheld on subsequent review. The applicant filed its application for an initial license on May 6, 1994. On April 21, 1995, the State of New York issued a water quality certification for the project.

### **Project and Civil Works**

5. Carver Falls was originally developed for hydroelectric power in 1894. The project has experienced numerous physical changes since it was constructed, including an added dam section following the flood of November 1927. The project was developed by the Carver Falls Power Company and acquired by the applicant in 1929.
6. The dam has a total length of 514 feet. It consists of a stone masonry structure with a concrete cap on the north (river right) end. The north spillway is 110 feet long with a fixed crest elevation of 227.8 feet msl. The spillway is topped with 6.0-foot plywood flashboards. The applicant has proposed, in a September 12, 2008 submittal, changing the flashboard design to consist of a 4.0-foot high lower section made of steel topped with a 2.0-foot wooden section constructed with untreated lumber. The southern section of the dam (river left) is a concrete structure consisting of a 215-foot spillway with a fixed crest elevation of 231.8 feet msl, a 10-foot stoplog section, a 6-foot wide by 9-foot high Broome gate, and an intake structure. The south spillway is topped with 1.5-foot hinged steel flashboards.
7. At a normal elevation of 233.3 feet msl, the impoundment extends 2,400 feet upriver. The surface area is approximately 10 acres. The impoundment has a gross storage capacity of 23 acre-feet and a usable storage capacity of 18 acre-feet.
8. The project headworks are located at the left end of the dam. They consist of trashracks with 1.75-inch clear spacing and an electrically-operated 7-foot square Chapman valve. There is a 7.0-foot diameter steel penstock, 300 feet long, that bifurcates into two 150-foot long steel penstocks, 3.0 feet and 4.0 feet in diameter between the dam and the powerhouse.
9. The stone and mortar powerhouse houses two horizontal turbines with a net design head of 115 feet. One turbine, manufactured by S. Morgan Smith, is rated at 1,700 horsepower and has a maximum hydraulic capacity of 162 cfs. The second turbine, manufactured by American Hydro, is rated at 1,250 horsepower at its hydraulic capacity of 92 cfs. The turbines drive 1,050 kW Westinghouse and 800 kW Allis-Chalmers generators, respectively. The normal tailwater elevation is 114.5 feet msl, which is about 19 feet above the normal water level of Lake Champlain.

10. The plant, with its total installed capacity of 1,850 kW, produces an average annual output of 7,351,200 kWh, based on 20 years of data ending in 2007. (Letter from Harriet King, Esq., representing CVPS, to Jeffrey Cueto, Department, November 21, 2008)

### **River Hydrology and Streamflow Regulation**

11. Carver Falls is the only operating commercial-scale hydroelectric project in the Poultney River watershed.
12. There are several dams in the watershed that control the outlets of lakes, including Lake Bomoseen, Sunset Lake, Glen Lake, and Lake Hortonia. Except for Lake Bomoseen Dam, outflow from these dams is not normally manipulated. The applicant formerly owned the dam at Lake Bomoseen and operated it to enhance power production at Carver Falls.
13. The Carver Falls Project operates in a run-of-river mode when inflow is at least equal to the station's minimum hydraulic capacity of 30 cfs. When inflow is less than station capacity, impoundment storage is used to provide peaking power on a daily cycle. Impoundment drawdowns average two feet, but have been as great as nine feet during extreme low flow periods. Leakage at the dam discharges approximately 9.5 cfs into the bypass when the impoundment is at its normal elevation. (EA, p. 5)
14. Since 1928, the U.S. Geological Survey has operated a surface water gaging station (No. 04280000) on the Poultney River 0.4 mile below the Carver Falls Project. The drainage area measured by the gage is 187 square miles, essentially equal to the drainage area of 186 square miles at the Carver Falls dam. The following hydrologic statistics are available based on gage data through water year 2004:

Mean annual flow	259 cfs
Annual runoff	18.84 inches
10 percent exceedance	616 cfs
50 percent exceedance	139 cfs
90 percent exceedance	28 cfs
7Q10	8.2 cfs

### *Applicant Proposal for Relicensing*

15. The applicant proposes to operate the Carver Falls Project in strict run-of-river mode.<sup>1</sup>
16. The applicant proposes a continuous release of 18.5 cfs, or inflow, at the dam. This flow would consist of approximately equal parts of leakage and spillage.

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<sup>1</sup>A true run-of-river project is one which does not operate out of storage and, therefore, does not artificially regulate streamflows below the project's tailrace. Outflow from the project is equal to inflow to the project's impoundment on an instantaneous basis. The flow regime below the project is essentially the river's natural regime, except in special circumstances, such as following the reinstallation of flashboards and project shutdowns. Under those circumstances, a change in storage contents is necessary, and outflow is reduced below inflow for a period.

17. All flows would be released at the dam when inflow is less than 48 cfs, the minimum hydraulic capacity of the station (30 cfs) plus the 18.5 cfs release at the dam.
18. The 6-foot-high flashboards are removed for replacement at approximately 5-year intervals. These flashboards also occasionally fail under high-flow surcharges of about two feet. As discussed above, the flashboards have been redesigned to incorporate a steel lower section; the change in design is intended to reduce the frequency of replacement. Project operation would deviate from true run-of-river mode when the flashboards are being replaced.
19. The hinged, steel flashboards on the southern spillway typically are upright from early May into the fall. They are laid down during the winter and raised following spring runoff.
20. The applicant has proposed the following procedure for operation during flashboard replacement or maintenance. Bypass flows would be maintained by opening the Broome gate and one or both turbines would be used to draw the impoundment to slightly below the dam crest. Once the flashboards have been replaced, turbine discharge will be adjusted to maintain 90 percent of inflow below the tailrace, converting 10 percent to storage until the impoundment is refilled. Once water again spills over the flashboards, the Broome gate will be closed.

#### **Standards Designation**

21. The applicable 2006 Vermont Water Quality Standards (Standards) were promulgated by the Vermont Water Resources Board pursuant to 10 V.S.A., Chapter 47, Water Pollution Control. Section 1252 of the chapter provides for the classification of State waters as either Class A or Class B and authorizes the adoption of standards of water quality to achieve the purpose of classification.
22. The Poultney River has been designated by the Vermont Water Resources Board as Class B waters.
23. Class B waters are managed to achieve and maintain a high level of quality compatible with certain beneficial values and uses. Values are high quality habitat for aquatic biota, fish and wildlife and a water quality that consistently exhibits good aesthetic value; uses are public water supply with filtration and disinfection, irrigation and other agricultural uses, swimming, and recreation. (Standards, Section 3-04(A) *Class B Waters: Management Objectives*)
24. The waters of the Poultney River from its headwaters to Carver Falls are designated coldwater fish habitat for the protection and management of fisheries. From Carver Falls to the river's confluence with Lake Champlain, the river is designated warmwater fish habitat for the protection and management of fisheries. (Standards, Section 3-05. *Fish Habitat Designation*)
25. In Class B waters, the dissolved oxygen standard for coldwater fish habitat streams is not less than 7 mg/l and 75 percent saturation at all times, nor less than 95 percent saturation during late egg maturation and larval development of salmonids in areas that the Secretary determines are salmonid spawning or nursery areas important to the establishment or maintenance of the fishery resource. At all times in all other waters designated as a coldwater fish habitat, the standard is not less than 6 mg/l and 70 percent saturation. In Class B waters designated as

warmwater fish habitat, the standard is not less than 5 mg/l and 60 percent saturation.  
(Standards, Section 3-04(B)(2) *Water Quality Criteria for Class B waters: Dissolved Oxygen*)

26. The temperature standard for coldwater fish habitat limits increases to 1.0°F from ambient conditions, or background. For warmwater fish habitat, the temperature standard limits increases from 1.0-5.0°F, depending on ambient temperature. (Standards, Section 3-01(B)(1) *General Criteria: Temperature*)
27. The turbidity standard is 10 NTU for coldwater fish habitat and 25 NTU for warmwater fish habitat. (Standards, Section 3-04(B)(1) *Water Quality Criteria for Class B waters: Turbidity*)  
(The Department notes that this section was amended on January 1, 2008)
28. Under the Class B criterion for aquatic biota, wildlife and aquatic habitat, the Standards require “[n]o change from the reference condition that would prevent the full support of aquatic biota, wildlife, or aquatic habitat uses. Biological integrity is maintained and all expected functional groups are present in a high quality habitat. All life-cycle functions, including overwintering and reproductive requirements are maintained and protected.” As the Poultney River has not been assigned a water management type, the criterion is “no change from reference conditions that would have an undue adverse effect on the composition of the aquatic biota, the physical or chemical nature of the substrate or the species composition or propagation of fishes.”  
(Standards, Section 3-04(B)(4) *Water Quality Criteria for Class B waters: Aquatic Biota, Wildlife and Aquatic Habitat*)
29. The Hydrology Policy requires that “[t]he proper management of water resources now and for the future requires careful consideration of the interruption of the natural flow regime and the fluctuation of water levels resulting from the construction of new, and the operation of existing, dams, diversions, and other control structures.” (Standards, Section 1-02(E)(1) *General Policy: Hydrology Policy*) For Class B waters, “[a]ny change from the natural flow regime shall provide for maintenance of flow characteristics that ensure the full support of uses and comply with the applicable water quality criteria.” (Standards, Section 3-01(C)(1) *Hydrology Criteria: Streamflow Protection*)
30. The Anti-Degradation Policy provides for protection of existing uses and high quality waters. (Standards, Section 1-03. *Anti-Degradation Policy*) Based on the analysis and conclusion set forth below, the Department finds that there will be no new or increased activity that will significantly affect water quality, but rather the proposed operations will improve water quality in the project area. Therefore, no additional analysis pursuant to Section 1-03 is warranted.

#### *Present status*

31. On September 24, 2008, the USEPA approved a list of waters considered to be impaired based on water quality monitoring efforts. The list was submitted by the Department under Section 303(d) of the Federal Clean Water Act. On prior lists issued through 2006, the Poultney River from Carver Falls downstream to its mouth was listed as impaired for fish consumption due to elevated levels of mercury in the tissue of walleye. This reach of the Poultney River downstream of Carver Falls is no longer listed due to approval by EPA (on December 20, 2007) of a regional TMDL for mercury.



32. The Department issued a six-part list, *List of Priority Surface Waters Outside the Scope of the Clean Water Act Section 303(d)* in 2008. Part F lists those surface waters where water quality or habitat is being impacted by flow regulation. The reach from Carver Falls to the mouth of the river is listed due to artificial flow regulation by the project.
33. On April 21, 1995, the New York State Department of Environmental Conservation issued a water quality certification as part of this licensing proceeding. The decision was appealed by the Vermont Natural Resources Council and New York Rivers United, both of which withdrew the appeals under the terms of a settlement agreement (NYS settlement agreement), which was reached on December 5, 1996. The NYS settlement agreement included: 1) a bypass conservation flow of 50 cfs to support spring walleye spawning (April 1 through May 15); 2) improved parking and site access; 3) certain special aesthetic flow releases into the bypass; and 4) creation of the Carver Falls Advisory Council. By letter dated December 13, 1996, the New York State Department of Environmental Conservation modified its certification in accordance with the NYS settlement agreement.

#### *Outstanding Resource Water Designation*

34. On June 28, 1991, the Water Resources Board designated the lower Poultney River an Outstanding Resource Water (ORW) because of its exceptional natural, cultural and scenic values. (Vermont Water Resources Board; Finding of Fact, Conclusions of Law and Order; Poultney River Outstanding Resource Water, Docket No. 90-01, June 28, 1991) The designation affects approximately 22 miles of the Poultney River mainstem from the Poultney-Fair Haven town line to Lake Champlain. This reach includes the project.
35. In cases where ORWs have been so designated because of their water quality values, "their existing water quality shall, at a minimum, be protected and maintained." (Standards, Section 1-03(D) *Protection of Outstanding Resource Waters*)

#### **Water Chemistry**

36. Wastewater treatment plants at Castleton, Poultney and Fair Haven discharge into the Poultney and Castleton rivers, providing an organic loading of pollutants that reduces dissolved oxygen levels during the decay process. The watershed also contributes substantial organic and nutrient loadings from natural and other cultural (land use) sources.
37. The applicant measured dissolved oxygen concentrations in 1992 at four locations: head of the impoundment, bypass, tailrace, and downstream. The results from the station at the head of the impoundment showed that the dissolved oxygen standard for coldwater fish habitat was not met on one occasion, and met on three others. The dissolved oxygen concentrations of a majority of the samples ranged from 6.8-7.2 mg/l, while two samples had a concentration of 8.0 mg/l. (1992 *Pre-dawn Dissolved Oxygen Sampling - Carver Falls Hydroelectric Generation Facility*, License Application, Appendix G).

### **Aquatic Biota and Habitat**

38. Class B waters are managed to provide high quality habitat for aquatic biota (Standards, Section 3-04(A) *Class B Waters: Management Objectives*). Aquatic biota are defined as "organisms that spend all or part of their life cycle in or on the water." (Standards, Section 1-01(B) *Definitions*) Included, for example, are fish, aquatic insects, amphibians and some reptiles, such as turtles.
39. The Poultney River supports a diverse fish population that includes both coldwater and warmwater species. Walleye, brown trout, rainbow smelt, eastern sand darter (threatened in Vermont and New York), channel darter (endangered in Vermont), log perch, blackchin shiner, bridal shiner, and silver redhorse are some of the fish found below the Carvers Falls Project. The latter three species, while not listed as threatened or endangered, are considered rare in Vermont.
40. The reach of the Poultney River from the plunge pool at Carver Falls downstream for approximately 1,600 feet provides the prime walleye spawning habitat in the Poultney River. It is characterized primarily by a rocky substrate, unlike the majority of the remainder of the lower river, which has substrate consisting of sand and silt. Its use has been documented by Agency of Natural Resources (ANR or Agency) biologists. The primary value of the plunge pool is resting habitat for walleye.
41. There is a very diverse mussel community below Carver Falls consisting of eleven identified species, including several which are threatened or endangered in Vermont.

### *Flow Needs for Protection of Aquatic Habitat*

42. Flows discharged below the project will essentially be unregulated, except during impoundment refilling following flashboard reinstallation.
43. A natural flow regime below the project tailrace will provide spawning and incubation habitat for walleye and rainbow smelt in the spring, and habitat for other fish and macroinvertebrates.
44. With adequate flows, the bypass reach can provide habitat for walleye spawning and incubation, brown trout, and other fishes and macroinvertebrates.
45. ANR staff participated in a flow demonstration at the project bypass in 1993. The purpose of the demonstration was to assess the amount of bypass flow needed to provide quality fish habitat in the lower plunge pool and the riffle between the pool and the tailrace and to maintain a zone of passage allowing fish to move up into the lower plunge pool from downstream of the project. Flows of 11.4 cfs, 18.5 cfs, and 26.3 cfs were observed.
46. At 26.3 cfs, there was good water circulation in the lower plunge pool. At this flow, the riffles below the plunge pool appeared to provide good habitat and to be passable for upstream and downstream movement of fish. At 18.5 cfs, the pool level had dropped from the higher flow and less water circulation was visible, and the riffle areas below the pool were very shallow, but appeared to be passable to fish. At 11.4 cfs the pool appeared stagnant and the riffle areas were very shallow with much less wetted area available as habitat or for fish movement. Hydraulic controls in the riffle area produced drops that may inhibit upstream fish movement.

### *Impoundment*

47. Fisheries habitat that was formerly riverine has been impounded by the dam. The limited depth of the impoundment and its small volume relative to the size of the contributing drainage assure that thermal stratification does not occur. The impoundment provides habitat for warmwater species.

### *Fish Passage and Movement*

48. Historically, migratory fish from Lake Champlain ascended many of its tributaries to access spawning waters. To meet the goals of the bi-state plan for the development of the Lake's salmonid fishery (*A Strategic Plan for Development of Salmonid Fisheries in Lake Champlain*, NYS Department of Environmental Conservation, October 4, 1977), upstream and downstream passage provisions are being sought at dams on certain Lake Champlain tributaries. In Vermont, the Winooski River is included in this effort; however, this initiative has not been extended to the Poultney River as the other tributaries present a better opportunity for coldwater fish spawning.

### **Wildlife and Wetlands**

49. Several Class Three wetlands are located adjacent to the project impoundment. The total wetland area is approximately 4.4 acres.
50. An area of fringe emergent wetland, totaling approximately 1.1 acres in area, is located below steep banks on the north shore adjacent to a small tributary. This area is dominated by joe-pye weed, purple loosestrife, arrow arum, sedges, and rushes.
51. Silt deposits on the south bank, just upstream of the dam, have been colonized by cattails, reed canary grass, purple loosestrife, soft rush, and arrowhead to create a 0.9 acre wetland. Along the gradually sloping shoreline in this area is a 0.3 acre wetland dominated by shrub species including, black willow, green ash, dogwood, and speckled alder.
52. Three islands in the impoundment are dominated by emergent and woody wetland species. The total area of the island wetlands is approximately 2.1 acres.

### **Rare and Endangered Species and Outstanding Natural Communities**

53. The Vermont Endangered Species Law (10 V.S.A. §§5401 to 5403) governs activities related to the protection of endangered and threatened species.
54. The bald eagle (*Haliaeetus leucocephalus*) is known to utilize habitat in the Poultney River corridor. This species is listed as federally threatened and state endangered.
55. Seven species of mussels that are listed as state threatened or endangered have been found in the Poultney River downstream of Carver Falls. The endangered species are: cylindrical papershell (*Anodontoidea ferussacianus*), pocketbook (*Lampsilis ovata*), fluted-shell (*Lasmigona costata*),

fragile papershell (*Leptodea fragilis*), black sandshell (*Ligumia recta*), and pink heelsplitter (*Potamilus alatus*). The giant floater (*Pyganodon grandis*) is listed as threatened.

56. Two state-listed fish species have been found in the Poultney River below the project. They are the threatened eastern sand darter (*Ammocrypta pellucida*) and endangered channel darter (*Percina copelandi*).

### Shoreline Erosion

57. Soils in the Carver Falls area include Vergennes clay and Windsor loamy sand-Oakville loamy sand (USDA soils classification). These soils are deep and moderately well-drained to excessively drained.
58. The impoundment shoreline is entirely vegetated. The cover consists of mixed forest (85 percent), cattail marshes (10 percent), and perennial grasses (5 percent).
59. The applicant conducted a shoreline erosion survey of the impoundment. There were several locations where evidence of bank undercutting or ice scouring was found. Four areas were identified as having a higher erosion potential. Two areas totaling approximately 500 feet are located on the left bank adjacent to the dam. The two remaining areas, 200 and 350 feet long, are located along the right bank.

### Recreational Use

60. Recreational use of the Poultney River in the vicinity of Carver Falls consists largely of fishing, canoeing, wildlife observation, and scenic appreciation. Existing recreational features and facilities at the project site are located on the New York side of the river. They include a small parking area adjacent to the dam; an unmarked trail leading from the meadow area to two lookout points (the penstock overlook and the promontory); a steep unmarked foot trail leading to the river downstream of the powerhouse; and an abandoned forest road that is currently used as a portage from the impoundment but does not provide vehicle access to drop-off boats.
61. Improvements to the recreation facilities proposed by the applicant include parking area improvements, establishment of a canoe portage trail to the impoundment upstream of the dam, an improved penstock lookout platform, interpretive signage at the powerhouse, a canoe drop-off road and downstream river access, picnic tables, and directional signage. The applicant also proposes to provide sign-in sheets for visitors to monitor recreational use.
62. The promontory is a ledge outcrop below the penstock that provides the most easily accessible view of the lower falls and the best out-of-channel view of the upper falls. Historically, it appears that the promontory was modified to provide viewing and now is maintained by users to some degree for that same purpose. The applicant proposes to continue its past practice of allowing, but not encouraging, continued access to this location.

## Aesthetics

63. *The Waterfalls, Cascades and Gorges of Vermont* report (1985) describes Carver Falls as the largest falls in both height and width in Vermont. Carver Falls may be the only horseshoe-shaped falls in Vermont. Specifically, the report states:

The site itself – an abrupt ravine with sharp crests incised below the level of the surrounding country – is the sort of feature that develops in areas with fairly soft bedrock and hence, is not typical of Vermont... The natural part of the site consists of a double falls: looking down from the dam, there is a horseshoe-shaped falls (the only one in Vermont?) about 250-300 feet across by 50 feet high. This concentrates the water into a steep chute about 100 feet long, where it then goes over a second falls about 100 feet wide by 60 feet high. At the bottom there is a pool about 50 feet across, after which the river makes a sharp turn, goes through a rocky gorge about 30 feet wide at the bottom with walls from 20-80 feet high, and then into a wider portion of the channel. The gorge is what is called a “shut-in” in the midwest: a narrow rock-walled gorge abruptly incised into generally flatter land.

64. The falls are of limestone bedrock and consist of four distinguishable sections: the spillway, the cascades below the spillway and above two abandoned penstocks, the two falls (upper falls) that discharge into an intermediate pool, and the lower falls, which discharges into the large plunge pool noted above as walleye resting habitat. There are at least four areas from which various sections of the falls can be viewed: the penstock overlook (the platform on the existing penstock below the intake), the promontory, the falls proper, and from river left at the plunge pool outlet. The access to the pool outlet site requires passage through the powerhouse or access by boat from downstream. Viewing points are also available from the Vermont side by hiking in across private land or walking across the falls from the New York side.
65. The lower falls contains solution cavities through which the water flows and reemerges in the large plunge pool at the base of the falls. Under low flow conditions, no water spills over the lower falls, even with the hydroelectric station off line.
66. The abandoned steel penstock sections span the falls just below the upper cascade section. These penstocks partially block views of the cascades above the upper plunge pool. Under the terms of the NYS settlement agreement, the penstock sections and associated concrete cradles will be removed; the old stone cradles will remain.
67. A one-day flow demonstration was conducted by the applicant on December 4, 1995. Flows spilling 1 inch, 2 inches, and 3 inches were targeted for documentation, along with an identification of the threshold flow that provides the first spillage over the lower falls. Corresponding flows were metered at a transect below the lower plunge pool. The demonstration flows were documented with still photographs and videotape.
68. The demonstration study was documented in the report, *Visual Aesthetic Review of Three Flows from the Carver Falls Hydroelectric Project*, prepared by landscape architect Elizabeth Courtney. The report describes the condition of the falls at three locations under controlled flow releases of 1 inch, 2 inches and 3 1/4 inches (metered at 21 cfs, 45 cfs, and 81 cfs, respectively,

including dam leakage) over the left spillway. After viewing the 3 1/4 inch spill, the applicant reduced spillage to 2 1/2 inches<sup>2</sup> to identify the threshold flow for spillage over the lower falls.

### State Comprehensive River Plans

69. The Agency, pursuant to 10 V.S.A. Chapter 49, is mandated to create plans and policies under which Vermont's water resources are managed and uses of these resources are defined. The Agency must, under Chapter 49 and general principles of administrative law, act consistently with these plans and policies whenever possible.

#### *Hydropower in Vermont, An Assessment of Environmental Problems and Opportunities* (May 1988)

70. The Department publication *Hydropower in Vermont, An Assessment of Environmental Problems and Opportunities* is a state comprehensive river plan. The hydropower study, which was initiated in 1982, indicated that hydroelectric development has a tremendous impact on Vermont streams. Artificial regulation of natural stream flows and the lack of adequate minimum flows at the sites were found to have reduced to a large extent the success of the state's initiatives to restore the beneficial values and uses for which the affected waters are managed.
71. With respect to the Carver Falls Project, the plan included recommendations that minimum flows should be required, the old penstock should be removed, and silt releases should be avoided. The plan also recommended studies of the project's impact on water quality, bypass fish habitat, and potential recreational development. These issues have been considered in the Department's current review.

#### *Vermont Agency of Natural Resources Management Plan for the Lower Poultney River – A Vermont Outstanding Resource Water* (August 1992)

72. The Agency of Natural Resources, with extensive public involvement, completed a comprehensive river plan for the Lower Poultney River. The plan, entitled *Vermont Agency of Natural Resources Management Plan for the Lower Poultney River – A Vermont Outstanding Resource Water* defines the following management goal:

For that portion of the Lower Poultney River within Vermont borders, the State will seek to manage certain activities affecting the water quality, flows, course, current, and cross section of the Lower Poultney River to preserve and enhance the exceptional natural, cultural, scenic, and recreational values of the river and river corridor..."

73. This plan formed part of the basis for the Water Resources Board's designation of the Lower Poultney River (from the Poultney-Fair Haven town line to Lake Champlain) in 1991 an Outstanding Resource Water for its exceptional natural, cultural and scenic values.

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<sup>2</sup>The applicant estimated the total flow with 2 1/2 inches of spillage at 57 cfs (45 cfs spilled). Unlike the other flows, this flow was only estimated using the weir equation. A small amount of flow, estimated at 3 cfs, cascaded over the lower falls during the 57 cfs flow.

74. Although the Department had recommended including recreation value in its designation, the Board elected not to include it. It concluded that it had not received sufficient evidence, although it did note that there is "exceptional canoeing for those seeking privacy and wildlife observation and [that] the river is important for its diversity of game fish, especially below Carver Falls..."

#### *1993 Vermont Recreation Plan*

75. The 1993 Vermont Recreation Plan (Department of Forests, Parks and Recreation), through extensive public involvement, identified water resources and access as top priority issues. The planning process disclosed that recreational use of surface waters is increasing, resulting in greater concern about water quality, public access to Vermont's waters, and shoreland development.

76. The plan's Water Resources and Access Policy is:

It is the policy of the State of Vermont to protect the quality of the rivers, streams, lakes, and ponds with scenic, recreational, cultural and natural values and to increase efforts and programs that strive to balance competing uses. It is also the policy of the State of Vermont to provide improved public access through the acquisition and development of sites that meet the needs for a variety of water-based recreational opportunities.

77. The applicant proposes to provide continued access to the river in the project area. This access and improved aesthetic and bypass flows would be compatible with this policy and balance the competing uses of recreation and hydropower. Failure to provide access would exacerbate a critical state recreational problem.

78. Another priority issue identified in the Recreation Plan is the loss or mismanagement of scenic resources. The plan notes "[t]he protection of the scenic and visual resources in Vermont is paramount if Vermont is to maintain its renowned charm and character."

79. The Scenic Resources Protection and Enhancement Policy in the Recreation Plan is:

It is the policy of the State of Vermont to initiate and support programs that identify, enhance, plan for, and protect the scenic character and rural traditions of Vermont.

### **Analysis**

#### **Water Chemistry**

80. Available water quality sampling by the applicant indicates that the dissolved oxygen standard for coldwater fish habitat may not be met upstream of the impoundment. The applicant proposes to spill 9.0 cfs, or inflow, at the dam, which will provide some reaeration. Further, when flows recede to 48.5 cfs, the minimum plant capacity of 30 cfs plus the 18.5 cfs (spill and leakage) in the bypass, the project would suspend operation in order to maintain the run-of-river conditions, and all inflows would be released at the dam. Consequently, under summer low flow conditions, all flows would be released at the dam, and water quality would benefit from reaeration through

the bypassed reach. Additional enhancement of downstream dissolved oxygen levels would occur with the maintenance of bypass flows necessary to support habitat and aesthetics. Finally, the Poultney River downstream of Carver Falls is managed for warmwater fish habitat, which has a lower dissolved oxygen standard than the upstream, coldwater-habitat reach.

## **Flow and Water Level Management**

### *Habitat Protection – Downstream*

81. Run-of-river operation will provide aquatic habitat and wetland protection below the project.
82. During periods when the impoundment is refilled following flashboard replacement, adequate flows must be provided to protect downstream habitat.

### *Habitat Protection – Bypass*

83. Adequate bypass flows must be provided to address year-round habitat needs and enable fish movement between the plunge pool and the reach below the project. The observation flow of 26.3 cfs provides higher quality habitat and a better passage zone for fish moving between the plunge pool and the below-project reach than the flow of 18.5 cfs. The 18.5 cfs flow provides minimally acceptable conditions in the bypass for fish habitat and movement, but is deemed adequate given the limited length of the bypass and the restoration of habitat under the proposed run-of-river operation. As discussed below, however, special spring flows will be necessary to support walleye propagation.
84. The reach from the lower plunge pool to below the tailrace can provide excellent habitat for walleye spawning and incubation, provided there are adequate flows during the spawning season (April 1 to May 15). Adult fish may use the lower plunge pool for resting, so there must be sufficient water depth to allow them to move through this reach. A water depth of 18 inches in the bypass allows adult fish to move over the hydraulic controls and reach the plunge pool. This water depth also provides some, but not optimal, spawning and incubation habitat. Given the limited length of the bypass and the improved habitat conditions below the project provided by run-of-river operations, a bypass water depth of 18 inches will provide adequate habitat conditions during the walleye spawning season. Based on data collected during the aesthetic flow study conducted in December 1995, a flow of 50 cfs will provide this depth. This flow will be provided under the terms of the NYS settlement agreement.

### *Habitat Protection – Impoundment*

85. The wetlands adjacent to the impoundment are significant for shoreline stabilization and wildlife habitat. In addition, the shoreline wetlands contribute to maintaining the surface water quality of the Poultney River in the impoundment. The project is proposed to be operated in run-of-river mode, so frequent impoundment fluctuations will be avoided. Some water level fluctuations will occur during periods of failure and replacement of the 6-foot flashboards and when the hinged 1.5-foot flashboards are lowered. Infrequent changes in impoundment elevation caused by dropping or raising the 1.5-foot-high flashboards or replacing the 2.0-foot wooden section of the 6-foot flashboards does not significantly compromise wetland habitat or



exacerbate shoreline erosion. Large-scale drawdowns caused by damage to the 6-foot flashboards or replacement of the lower steel section of the 6-foot flashboards will cause substantial loss of impoundment habitat and the potential for a sediment release downstream; however, the applicant indicates that the modified design will reduce the frequency of these drawdowns to intervals of 5 years or longer.

### *Aesthetics*

86. Aesthetics is an important consideration at Carver Falls due to the statewide significance of the site, its unique character, and the ready accessibility to the public.
87. The dam is highly visible from downstream vantage points. This area is accessible to the public, which uses the river for swimming, fishing, and general enjoyment of the water. A veil of water flowing over the dam is important for aesthetic purposes, as well as providing certain water quality benefits. To the extent feasible given the leakage conditions at the dam, at least 1.0 inch of spillage (about 15 cfs) should be maintained over the south spillway to provide the veil of water, and the remainder or bypass flows can be discharged via a gate release. Sufficient water should be released into the bypass to provide a veil of water over the New York spillway, cascade attractively over the double upper falls, and visibly spill over the lower falls.
88. At bypass flows below about 55 cfs, no water flows over the lower falls. Of those flows that were observed during the aesthetics flow demonstration, 81 cfs is the minimum flow that would provide visible spill over the lower falls.
89. The NYS settlement agreement addressed aesthetic flow releases. The agreement calls for the applicant to provide a flow over the south spillway of 2.5 inches (or inflow, if less) on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August, commencing at 9:00 a.m. and continuing through the daylight hours.

### *Conclusions*

90. Run-of-river operation will be necessary to protect impoundment and downstream habitat. A limited deviation from run-of-river may occur when the impoundment is being refilled following flashboard replacement or a maintenance drawdown. To address this issue, this certification is being conditioned to require that 90 percent of inflow be released downstream during refill periods.
91. Adequate bypass flows will be needed to provide high quality aquatic habitat in that reach. Based on the current record, this objective can be met by providing, from May 16 to March 31, a minimum bypass flow of 18.5 cfs and, from April 1 to May 15, a minimum bypass flow of 50 cfs (the latter to support walleye spawning and incubation and access to the plunge pool at the base of the falls).
92. Another flow management objective is support of aesthetics by providing a veil of water over the south spillway and flows over the upper and lower falls during periods when public use of the falls area is likely to be higher. The NYS settlement agreement addresses aesthetics flows.

93. Implementing the proposed redesign of the existing 6-foot plywood flashboards will be necessary to limit potential standards violations caused by flashboard failure or maintenance and replacement activities.
94. Precise control of the impoundment elevation will be necessary to consistently provide the required flows over the spillway.
95. By condition of this certification, the applicant shall be required to maintain run-of-river operation and provide bypass flows as described above by spilling water over the south spillway.

#### **Fish Passage**

96. In accordance with *A Strategic Plan for Development of Salmonid Fisheries in Lake Champlain* (NYS Department of Environmental Conservation, October 4, 1977), neither upstream nor downstream fishways are considered necessary at Carver Falls.

#### **Recreation**

97. Vermont Water Quality Standards require the protection of existing water uses, including the use of water for recreation. Standards also requires the management of the waters of the State to protect, maintain, and improve water quality. (Standards, Section 1-03. *Anti-Degradation Policy*)
98. Uses for which Class B waters are managed include water that exhibits good aesthetic value and swimming and recreation. (Standards, Section 3-04(A) *Class B Waters: Management Objectives*)
99. The applicant will provide continued public access to the project area and has proposed several recreational improvements. The proposed improvements will enhance the existing uses of fishing, canoeing, wildlife observation and scenic appreciation.
100. Allowing continued access to the promontory will enable visitors to continue to be able to view both the upper and lower falls, a long-standing public use at the site. Improvements to the access to the promontory should be limited to those necessary to avoid erosion or other resource impacts and address public safety.
101. By condition of this certification, the applicant shall be required to provide continued public access to the area and to develop a recreation plan, subject to review and approval by the Department.
102. The NYS settlement agreement establishes the Carver Falls Advisory Council "[i]n order to keep abreast of changing conditions that may affect the Carver Falls site..." The Council will be comprised of the New York State Department of Environmental Conservation, the applicant, the Vermont Natural Resources Council, and New York Rivers United.

### **Erosion**

103. Erosion, if severe, can impair recreational use and cause turbidity and the discharge of suspended solids, potentially violating the standards for those parameters. (Standards, Section 3-03(B)(1) *Turbidity* and Section 3-01(B)(5) *Settleable solids, floating solids, oil, grease, scum, or total suspended solids*) Several eroding areas along the impoundment were identified during the applicant's shoreline erosion survey. However, run-of-river operation should mitigate any contribution of project operation to this problem.
104. Recreational use of project lands may cause some localized erosion. Proper recreation planning limits the risk of significant erosion, but the Department will maintain continuing jurisdiction over this issue and require modifications where found necessary to abate erosion.

### **Debris**

105. The applicant does not provide information on the handling and disposal of trashrack debris and other project related debris. The depositing or emission of debris and other solids to state waters violates the state solid waste laws and Standards, Section 3-01(B)(5) *Settleable solids, floating solids, oil, grease, scum, or total suspended solids*. Debris may also impair aesthetics and boating. A debris disposal plan is being required as a condition of this certification.

### Decision and Certification

Based on its review of the applicant's proposal and the above findings, the Department concludes that there is reasonable assurance that operation and maintenance of the Carver Falls Hydroelectric Project as proposed by the applicant and in accordance with the following conditions will not cause a violation of 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. §1251 et seq., as amended, and other appropriate requirements of state law:

- A. **Compliance with Conditions.** The applicant shall operate and maintain this project consistent with the findings and conditions of this certification, where those findings and conditions relate to protection of water quality and support of designated and existing uses under Vermont Water Quality Standards and other appropriate requirements of state law.
- B. **Flow Management.** Except as allowed in Condition C below, the facility shall be operated in a true run-of-the-river mode where instantaneous flows below the tailrace shall equal instantaneous inflow to the impoundment at all times. When the facility is not operating, all flows shall be spilled at the dam. Bypass flows shall be maintained in accordance with the following table.

Period	Bypass Flow Release (cfs)
May 16 – March 31	18.5
April 1 – May 15	50

The bypass flow release is the value listed above or instantaneous inflow, if less.

Bypass conservation flows, except for uncontrolled leakage, shall be released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods noted below, any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during the period November through March.

Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway shall be provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release shall commence at 9:00 a.m. and continue through the daylight hours.

- C. **Flow Management during Impoundment Refill.** During refilling of the project impoundment after flashboard replacement, an approved dam maintenance operation or an emergency drawdown, the applicant shall release at least 90 percent of instantaneous inflow below the

project. While the impoundment is being refilled, bypass flow requirements shall be met at all times.

- D. **Flow Management Plan.** The applicant shall develop and file with the Department a flow management plan detailing how the project will be operated to comply with the conservation flow and impoundment fluctuation limitations described above. The plan shall include information on how the project will be managed to control lag times and avoid related non-compliance with the conservation flow requirements. The plan shall be subject to Department review and approval. The Department reserves the right of review and approval of any material changes made to the plan.
- E. **Monitoring Plan for Impoundment and Flow Management.** The applicant shall develop a plan for continuous monitoring and reporting of flow releases at the project (spillage and turbine discharge), impoundment levels, flashboard status and inflows. The plan shall include procedures for reporting deviations from prescribed operating conditions to the Department, explaining the reasons for those deviations and indicating measures to be taken to avoid recurrences. The applicant shall maintain continuous records of flows and impoundment levels and provide such records on a regular basis as per specifications of the Department. The plan shall include a provision for the inclusion of contemporaneous records from the U.S. Geological Survey gage (Poultney River below Fair Haven, Vermont, Gage No. 04280000) located below the project powerhouse. The applicant shall fund the gage in order to facilitate compliance monitoring and to furnish data for quality control purposes. The plan shall be developed in consultation with the Department and the U.S. Fish and Wildlife Service. The plan shall be subject to Department review and approval. The Department reserves the right of review and approval of any material changes made to the plan.
- F. **Turbine Rating Curves.** The applicant shall provide the Department with a copy of the turbine rating curves, accurately depicting the flow/production relationship, for the record within one year of the issuance of the license.
- G. **Flashboards.** The applicant shall replace the 6-foot plywood flashboards on the north spillway with a new system consisting of a lower 4.0-foot steel section and an upper 2.0-foot section of untreated lumber, or an alternate design approved by the Department and meeting the objective of reducing the incidence of large scale impoundment drawdowns. The final design and implementation schedule shall be filed with the Department within 60 days of the issuance of the license, and shall be subject to Department review and approval. The modified system shall be in place within two years of license issuance.
- H. **Debris Disposal Plan.** The applicant shall develop a plan for proper disposal of debris associated with project operation, including trashrack debris. The plan shall be developed in consultation with the Department and shall be subject to Department review and approval. The Department reserves the right of review and approval of any material changes made to the plan at any time.
- I. **Maintenance and Repair Work.** Any proposals for project maintenance or repair work, including drawdowns below the fixed dam crest to facilitate repair/maintenance work, shall be filed with the Department for prior review and approval, if said work may have a material

adverse effect on water quality or cause less-than-full support of an existing use or a beneficial value or use of State waters.

- J. **Public Access.** The applicant shall allow public access to the project lands for utilization of public resources, subject to reasonable safety and liability limitations. Such access shall be prominently and permanently posted so that its availability is made known to the public. Any proposed limitations of access to State waters to be imposed by the applicant shall first be subject to written approval by the Department. In cases where an immediate threat to public safety exists, access may be restricted without prior approval; the applicant shall so notify the Department and shall file a request for approval, if the restriction is to be permanent or long term, within 14 days of the restriction of access.
- K. **Abandoned Penstocks.** The applicant shall remove the concrete cradles and the section of abandoned steel penstocks between the last stone cradle and the river embankment following full consultation with the Vermont Division for Historic Preservation and within two years of the issuance of the license.
- L. **Recreational Facilities.** Recreational facilities shall be constructed and maintained consistent with a recreation plan approved by the Department. The plan shall include a provision to allow but not encourage access to the promontory. The plan shall be filed with the Department within one year of license issuance and shall include an implementation schedule. Where appropriate, the recreation plan shall include details on erosion control. The plan shall be updated at intervals not exceeding ten years or a written statement provided that indicates the basis for there being no need to upgrade the facilities or otherwise modify the plan. Modifications to the recreation plan shall also be subject to Department approval over the term of the license.
- M. **Restoration Fund.** The applicant shall contribute \$250,000 to a fund (Fund) to be known as the Lake Champlain and Tributaries Restoration Fund, which shall be created by the State of Vermont and administered by an independent non-profit community foundation (the Fund Trustee) chosen by the applicant and the Vermont Agency of Natural Resources. The Fund, which shall include the contribution and associated earnings as well as outside monies contributed by others and associated earnings, is to only be used for eligible projects, the purpose of which are to:
  - a) Protect, restore and enhance the ecosystem integrity and ecological connectivity of the community of aquatic life in the Lake Champlain ecosystem and its tributaries.
  - b) Protect, restore and enhance lake sturgeon and their habitats in the Lake Champlain basin and its tributaries.
  - c) Restore a self-sustaining land-locked Atlantic salmon population in Lake Champlain through habitat restoration and fish monitoring programs.
  - d) Protect the riparian zones along Lake Champlain tributaries for the benefit of the ecological and recreational resources, through the purchase of land or easements.

The Fund shall not be used for projects located outside of the Lake Champlain basin, or on New York tributaries of Lake Champlain. The applicant shall make a nonrefundable contribution in the amount of \$250,000 within 30 days of the completion of the following two events: (a) issuance of this certification or if this certification is the subject of an appeal, upon the completion of the appeal process provided that the certification contains conditions that are materially similar to this original certification and (b) issuance of a FERC license that contains conditions of this certification, or a certification issued on appeal with materially similar conditions, or if the FERC license is the subject of an appeal, upon the completion of the appeal process provided that the FERC license contains conditions that are materially similar to the final certification.

The Fund Trustee shall make investment decisions, and shall disburse monies from the Fund from time to time, in whole or in part, based upon recommendations made by representatives of the CVPS, the ANR, the U.S. Fish and Wildlife Service, the Vermont Natural Resources Council and Trout Unlimited who shall serve as the Fund Advisors. The Fund Advisors shall make decisions based upon vote of a majority of the Fund Advisors (not simply a quorum thereof). Any party may permanently withdraw as a Fund Advisor upon written notice to the other Fund Advisors. The Fund Advisors may solicit proposals from nonprofit organizations, educational institutions, units of government, and officially appointed commissions, boards or other entities within the state of Vermont for projects which address any of the above purposes. The Fund Advisors may target a specified portion of the funds to specific protection, mitigation, or enhancement objectives or to specific areas which are encompassed within the purposes and geographic scope defined above.

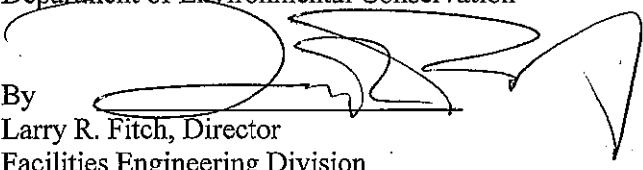
The Fund Trustee shall only disburse monies from the Fund when matching funds are contributed to a project by Parties or entities other than CVPS, at a ratio of no less than \$1 of outside monies for every \$2 drawn from CVPS's contribution and Fund earnings thereon.

- N. **Erosion Control.** Upon a written request by the Department, the applicant shall design and implement erosion control measures as necessary to address erosion occurring as a result of use of the project lands for recreation. Any work that exceeds minor maintenance shall be subject to prior approval by the Department and FERC.
- O. **Compliance Inspection by Department.** The applicant shall allow the Department to inspect the project area at any time to monitor compliance with certification conditions.
- P. **Posting of Certification.** A copy of this certification shall be prominently posted within the project powerhouse.
- Q. **Approval of Project Changes.** Any change to the project that would have a significant or material effect on the findings, conclusions or conditions of this certification, including project operation, must be submitted to the Department for prior review and written approval where appropriate and authorized by law and only as related to the change proposed.
- R. **Reopening of License.** The Department may request, at any time, that FERC reopen the license to consider modifications to the license as necessary to assure compliance with Vermont Water Quality Standards.

- S. **Continuing Jurisdiction.** The Department reserves the right to add and alter the terms and conditions of this certification, when authorized by law and as appropriate to carry out its responsibilities with respect to water quality during the life of the project.

Dated at Waterbury, Vermont this  
5<sup>TH</sup> day of December, 2008

Laura Q. Pelosi, Commissioner  
Department of Environmental Conservation

By   
Larry R. Fitch, Director  
Facilities Engineering Division

c: Distribution List

LRF/BTF



**Water Quality Certification Amendment  
(33 U.S.C. §1341)**

In the matter of:           Central Vermont Public Service Corporation  
                                  77 Grove Street  
                                  Rutland, VT 05701

**APPLICATION FOR CARVER FALLS HYDROELECTRIC PROJECT**

The Vermont Department of Environmental Conservation (Department) has reviewed a water quality certification amendment application dated June 17, 2010 and filed by Central Vermont Public Service Corporation (CVPS), the licensee for the Carver Falls Hydroelectric Project (FERC Project No. 11475). The licensee is seeking authorization to replace one of the project turbines with a new unit that will increase the project's hydraulic and generation capacity. The original water quality certification for the project was issued on December 5, 2008 and a federal license was granted on February 25, 2009.

In addition to the application, the Department considered information contained in an updated Exhibit E (Environmental Report) filed with FERC by CVPS on August 16, 2010.

In accordance with 10 V.S.A. § 1004, the current application is subject to review under the Vermont Water Quality Standards adopted by the Water Resources Panel that became effective on January 1, 2008 (Standards, Section 1-01. Applicability and Definitions).

The Department placed the application on public notice on September 1, 2010 and accepted comments through October 7, 2010.

The Department, based on the application and record before it, makes the following findings and conclusions.

**Findings**

1. The Carver Falls Hydroelectric Project is located on the Poultney River in the towns of West Haven, Vermont and Hampton, New York.
2. The project powerhouse houses two turbines. Unit 1, manufactured by S. Morgan Smith, is rated at 1,700 horsepower and has a maximum hydraulic capacity of 162 cfs. Unit 2, manufactured by American Hydro, is rated at 1,250 horsepower at its hydraulic capacity of 92 cfs. The turbines drive 1,050 kW Westinghouse and 800 kW Allis-Chalmers generators, respectively.
3. The proposal is to replace Unit 1 with turbine manufactured by Norcan Hydraulic Turbine that is rated at 1,946 horsepower. The new unit has a maximum hydraulic capacity of 177 cfs, increasing total station hydraulic capacity by 15 cfs.
4. The new turbine will be connected to the existing generator. Peak output of the facility is expected to increase from 1,900 kW to 2,251 kW.

5. Condition B of the water quality certification issued by the Department on December 5, 2008 requires the project to operate in strict run-of-river mode except in limited circumstances specified in Condition C.
6. Condition B further specifies bypass flows of 18.5 cfs from May 16 to March 31 and 50.0 cfs from April 1 to May 15 (or inflow, if less, for both periods). Finally, Condition B requires spillage over the dam to support aesthetics during specified periods.

### **Analysis**

7. The project will continue strict run-of-river operation, so downstream flows will not be affected by the turbine upgrade.
8. The turbine upgrade will allow the project to utilize an additional 15 cfs of inflow which currently would spill into the bypass once inflow exceeds the current station hydraulic capacity plus the bypass flow (seasonally, 272.5 cfs or 304 cfs). With the upgrade, that 15 cfs could be routed through the units rather than spilled.
9. Bypass flow requirements for support of aquatic habitat will not be changed, so aquatic habitat in the bypass will continue to be fully supported.
10. The time periods when additional bypass flows are required to support aesthetics will not be changed.
11. The limited change in the time periods when bypass flows exceed the bypass conservation flow requirements will not have a measurable effect on aquatic habitat in the bypass.

### **Decision and Certification**

Based on its review of the applicant's proposal and the above findings, the Department concludes that the proposed modifications at the Carver Falls Hydroelectric Project will comply with 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. §1251 et seq., as amended. All conditions in the original December 5, 2008 water quality certification issued for the project remain in effect.

Dated at Waterbury, Vermont this  
20<sup>th</sup> day of October, 2010

Justin G. Johnson, Commissioner  
Department of Environmental Conservation

By



Peter LaFlamme, Director  
Water Quality Division

**Water Quality Certification Amendment  
(33 U.S.C. §1341)**

In the matter of:           Central Vermont Public Service Corporation  
                                  77 Grove Street  
                                  Rutland, VT 05701

**APPLICATION FOR CARVER FALLS HYDROELECTRIC PROJECT**

The Vermont Department of Environmental Conservation (Department) has reviewed a water quality certification amendment application dated January 20, 2012 and filed by Central Vermont Public Service Corporation (CVPS), the licensee for the Carver Falls Hydroelectric Project (FERC Project No. 11475). The Licensee seeks to revise the description of the recently replaced project turbine to reflect its wider hydraulic operating range determined after installation and testing. The replacement of the turbine with a new unit that increased the project's hydraulic and generation capacity was authorized by a water quality certification amendment issued on October 20, 2010. The original water quality certification for the project was issued on December 5, 2008 and a federal license was granted on February 25, 2009.

In addition to the application, the Department considered information contained in an updated Exhibit E (Environmental Report) filed with FERC by CVPS on August 16, 2010 and in an updated Exhibit A (Description of the Project and Mode of Operation) filed with FERC by CVPS on February 13, 2012.

In accordance with 10 V.S.A. § 1004, the current application is subject to review under the Vermont Water Quality Standards adopted by the Water Resources Panel that became effective on December 30, 2011 (Standards, Section 1-01. Applicability and Definitions).

The Department placed the application on public notice on May 22, 2012 and accepted comments through June 22, 2012. No comments were received.

The Department, based on the application and record before it, makes the following findings and conclusions.

**Findings**

1. The Carver Falls Hydroelectric Project is located on the Poultney River in the towns of West Haven, Vermont and Hampton, New York.
2. There are two turbines. The original Unit 1, manufactured by S. Morgan Smith, was rated at 1,700 horsepower and had a maximum hydraulic capacity of 162 cfs. Unit 2, manufactured by American Hydro, was rated at 1,250 horsepower at its hydraulic capacity of 92 cfs. The turbines drove 1,050 kW Westinghouse and 800 kW Allis-Chalmers generators, respectively. The minimum hydraulic capacity of the project was 30 cfs.
3. The October 20, 2010 water quality certification amendment authorized the replacement of Unit 1.
4. In 2011, Unit 1 was replaced with a turbine manufactured by Norcan Hydraulic Turbine that is rated at 1,946 horsepower. The manufacturer's specifications listed the new unit's maximum hydraulic capacity as 177 cfs, increasing total station hydraulic capacity to 269 cfs, an increase of 15 cfs.
5. The new Unit 1 turbine was connected to the existing generator. Peak output of the facility increased from 1,900 kW to 2,251 kW.

6. The turbine manufacturer's field test report shows that the maximum hydraulic capacity of Unit 1 is 206 cfs, compared to 177 cfs given in the turbine specifications. This is a total increase of 44 cfs from the original Unit 1, bringing total station capacity to 298 cfs. It increases the station capacity an additional 29 cfs from that authorized by the October 20, 2010 water quality certification amendment.
7. The replacement Unit 1 has the capability of operating at a lower flow (20 cfs) than the original turbine, which had a lower limit of 30 cfs. In order to maintain existing bypass flow conditions during periods of low inflow, the licensee has agreed that both units will be shut down when inflow is less than or equal to the bypass conservation flow plus 30 cfs, i.e., 48.5 or 80 cfs, seasonally.
8. Condition B of the water quality certification issued by the Department on December 5, 2008 requires the project to operate in strict run-of-river mode except in limited circumstances specified in Condition C.
9. Condition B further specifies bypass flows of 18.5 cfs from May 16 to March 31 and 50.0 cfs from April 1 to May 15 (or inflow, if less, for both periods). Finally, Condition B requires spillage over the dam to support aesthetics during specified periods.

#### **Analysis**

10. The project will continue strict run-of-river operation, so downstream flows will not be affected by the change in hydraulic capacity.
11. As constructed, the new turbine will enable the project to utilize an additional 29 cfs of inflow beyond the previously authorized 15 cfs. Prior to the turbine upgrade, this additional flow would spill into the bypass once inflow exceeded the station hydraulic capacity plus the required bypass flow. With the upgrade, the 44 cfs can be routed through the units rather than spilled. A flow duration analysis shows that the bypass flow will equal the conservation flow for approximately 15 additional days per year.
12. CVPS shall not operate the new unit below the lower limit of the operating range of the unit it replaced, so there will be no effect on bypass flows during low inflow periods.
13. Bypass flow requirements for support of aquatic habitat will not be changed, so aquatic habitat in the bypass will continue to be fully supported.
14. The time periods when additional bypass flows are required to support aesthetics will not be changed.
15. The limited number of days when bypass flows will change as a result of the turbine upgrade will not have a measurable effect on aquatic habitat in the bypass.

### Decision and Certification

Based on its review of the applicant's proposal and the above findings, the Department concludes that the modifications at the Carver Falls Hydroelectric Project will comply with 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. §1251 et seq., as amended, and other appropriate requirements of state law. In making this determination, the Department amends the original certification to modify the following condition:

**B. Flow Management.** Except as allowed in Condition C below, the facility shall be operated in a true run-of-the-river mode where instantaneous flows below the tailrace shall equal instantaneous inflow to the impoundment at all times. When the facility is not operating, all flows shall be spilled at the dam. Both units shall be shut down and all flows shall be released at the dam when inflow is less than 30 cfs plus the bypass flow release as given below. Bypass flows shall be maintained in accordance with the following table.

Period	Bypass Flow Release (cfs)
May 16 – March 31	18.5
April 1 – May 15	50
<p>The bypass flow release is the value listed above or instantaneous inflow, if less.</p> <p>Bypass conservation flows, except for uncontrolled leakage, shall be released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods noted below, any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during the period November through March.</p> <p>Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway shall be provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release shall commence at 9:00 a.m. and continue through the daylight hours.</p>	

All other conditions in the original December 5, 2008 water quality certification issued for the project remain in effect.

David K. Mears, Commissioner  
Department of Environmental Conservation  
By

Peter LaFlamme, Director  
Watershed Management Division

**From:** [Davis, Eric](#)  
**To:** [Kayla Easler](#); [Katie Sellers](#)  
**Cc:** [McHugh, Peter](#); [Popp, Bob](#); [Marshall, Everett](#); [Appleton, Tim](#); [Mackenzie, Chet](#)  
**Subject:** RE: Carver Falls FERC No. 11475  
**Date:** Friday, July 14, 2017 10:43:01 AM  
**Attachments:** [Carver Falls RTE List.pdf](#)  
[Carver Falls LIHI Comments.pdf](#)

---

Hi Kayla,

The Agency has reviewed our records for the Carver Falls Project and provides the following information regarding water quality and rare, threatened, and endangered species requested by Kleinschmidt to develop a complete LIHI application.

#### Water Quality

-

*Per the State of Vermont 2016 303(d) List of Impaired Waters and the State of New York 2016 Section 303(d) List of Impaired Waters, the Poultney River is not listed as an impaired waterway.*

*Could you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations?*

The Agency has reviewed its 2016 list of Priority Surface Waters. A 10.4 mile stretch from its mouth upstream to Carvers Falls is listed on Part D, waters that are assessed as impaired and have a completed and EPA-approved TMDL, due to elevated levels of Mercury in Walleye. Additionally, discrete portions of the Lower Poultney (below the Castleton River) are listed on Part E, waters altered by aquatic invasive species, due to locally abundant Water Chestnut growth.

I can confirm that the current operations of the project are not a contributing cause to the listing of portions of the Poultney River as priority waters for management action.

#### Rare, Threatened and Endangered Species

-

*Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the Project continues to not negatively affect any of the currently listed species that may occur within the Project area?*

*Vermont State Species (<http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229831>)*

*Eastern sand darter*

*Channel Darter*

*Lake Sturgeon*

*Black sandshell*

*Giant Floater*

*Fluted Shell*

*Fragile Papershell*

*Pink Heelsplitter*

Our Natural Heritage Program and Fish and district staff have reviewed the provided list, as well as other recent records for RTE species in the project area. An updated version of RT&E species is provided in the attached table, which differs in a few key areas. (1) We believe that the Lake Sturgeon should not be included in the list given that there are no known instances (recent or historic) of these fish in the Poultney River. (2) We note that there are several vertebrate, invertebrate, and plant species in the project-affected area that weren't included in the previous application's list; this may be due to different search area being used in the current vs. the former compilation. Here, we include impounded area immediately upstream of the falls/dam and the Poultney downstream to the bridge at Book Rd. in West Haven. We also consider upland species within the project's vicinity, given that they may be susceptible to project impacts if/when facility maintenance necessitates activity in these areas (see caveats noting that impacts should be negligible in the absence of such work).

Beyond updating the list, the biologists associated with this review concurred that the project should continue to negligibly impact these species if it is operated according to the conditions specified in its 401 Water Quality Certificate, particularly those specifying a run-of-river regime. However, deviations from run-of-river operations, have the potential to adversely affect several of the species listed here.

-  
Formal Application Review

-  
The Agency hopes the input above assists you in developing a complete LIHI application. As you know the Agency's review of LIHI applications has evolved, and the Agency has now developed a practice of requesting one year of project operations records to review for compliance with certification conditions in order to provide meaningful input into the LIHI review process.

In addition to the Agency's standard practice, the 2012 LIHI review (attached) noted some issues with flow monitoring and management at the Project. Recent reviews of gage data continue to highlight flow management as a potential concern. Given this history, the Agency thought it may be beneficial to flag this as an information need as early as possible, so that the parties can begin to discuss the data before the application goes out for comment.

Please let me know if you have additional questions,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>  
(Please note my new e-mail address, effective July 27, 2015)



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---

**From:** Davis, Eric

**Sent:** Thursday, June 15, 2017 10:17 AM

**To:** 'Kayla Easler' <Kayla.Easler@KleinschmidtGroup.com>; Katie Sellers  
<Katie.Sellers@KleinschmidtGroup.com>

**Cc:** McHugh, Peter <Peter.McHugh@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>; Marshall,  
Everett <Everett.Marshall@vermont.gov>; Appleton, Tim <Tim.Appleton@vermont.gov>

**Subject:** RE: Carver Falls FERC No. 11475

Good morning Kayla,

The Departments of Fish and Wildlife and Environmental Conservation have received Kleinschmidt's request for rare, threatened, and endangered species and water quality information for the Craver's Falls project to further the development of a complete LIHI application. The Departments will develop an Agency response and provide the requested information to Kleinschmidt.

Thanks,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>  
(Please note my new e-mail address, effective July 27, 2015)



See what we're up to on our [Blog. Flow.](#)

---

**From:** Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]

**Sent:** Wednesday, June 14, 2017 11:32 AM

**To:** Davis, Eric <Eric.Davis@vermont.gov>; fwfish5@dec.ny.gov

**Cc:** Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>

**Subject:** Carver Falls FERC No. 11475

Good morning,

The following is a request for review of water quality resources for the LIHI re-certification application for Green Mountain Power: Carver Falls Hydroelectric Project (FERC No. 11475) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The LIHI application asks that we gain your feedback on the following water quality information:



Per the State of Vermont 2016 303(d) List of Impaired Waters and the State of New York 2016 Section 303(d) List of Impaired Waters, the Poultney River is not listed as an impaired waterway.

Could you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations?

When you have a moment to review, could you please provide us with your feedback on this topic?

Best,

Kayla A. Easler  
Regulatory Coordinator

The logo for Kleinschmidt, featuring the word "Kleinschmidt" in a stylized blue font with a green underline.

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**Carver Falls LIHI Review  
RTE Species List**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Rank</b>	<b>Status</b>	<b>Notes / comments</b>
<b>Vascular Plant</b>				
<i>Arisaema dracontium</i>	Green Dragon	S2	T	
<i>Peltandra virginica</i>	Arrowleaf	S2S3		
<i>Carya glabra</i>	Pignut hickory	S2		Upland. Only impacted if infrastructure expands.
<i>Eutrochium purpureum</i>	Upland Joe Pye weed	S2S3		Upland. Only impacted if infrastructure expands.
<b>Vertebrate Animal</b>				
<i>Ammocrypta pellucida</i>	Eastern Sand Darter	S1	T	
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	S2?	SC	
<i>Ixobrychus exilis</i>	Least Bittern	S2B	SC	
<i>Moxostoma anisurum</i>	Silver Redhorse	S2	SC	
<i>Moxostoma macrolepidotum</i>	Shorthead Redhorse	S2		
<i>Myotis sodalis</i>	Indiana Bat	S1	E	
<i>Necturus maculosus</i>	Mudpuppy	S2	SC	
<i>Notropis bifrenatus</i>	Bridle Shiner	S1?	SC	
<i>Notropis heterodon</i>	Blackchin Shiner	S1	SC	
<i>Notropis rubellus</i>	Rosyface Shiner	S3		
<i>Percina copelandi</i>	Channel Darter	S1	E	
<i>Sternotherus odoratus</i>	Eastern Musk Turtle	S2	SC	
<i>Thamnophis sauritus</i>	Eastern Ribbonsnake	S2	SC	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	S1	E	VDFW should be notified if nesting documented on property
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	S1	E (Fed T)	Impacts unlikely unless tree cutting occurs.
<i>Myotis sodalis</i>	Indiana Bat	S1	E (Fed E)	Impacts unlikely unless tree cutting occurs.
<b>Invertebrate Animal</b>				
<i>Anodontoides ferussacianus</i>	Cylindrical Papershell	S1S2	E	
<i>Cordulegaster obliqua</i>	Arrowhead Spiketail	S1S2		
<i>Enallagma antennatum</i>	Rainbow Bluet	S2S3		
<i>Enallagma laterale</i>	New England Bluet	S1		
<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail	S1S2		
<i>Gomphus lividus</i>	Ashy Clubtail	S2S3		
<i>Gomphus quadricolor</i>	Rapids Clubtail	S2		
<i>Lampsilis ovata</i>	Pocketbook	S2	E	
<i>Gomphus adelphus</i>	Moustached Clubtail	S3		
<i>Nehalennia gracilis</i>	Sphagnum Sprite	S3		
<i>Neurocordulia</i>	Stygian Shadowdragon	S3		

Scientific Name	Common Name	Rank	Status	Notes / comments
<i>Lasmigona compressa</i>	Creek Heelsplitter	S2		
<i>Lasmigona costata</i>	Fluted-shell	S2	E	
<i>Leptodea fragilis</i>	Fragile Papershell	S2	E	
<i>Ligumia recta</i>	Black Sandshell	S1	E	
<i>Potamilus alatus</i>	Pink Heelsplitter	S2	E	
<i>Pyganodon grandis</i>	Giant Floater	S2S3	T	
<i>Strophitus undulatus</i>	Creeper	S3		
<b>Terrestrial Community</b>				
Cattail Marsh		S4		
Deep Bulrush Marsh		S4		
Silver Maple-Sensitive Fern		S3		
Mesic Clayplain Forest		S2		Upland. Only impacted if infrastructure expands.
Wild Rice Marsh		S3		

**From:** [Post, Tim \(DEC\)](#)  
**To:** [Kayla Easler](#)  
**Cc:** [Durfey, Lance \(DEC\)](#); [Pinheiro, James M \(DEC\)](#)  
**Subject:** RE: Carver Falls LIHI (FERC No. 11475) info request  
**Date:** Tuesday, August 29, 2017 11:01:35 AM  
**Attachments:** [image002.png](#)  
[image004.png](#)  
[image006.png](#)

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Hi,

Thanks for the information, never heard of LIHI before.

At this point, NYSDEC is still not prepared to draw any conclusions about the operation of the project, and its effects on fish and wildlife. There are rare and threatened species below the project, and we have not completed any kind of review of the population status for these species. We also have not looked at whether spring spawning flows in the bypass (particularly for walleye) are adequate.

Tim Post  
Habitat Manager  
NYSDEC

Hi Tim,

Thank you for your response, I would like to give a little more background on our request. We would like to clarify that this is a LIHI Application and not relicensing. I believe this may be the first New York, application that we have had for LIHI certification. However, we have had many projects in Vermont. The Vermont ANR has been identifying species present and providing a simple review as to whether or not continued use and project operations will negatively affect the identified species or not.

I am not sure if you have dealt with any LIHI application before. If you haven't reviewed any LIHI applications and would like more information here is the link to the LIHI website:  
<http://lowimpacthydro.org/>

It may also be worth while to contact Mike Sales or Shannon Ames:

Michael J. Sale, PhD  
[mjsale@lowimpacthydro.org](mailto:mjsale@lowimpacthydro.org)  
Senior Technical Advisor, Low Impact Hydropower Institute (LIHI)  
Mobile: [865-719-4794](tel:865-719-4794)

Shannon Ames, Executive Director  
[sames@lowimpacthydro.org](mailto:sames@lowimpacthydro.org)  
781.538.4266 office  
617.501.3428 cell

I would be happy to speak with you over the phone if you have any questions or would like to discuss the project further.

Thank you,

Kayla A. Easler  
Regulatory Coordinator  
  
Direct: (207) 416-1271  
[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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**From:** Post, Tim (DEC) [<mailto:tim.post@dec.ny.gov>]  
**Sent:** Monday, August 21, 2017 8:00 AM  
**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>  
**Cc:** Durfey, Lance (DEC) <[lance.durfey@dec.ny.gov](mailto:lance.durfey@dec.ny.gov)>; Pinheiro, James M (DEC) <[james.pinheiro@dec.ny.gov](mailto:james.pinheiro@dec.ny.gov)>  
**Subject:** RE: Carver Falls LIHI (FERC No. 11475) info request

Hi,

Lance forwarded your email to me, I will be the primary NYSDEC Division of Fish and Wildlife contact for this relicensing.

NYSDEC is not prepared to draw any conclusions about the operation of the project, and its effects on fish and wildlife, at this time. We will need to look over any existing data and discuss population status; and then determine if further study is needed to evaluate the status of the populations of rare and threatened species, as well as fish and wildlife resources impacted by the project.

Any questions let me know.

Tim Post  
Habitat Manager  
NYSDEC

Good morning Lance,

I am forwarding you the response that I received from the Natural Heritage for environmental review of the Carver Falls LIHI application project. Could you please do a review of the generated NHP list to confirm that the Project, as it currently operates, continues to not negatively affect any of the currently listed species that may occur within the Project area.

If you have questions please let me know,

Thank you,

Kayla A. Easler  
Regulatory Coordinator

**Kleinschmidt**

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**From:** dec.sm.NaturalHeritage [<mailto:NaturalHeritage@dec.ny.gov>]  
**Sent:** Tuesday, July 11, 2017 5:34 PM  
**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>  
**Subject:** RE: Carver Falls LIHI (FERC No. 11475) info request

Ms. Easler,

In response to your request, please see the attached letter and report of state-listed and rare species in the vicinity of the Carver Falls Dam. We do not have any records of rare bats, peregrine falcon, or lake sturgeon in the vicinity of the Carver Falls Dam

Regarding confirmation that the Project continues to not negatively affect any of the currently listed species that occur within the Project area, the New York Natural Heritage Program is not authorized to officially make such determinations on behalf of NYSDEC. Those determinations are made by the respective NYSDEC Regional Office, in this case the Region 5 office, contact information for which is in the attached report.

Sincerely,

**Nicholas Conrad**

**Information Resources Coordinator**

**New York Natural Heritage Program**

SUNY College of Environmental Science and Forestry

In partnership with NYS Department of Environmental Conservation

625 Broadway

Albany, NY 12233-4757

(518) 402-8935

[www.nynhp.org](http://www.nynhp.org)

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**From:** Kayla Easler [<mailto:Kayla.Easler@KleinschmidtGroup.com>]

**Sent:** Wednesday, June 14, 2017 1:23 PM

**To:** dec.sm.NaturalHeritage <[NaturalHeritage@dec.ny.gov](mailto:NaturalHeritage@dec.ny.gov)>

**Subject:** FW: Carver Falls LIHI (FERC No. 11475) info request

Good afternoon,

This is a request for threatened and endangered species review for the Carver Falls (FERC No. 11475) (LIHI application) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The Project dam is located at the top of the 80-foot drop of Carver Falls, with one abutment on the Vermont shore of the river and the other abutment on the New York side of the river. The powerhouse, several hundred feet downstream of the falls, is on the New York side of the river. The Project impounds a 10-acre reservoir that extends 2400-feet upstream with an elevation of 233.3-feet above mean sea level (msl), and a useable storage capacity of 800,000 cubic feet. The dam is 514-feet-long, with two spillway sections. The northern spillway is 110-feet-long and topped with 6-foot flashboards. The southern spillway is 150-feet-long and topped with 1.5-foot flashboards. The steel penstock is 220-feet-long and 7-feet in diameter. It bifurcates into two 132-foot-long, 3 to 4-foot diameter penstocks. Two steel surge tanks are located approximately 20-feet below the point of bifurcation, one for each penstock. A butterfly valve is located in the 4-foot penstock below the surge tank. Both surge tanks are 44-feet-high and have respective diameters of 72-inches and 48-inches. The bypass reach is 250-feet-long, and includes the bedrock gorge occupied by the falls and the plunge pool at its base. It also includes immediately adjoining areas on the left bank of the river that are presently occupied by the electrical substation and other Project facilities. The powerhouse contains two turbine generating units, one with a capacity of 1,451 kW and the other with a capacity of 800 kW, as well as appurtenant facilities. Project power is transmitted through a 275-foot-long, 2.4-kilovolt transmission line connected to the regional grid.

The Project operates in a run-of-river mode to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Poultney River. When the Project is not operating, all flows are spilled at the dam. GMP provides the following bypassed reach flow release schedule for the preservation of walleye spawning habitat: 18.5 cfs between May 16 - March 31 and 50 cfs between April 1 - May 15 or instantaneous inflow, if less. Bypass conservation flows, except for uncontrolled leakage, is released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods (noted below), any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during

the period November through March. Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway is provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release commences at 9:00am and continues through the daylight hours.

At this time no changes are planned for the project.

Based on an U.S. Fish and Wildlife Service Species List (IPaC) populated on June 8, 2017, the federally endangered Indian bat (*Myotis sodalis*) and the threatened Northern long-eared bat (*Myotis septentrionalis*) may occur within the Project Vicinity. In addition, the bald eagle which was delisted and removed from the federal list of endangered and threatened species in 2007, but still protected under the federal Migratory Bird Treaty Act and Bald and Golden Eagle Act, is considered a potential transient species only. Within the state of Vermont, the Indiana bat, Northern long-eared bat and bald eagle are listed as state endangered species. Within the state of New York, the Indiana bat is listed as state endangered and the Northern long-eared bat and bald eagle are listed as state threatened species.

The peregrine falcon (*Falco peregrines*) was also identified during licensing as occurring on an occasional transient basis around the Project area. Peregrines were removed from Vermont's List in April 2005 but remain listed as an endangered species in New York, with possible breeding habitat in the vicinity of the Project area, although none have been observed there.

Several species of fish are listed as threatened or endangered in Vermont and/or New York including the eastern sand darter, channel darter and lake sturgeon, all of which may be found in the Poultney River within the Project area, downstream of the falls and project dam. In addition, several species of mussels are also listed in one or both states including the black sand shell mussel, giant floater, fluted shell, fragile papershell, and pink heelsplitter, all found downstream of the project's tailrace.

Vermont State Species (<http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229831>)

Eastern sand darter

Channel Darter

Lake Sturgeon

Black sandshell

Giant Floater

Fluted Shell

Fragile Papershell

Pink Heelsplitter

New York State Species (<http://www.dec.ny.gov/animals/7494.html>)

Eastern sand darter

Lake Sturgeon

Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the Project continues to not negatively affect any of the currently listed species that may occur within the Project area?

If you are not the correct contact, please let me know who I should be directing this email. Thank you,

Kayla A. Easler  
Regulatory Coordinator



Direct: (207) 416-1271

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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**From:** dec.sm.fwfish5 [<mailto:fwfish5@dec.ny.gov>]

**Sent:** Wednesday, June 14, 2017 11:57 AM

**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>

**Subject:** RE: Carver Falls LIHI (FERC No. 11475) Environmental Review

Hello Kayla. Threatened and endangered species reviews are handled by our Natural Heritage Program. Details and instructions on how to request Natural Heritage data for a project site are located on our website at:

<http://www.dec.ny.gov/animals/31181.html> .

Thank you.

Lance

## Lance Durfey

Region 5 Fisheries Manager, Division of Fish and Wildlife

### New York State Department of Environmental Conservation

PO Box 296, 1115 Route 86, Ray Brook, NY 12977

P: (518) 897-1290 | F: (518) 897-1370 | [lance.durfey@dec.ny.gov](mailto:lance.durfey@dec.ny.gov)

[www.dec.ny.gov](http://www.dec.ny.gov) |  | 

---

**From:** Kayla Easler [<mailto:Kayla.Easler@KleinschmidtGroup.com>]

**Sent:** Wednesday, June 14, 2017 11:21 AM

**To:** Popp, Bob <[Bob.Popp@vermont.gov](mailto:Bob.Popp@vermont.gov)>; dec.sm.fwfish5 <[fwfish5@dec.ny.gov](mailto:fwfish5@dec.ny.gov)>; Appleton, Tim <[Tim.Appleton@vermont.gov](mailto:Tim.Appleton@vermont.gov)>; McHugh, Peter <[Peter.McHugh@vermont.gov](mailto:Peter.McHugh@vermont.gov)>

**Cc:** Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Subject:** Carver Falls LIHI (FERC No. 11475) Environmental Review

*ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.*

Good afternoon,

This is a request for threatened and endangered species review for the Carver Falls (FERC No.



11475) (LIHI application) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The Project dam is located at the top of the 80-foot drop of Carver Falls, with one abutment on the Vermont shore of the river and the other abutment on the New York side of the river. The powerhouse, several hundred feet downstream of the falls, is on the New York side of the river. The Project impounds a 10-acre reservoir that extends 2400-feet upstream with an elevation of 233.3-feet above mean sea level (msl), and a useable storage capacity of 800,000 cubic feet. The dam is 514-feet-long, with two spillway sections. The northern spillway is 110-feet-long and topped with 6-foot flashboards. The southern spillway is 150-feet-long and topped with 1.5-foot flashboards. The steel penstock is 220-feet-long and 7-feet in diameter. It bifurcates into two 132-foot-long, 3 to 4-foot diameter penstocks. Two steel surge tanks are located approximately 20-feet below the point of bifurcation, one for each penstock. A butterfly valve is located in the 4-foot penstock below the surge tank. Both surge tanks are 44-feet-high and have respective diameters of 72-inches and 48-inches. The bypass reach is 250-feet-long, and includes the bedrock gorge occupied by the falls and the plunge pool at its base. It also includes immediately adjoining areas on the left bank of the river that are presently occupied by the electrical substation and other Project facilities. The powerhouse contains two turbine generating units, one with a capacity of 1,451 kW and the other with a capacity of 800 kW, as well as appurtenant facilities. Project power is transmitted through a 275-foot-long, 2.4-kilovolt transmission line connected to the regional grid.

The Project operates in a run-of-river mode to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Poultney River. When the Project is not operating, all flows are spilled at the dam. GMP provides the following bypassed reach flow release schedule for the preservation of walleye spawning habitat: 18.5 cfs between May 16 - March 31 and 50 cfs between April 1 - May 15 or instantaneous inflow, if less. Bypass conservation flows, except for uncontrolled leakage, is released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods (noted below), any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during the period November through March. Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway is provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release commences at 9:00am and continues through the daylight hours.

At this time no changes are planned for the project.

Based on an U.S. Fish and Wildlife Service Species List (IPaC) populated on June 8, 2017, the federally endangered Indian bat (*Myotis sodalis*) and the threatened Northern long-eared bat (*Myotis septentrionalis*) may occur within the Project Vicinity. In addition, the bald eagle which was delisted and removed from the federal list of endangered and threatened species in 2007, but still protected under the federal Migratory Bird Treaty Act and Bald and Golden Eagle Act, is considered a potential transient species only. Within the state of Vermont, the Indiana bat, Northern long-eared bat and bald eagle are listed as state endangered species. Within the state of New York, the Indiana bat is listed as state endangered and the Northern long-eared bat and bald eagle are listed as state threatened species.

The peregrine falcon (*Falco peregrines*) was also identified during licensing as occurring on an occasional transient basis around the Project area. Peregrines were removed from Vermont's List in April 2005 but remain listed as an endangered species in New York, with possible breeding habitat in the vicinity of the Project area, although none have been observed there.

Several species of fish are listed as threatened or endangered in Vermont and/or New York including the eastern sand darter, channel darter and lake sturgeon, all of which may be found in the Poultney River within the Project area, downstream of the falls and project dam. In addition, several species of mussels are also listed in one or both states including the black sand shell mussel, giant floater, fluted shell, fragile papershell, and pink heelsplitter, all found downstream of the project's tailrace.

[itemId=229831](#))

Eastern sand darter

Channel Darter

Lake Sturgeon

Black sandshell

Giant Floater

Fluted Shell

Fragile Papershell

Pink Heelsplitter

New York State Species (<http://www.dec.ny.gov/animals/7494.html>)

Eastern sand darter

Lake Sturgeon

Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and  
b) review this list to confirm that the Project continues to not negatively affect any of the currently  
listed species that may occur within the Project area?

If you are not the correct contact, please let me know who I should be directing this email. Thank  
you,

Kayla A. Easler  
Regulatory Coordinator

***Kleinschmidt***

Direct: (207) 416-1271

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

*Providing **practical** solutions for **complex** problems affecting energy, water,  
and the environment*

**From:** Katie Sellers  
**To:** ["Davis, Eric"](#)  
**Cc:** ["Greenan, John"](#); [Andy Qua](#); ["Beth Eliason"](#)  
**Subject:** Carver Falls - Operations Data Submission for LIHI Application  
**Date:** Wednesday, October 03, 2018 2:26:00 PM  
**Attachments:** [CarverFalls\\_2011 Turbine Field Test Summary.pdf](#)

---

This message contains attachments delivered via [ShareFile](#).

- 2016-2017 Carver Falls Operations Data\_FINAL.xlsx (16.6 MB)

Download the attachments by [clicking here](#).

Hi Eric,

Kleinschmidt, on behalf of GMP, herein provides one-year (2016-2017) of Carver Falls Hydroelectric Project (FERC No. 11475) operations data via ShareFile for review. This operations dataset is being supplied to the Vermont Department of Environmental Conservation (VDEC) for verification of Project compliance with Water Quality Certificate conditions, as requested for Low Impact Hydropower Institute application review.

The attached 2016-2017 data depicts project generation, headpond level, river flow, and flashboard data to display operations occurring at the Carver Falls Project. As depicted in the spreadsheet cover page, flow data was obtained from USGS gage 04280000 – Poultney River below Fair Haven, VT, located downstream of the Project. Compliant operations are represented well across the dataset. As displayed in the data, flashboards came down on 9/13/2016 and then placed back in on May 17, 2017. The station was shut down throughout August, September, October, and most of November 2016 as there was not enough water flow for generation.

In addition, please find turbine curves from a 2011 Norcan turbine field test summary report attached.

Please note that the attached operational data is considered provisional by GMP, but has been vetted with operations staff. Should you have any questions upon review, please do not hesitate to make contact with John or myself as GMP staff are available to provide background information or further explanation as needed.

Thank you!

Katie

\*To access ShareFile documents, select the "clicking here" link, fill in your name, email, and organization name when prompted (no passwords required). You will then be allowed to download the documents.

**Katie E. Sellers, M.S.**  
**Regulatory Coordinator**  
  
**Office: 207-416-1218**

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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**APPENDIX D**  
**FISH PASSAGE**

**From:** [Davis, Eric](#)  
**To:** [Katie Sellers](#)  
**Cc:** [McHugh, Peter](#)  
**Subject:** RE: Carver Falls FERC No. 11475  
**Date:** Monday, May 21, 2018 12:05:58 PM

---

Hi Katie,

I checked in with our fisheries biologists on this question, but neglected to close the loop with you on this question.

American eel have historically have been able to ascend Carver Falls and access upstream habitat. The Department of Fish and Wildlife has documented eel presence in Lake Bomoseen during both past creel surveys and electrofishing efforts. Lake Bomoseen flows into the Castleton River and then the Poultney River upstream of the dam at Carvers Falls.

Thanks,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>



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**From:** Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>  
**Sent:** Friday, May 04, 2018 3:25 PM  
**To:** Davis, Eric <[Eric.Davis@vermont.gov](mailto:Eric.Davis@vermont.gov)>  
**Subject:** RE: Carver Falls FERC No. 11475

Thanks Eric!

---

**From:** Davis, Eric [<mailto:Eric.Davis@vermont.gov>]  
**Sent:** Friday, May 04, 2018 1:54 PM  
**To:** Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>  
**Subject:** RE: Carver Falls FERC No. 11475

Hi Katie,

I'm checking in with our district fisheries biologists to get a more informed view on that question.

Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>



VERMONT DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
**WATERSHED  
MANAGEMENT DIVISION**  
RIVERS PROGRAM

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---

**From:** Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Sent:** Friday, May 04, 2018 10:18 AM

**To:** Davis, Eric <[Eric.Davis@vermont.gov](mailto:Eric.Davis@vermont.gov)>

**Cc:** McHugh, Peter <[Peter.McHugh@vermont.gov](mailto:Peter.McHugh@vermont.gov)>; Popp, Bob <[Bob.Popp@vermont.gov](mailto:Bob.Popp@vermont.gov)>; Marshall, Everett <[Everett.Marshall@vermont.gov](mailto:Everett.Marshall@vermont.gov)>; Appleton, Tim <[Tim.Appleton@vermont.gov](mailto:Tim.Appleton@vermont.gov)>; Mackenzie, Chet <[Chet.Mackenzie@vermont.gov](mailto:Chet.Mackenzie@vermont.gov)>

**Subject:** RE: Carver Falls FERC No. 11475

Hi Eric et al., We are currently finalizing the LIHI application for Carver Falls. In LIHI's review of the draft application, they asked that we follow up with you regarding American eel presence. Could you weigh in on whether or not eel are believed to have historically been able to ascend Carver Falls and access upstream habitat?

Thank you

Katie

**Katie E. Sellers, M.S.**

Regulatory Coordinator

***Kleinschmidt***

Office: 207-416-1218

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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---

**From:** Davis, Eric [<mailto:Eric.Davis@vermont.gov>]

**Sent:** Friday, July 14, 2017 10:43 AM

**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>; Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Cc:** McHugh, Peter <[Peter.McHugh@vermont.gov](mailto:Peter.McHugh@vermont.gov)>; Popp, Bob <[Bob.Popp@vermont.gov](mailto:Bob.Popp@vermont.gov)>; Marshall, Everett <[Everett.Marshall@vermont.gov](mailto:Everett.Marshall@vermont.gov)>; Appleton, Tim <[Tim.Appleton@vermont.gov](mailto:Tim.Appleton@vermont.gov)>; Mackenzie, Chet <[Chet.Mackenzie@vermont.gov](mailto:Chet.Mackenzie@vermont.gov)>

**Subject:** RE: Carver Falls FERC No. 11475

Hi Kayla,

The Agency has reviewed our records for the Carver Falls Project and provides the following information regarding water quality and rare, threatened, and endangered species requested by Kleinschmidt to develop a complete LIHI application.

Water Quality

-

*Per the State of Vermont 2016 303(d) List of Impaired Waters and the State of New York 2016 Section 303(d) List of Impaired Waters, the Poultney River is not listed as an impaired waterway.*

*Could you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations?*

The Agency has reviewed its 2016 list of Priority Surface Waters. A 10.4 mile stretch from its mouth upstream to Carvers Falls is listed on Part D, waters that are assessed as impaired and have a completed and EPA-approved TMDL, due to elevated levels of Mercury in Walleye. Additionally, discrete portions of the Lower Poultney (below the Castleton River) are listed on Part E, waters altered by aquatic invasive species, due to locally abundant Water Chestnut growth.

I can confirm that the current operations of the project are not a contributing cause to the listing of portions of the Poultney River as priority waters for management action.

Rare, Threatened and Endangered Species

-

*Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the Project continues to not negatively affect any of the currently listed species that may occur within the Project area?*

Vermont State Species (<http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229831>)

*Eastern sand darter*

*Channel Darter*

*Lake Sturgeon*

*Black sandshell*

*Giant Floater*

*Fluted Shell*

*Fragile Papershell*

*Pink Heelsplitter*

Our Natural Heritage Program and Fish and district staff have reviewed the provided list, as well as other recent records for RTE species in the project area. An updated version of RT&E species is provided in the attached table, which differs in a few key areas. (1) We believe that the Lake Sturgeon should not be included in the list given that there are no known instances (recent or



historic) of these fish in the Poultney River. (2) We note that there are several vertebrate, invertebrate, and plant species in the project-affected area that weren't included in the previous application's list; this may be due to different search area being used in the current vs. the former compilation. Here, we include impounded area immediately upstream of the falls/dam and the Poultney downstream to the bridge at Book Rd. in West Haven. We also consider upland species within the project's vicinity, given that they may be susceptible to project impacts if/when facility maintenance necessitates activity in these areas (see caveats noting that impacts should be negligible in the absence of such work).

Beyond updating the list, the biologists associated with this review concurred that the project should continue to negligibly impact these species if it is operated according to the conditions specified in its 401 Water Quality Certificate, particularly those specifying a run-of-river regime. However, deviations from run-of-river operations, have the potential to adversely affect several of the species listed here.

-  
Formal Application Review

-  
The Agency hopes the input above assists you in developing a complete LIHI application. As you know the Agency's review of LIHI applications has evolved, and the Agency has now developed a practice of requesting one year of project operations records to review for compliance with certification conditions in order to provide meaningful input into the LIHI review process.

In addition to the Agency's standard practice, the 2012 LIHI review (attached) noted some issues with flow monitoring and management at the Project. Recent reviews of gage data continue to highlight flow management as a potential concern. Given this history, the Agency thought it may be beneficial to flag this as an information need as early as possible, so that the parties can begin to discuss the data before the application goes out for comment.

Please let me know if you have additional questions,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>  
(Please note my new e-mail address, effective July 27, 2015)



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---

**From:** Davis, Eric

**Sent:** Thursday, June 15, 2017 10:17 AM

**To:** 'Kayla Easler' <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>; Katie Sellers

<[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Cc:** McHugh, Peter <[Peter.McHugh@vermont.gov](mailto:Peter.McHugh@vermont.gov)>; Popp, Bob <[Bob.Popp@vermont.gov](mailto:Bob.Popp@vermont.gov)>; Marshall, Everett <[Everett.Marshall@vermont.gov](mailto:Everett.Marshall@vermont.gov)>; Appleton, Tim <[Tim.Appleton@vermont.gov](mailto:Tim.Appleton@vermont.gov)>

**Subject:** RE: Carver Falls FERC No. 11475

Good morning Kayla,

The Departments of Fish and Wildlife and Environmental Conservation have received Kleinschmidt's request for rare, threatened, and endangered species and water quality information for the Craver's Falls project to further the development of a complete LIHI application. The Departments will develop an Agency response and provide the requested information to Kleinschmidt.

Thanks,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>  
(Please note my new e-mail address, effective July 27, 2015)



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---

**From:** Kayla Easler [<mailto:Kayla.Easler@KleinschmidtGroup.com>]

**Sent:** Wednesday, June 14, 2017 11:32 AM

**To:** Davis, Eric <[Eric.Davis@vermont.gov](mailto:Eric.Davis@vermont.gov)>; [fwfish5@dec.ny.gov](mailto:fwfish5@dec.ny.gov)

**Cc:** Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Subject:** Carver Falls FERC No. 11475

Good morning,

The following is a request for review of water quality resources for the LIHI re-certification application for Green Mountain Power: Carver Falls Hydroelectric Project (FERC No. 11475) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The LIHI application asks that we gain your feedback on the following water quality information:

Per the State of Vermont 2016 303(d) List of Impaired Waters and the State of New York 2016 Section 303(d) List of Impaired Waters, the Poultney River is not listed as an impaired waterway.

Could you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations?

When you have a moment to review, could you please provide us with your feedback on this topic?

Best,

Kayla A. Easler  
Regulatory Coordinator



Direct: (207) 416-1271

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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## **APPENDIX E**

### **THREATENED AND ENDANGERED SPECIES**



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5094  
Phone: (603) 223-2541 Fax: (603) 223-0104  
<http://www.fws.gov/newengland>



In Reply Refer To:

June 08, 2017

Consultation Code: 05E1NE00-2017-SLI-0694

Event Code: 05E1NE00-2017-E-03955

Project Name: Carver Falls for LIHI Re-Certification

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

## Official Species List

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

This species list is provided by:

**New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office:

**New York Ecological Services Field Office**

3817 Luker Road

Cortland, NY 13045-9349

(607) 753-9334

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## Project Summary

Consultation Code: 05E1NE00-2017-SLI-0694

Event Code: 05E1NE00-2017-E-03955

Project Name: Carver Falls for LIHI Re-Certification

Project Type: DAM

Project Description: Carver Falls Hydroelectric Project applying for recertification from LIHI

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/43.62497609150006N73.30244919814331W>



Counties: Washington, NY | Rutland, VT

## Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

---

## Mammals

NAME	STATUS
Indiana Bat ( <i>Myotis sodalis</i> ) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a>	Endangered
Northern Long-eared Bat ( <i>Myotis septentrionalis</i> ) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Critical habitats

There are no critical habitats within your project area.

---



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

New York Ecological Services Field Office

3817 Luker Road

Cortland, NY 13045-9349

Phone: (607) 753-9334 Fax: (607) 753-9699

<http://www.fws.gov/northeast/nyfo/es/section7.htm>



In Reply Refer To:

June 08, 2017

Consultation Code: 05E1NY00-2017-SLI-0829

Event Code: 05E1NY00-2017-E-07130

Project Name: Carver Falls for LIHI Re-Certification

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: <http://www.fws.gov/northeast/nyfo/es/section7.htm>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (

[http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the Services wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

# Official Species List

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

This species list is provided by:

**New York Ecological Services Field Office**

3817 Luker Road

Cortland, NY 13045-9349

(607) 753-9334

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office:

**New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

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## Project Summary

Consultation Code: 05E1NY00-2017-SLI-0829

Event Code: 05E1NY00-2017-E-07130

Project Name: Carver Falls for LIHI Re-Certification

Project Type: DAM

Project Description: Carver Falls Hydroelectric Project applying for recertification from LIHI

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/43.62497609150006N73.30244919814331W>



Counties: Washington, NY | Rutland, VT

## Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

---

## Mammals

NAME	STATUS
Indiana Bat ( <i>Myotis sodalis</i> ) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a>	Endangered
Northern Long-eared Bat ( <i>Myotis septentrionalis</i> ) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Critical habitats

There are no critical habitats within your project area.

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**From:** [Davis, Eric](#)  
**To:** [Kayla Easler](#); [Katie Sellers](#)  
**Cc:** [McHugh, Peter](#); [Popp, Bob](#); [Marshall, Everett](#); [Appleton, Tim](#); [Mackenzie, Chet](#)  
**Subject:** RE: Carver Falls FERC No. 11475  
**Date:** Friday, July 14, 2017 10:43:01 AM  
**Attachments:** [Carver Falls RTE List.pdf](#)  
[Carver Falls LIHI Comments.pdf](#)

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Hi Kayla,

The Agency has reviewed our records for the Carver Falls Project and provides the following information regarding water quality and rare, threatened, and endangered species requested by Kleinschmidt to develop a complete LIHI application.

#### Water Quality

-

*Per the State of Vermont 2016 303(d) List of Impaired Waters and the State of New York 2016 Section 303(d) List of Impaired Waters, the Poultney River is not listed as an impaired waterway.*

*Could you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations?*

The Agency has reviewed its 2016 list of Priority Surface Waters. A 10.4 mile stretch from its mouth upstream to Carvers Falls is listed on Part D, waters that are assessed as impaired and have a completed and EPA-approved TMDL, due to elevated levels of Mercury in Walleye. Additionally, discrete portions of the Lower Poultney (below the Castleton River) are listed on Part E, waters altered by aquatic invasive species, due to locally abundant Water Chestnut growth.

I can confirm that the current operations of the project are not a contributing cause to the listing of portions of the Poultney River as priority waters for management action.

#### Rare, Threatened and Endangered Species

-

*Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the Project continues to not negatively affect any of the currently listed species that may occur within the Project area?*

*Vermont State Species (<http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229831>)*

*Eastern sand darter*

*Channel Darter*

*Lake Sturgeon*

*Black sandshell*

*Giant Floater*

*Fluted Shell*

*Fragile Papershell*

*Pink Heelsplitter*

Our Natural Heritage Program and Fish and district staff have reviewed the provided list, as well as other recent records for RTE species in the project area. An updated version of RT&E species is provided in the attached table, which differs in a few key areas. (1) We believe that the Lake Sturgeon should not be included in the list given that there are no known instances (recent or historic) of these fish in the Poultney River. (2) We note that there are several vertebrate, invertebrate, and plant species in the project-affected area that weren't included in the previous application's list; this may be due to different search area being used in the current vs. the former compilation. Here, we include impounded area immediately upstream of the falls/dam and the Poultney downstream to the bridge at Book Rd. in West Haven. We also consider upland species within the project's vicinity, given that they may be susceptible to project impacts if/when facility maintenance necessitates activity in these areas (see caveats noting that impacts should be negligible in the absence of such work).

Beyond updating the list, the biologists associated with this review concurred that the project should continue to negligibly impact these species if it is operated according to the conditions specified in its 401 Water Quality Certificate, particularly those specifying a run-of-river regime. However, deviations from run-of-river operations, have the potential to adversely affect several of the species listed here.

-  
Formal Application Review

-  
The Agency hopes the input above assists you in developing a complete LIHI application. As you know the Agency's review of LIHI applications has evolved, and the Agency has now developed a practice of requesting one year of project operations records to review for compliance with certification conditions in order to provide meaningful input into the LIHI review process.

In addition to the Agency's standard practice, the 2012 LIHI review (attached) noted some issues with flow monitoring and management at the Project. Recent reviews of gage data continue to highlight flow management as a potential concern. Given this history, the Agency thought it may be beneficial to flag this as an information need as early as possible, so that the parties can begin to discuss the data before the application goes out for comment.

Please let me know if you have additional questions,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>  
(Please note my new e-mail address, effective July 27, 2015)



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---

**From:** Davis, Eric

**Sent:** Thursday, June 15, 2017 10:17 AM

**To:** 'Kayla Easler' <Kayla.Easler@KleinschmidtGroup.com>; Katie Sellers  
<Katie.Sellers@KleinschmidtGroup.com>

**Cc:** McHugh, Peter <Peter.McHugh@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>; Marshall,  
Everett <Everett.Marshall@vermont.gov>; Appleton, Tim <Tim.Appleton@vermont.gov>

**Subject:** RE: Carver Falls FERC No. 11475

Good morning Kayla,

The Departments of Fish and Wildlife and Environmental Conservation have received Kleinschmidt's request for rare, threatened, and endangered species and water quality information for the Craver's Falls project to further the development of a complete LIHI application. The Departments will develop an Agency response and provide the requested information to Kleinschmidt.

Thanks,  
Eric

**Eric Davis, River Ecologist**

1 National Life Drive, Main 2  
Montpelier, VT 05620-3522  
802-490-6180 / [eric.davis@vermont.gov](mailto:eric.davis@vermont.gov)  
<http://www.watershedmanagement.vt.gov/rivers>  
(Please note my new e-mail address, effective July 27, 2015)



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---

**From:** Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]

**Sent:** Wednesday, June 14, 2017 11:32 AM

**To:** Davis, Eric <Eric.Davis@vermont.gov>; fwfish5@dec.ny.gov

**Cc:** Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>

**Subject:** Carver Falls FERC No. 11475

Good morning,

The following is a request for review of water quality resources for the LIHI re-certification application for Green Mountain Power: Carver Falls Hydroelectric Project (FERC No. 11475) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The LIHI application asks that we gain your feedback on the following water quality information:

Per the State of Vermont 2016 303(d) List of Impaired Waters and the State of New York 2016 Section 303(d) List of Impaired Waters, the Poultney River is not listed as an impaired waterway.

Could you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations?

When you have a moment to review, could you please provide us with your feedback on this topic?

Best,

Kayla A. Easler  
Regulatory Coordinator

The logo for Kleinschmidt, featuring the word "Kleinschmidt" in a stylized blue font with a green underline.

Direct: (207) 416-1271

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**Carver Falls LIHI Review  
RTE Species List**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Rank</b>	<b>Status</b>	<b>Notes / comments</b>
<b>Vascular Plant</b>				
<i>Arisaema dracontium</i>	Green Dragon	S2	T	
<i>Peltandra virginica</i>	Arrowleaf	S2S3		
<i>Carya glabra</i>	Pignut hickory	S2		Upland. Only impacted if infrastructure expands.
<i>Eutrochium purpureum</i>	Upland Joe Pye weed	S2S3		Upland. Only impacted if infrastructure expands.
<b>Vertebrate Animal</b>				
<i>Ammocrypta pellucida</i>	Eastern Sand Darter	S1	T	
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	S2?	SC	
<i>Ixobrychus exilis</i>	Least Bittern	S2B	SC	
<i>Moxostoma anisurum</i>	Silver Redhorse	S2	SC	
<i>Moxostoma macrolepidotum</i>	Shorthead Redhorse	S2		
<i>Myotis sodalis</i>	Indiana Bat	S1	E	
<i>Necturus maculosus</i>	Mudpuppy	S2	SC	
<i>Notropis bifrenatus</i>	Bridle Shiner	S1?	SC	
<i>Notropis heterodon</i>	Blackchin Shiner	S1	SC	
<i>Notropis rubellus</i>	Rosyface Shiner	S3		
<i>Percina copelandi</i>	Channel Darter	S1	E	
<i>Sternotherus odoratus</i>	Eastern Musk Turtle	S2	SC	
<i>Thamnophis sauritus</i>	Eastern Ribbonsnake	S2	SC	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	S1	E	VDFW should be notified if nesting documented on property
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	S1	E (Fed T)	Impacts unlikely unless tree cutting occurs.
<i>Myotis sodalis</i>	Indiana Bat	S1	E (Fed E)	Impacts unlikely unless tree cutting occurs.
<b>Invertebrate Animal</b>				
<i>Anodontoides ferussacianus</i>	Cylindrical Papershell	S1S2	E	
<i>Cordulegaster obliqua</i>	Arrowhead Spiketail	S1S2		
<i>Enallagma antennatum</i>	Rainbow Bluet	S2S3		
<i>Enallagma laterale</i>	New England Bluet	S1		
<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail	S1S2		
<i>Gomphus lividus</i>	Ashy Clubtail	S2S3		
<i>Gomphus quadricolor</i>	Rapids Clubtail	S2		
<i>Lampsilis ovata</i>	Pocketbook	S2	E	
<i>Gomphus adelphus</i>	Moustached Clubtail	S3		
<i>Nehalennia gracilis</i>	Sphagnum Sprite	S3		
<i>Neurocordulia</i>	Stygian Shadowdragon	S3		

Scientific Name	Common Name	Rank	Status	Notes / comments
<i>Lasmigona compressa</i>	Creek Heelsplitter	S2		
<i>Lasmigona costata</i>	Fluted-shell	S2	E	
<i>Leptodea fragilis</i>	Fragile Papershell	S2	E	
<i>Ligumia recta</i>	Black Sandshell	S1	E	
<i>Potamilus alatus</i>	Pink Heelsplitter	S2	E	
<i>Pyganodon grandis</i>	Giant Floater	S2S3	T	
<i>Strophitus undulatus</i>	Creeper	S3		
<b>Terrestrial Community</b>				
Cattail Marsh		S4		
Deep Bulrush Marsh		S4		
Silver Maple-Sensitive Fern		S3		
Mesic Clayplain Forest		S2		Upland. Only impacted if infrastructure expands.
Wild Rice Marsh		S3		

# NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program  
625 Broadway, Fifth Floor, Albany, NY 12233-4757  
P: (518) 402-8935 | F: (518) 402-8925  
[www.dec.ny.gov](http://www.dec.ny.gov)

July 11, 2017

Kayla A. Easler  
Kleinschmidt

Re: Carver Falls (FERC No. 11475) (LIHI application)  
County: Washington    Town/City: Hampton

Dear Ms. Easler:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the state-listed animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 5 Office, Division of Environmental Permits, as listed at [www.dec.ny.gov/about/39381.html](http://www.dec.ny.gov/about/39381.html).

Sincerely,



Nicholas Conrad  
Information Resources Coordinator  
New York Natural Heritage Program



**The following state-listed and rare animals and plants have been documented  
in the vicinity of the Carver Falls Dam.**

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing. The list also includes other rare animals and plants found with the listed species.

**For information about any permit considerations for the project, contact the Permits staff at the NYSDEC Region 5 Office, [dep.r5@dec.ny.gov](mailto:dep.r5@dec.ny.gov), (518) 897-1234. For information about potential impacts of the project on these species, and how to avoid, minimize, or mitigate any impacts, contact the Fisheries Manager, [fwfish5@dec.ny.gov](mailto:fwfish5@dec.ny.gov), (518) 897-1290.**

**The following species have been documented in the Poultney River within .5 mile downstream of Carver Falls Dam.**

COMMON NAME	SCIENTIFIC NAME	NY STATE LISTING	
<b>Fish</b>			
<b>Eastern Sand Darter</b>	<i>Ammocrypta pellucida</i>	Threatened	5474
<b>Freshwater Mussels</b>			
<b>Fragile Papershell</b>	<i>Leptodea fragilis</i>	Unlisted	3173
<b>Pink Heelsplitter</b>	<i>Potamilus alatus</i>	Unlisted	6328
<b>Dragonflies and Damselflies</b>			
<b>Rapids Clubtail</b>	<i>Gomphus quadricolor</i>	Unlisted	14544
<b>Plants</b>			
<b>Meadow Horsetail</b>	<i>Equisetum pratense</i>	Threatened	
Poultney River, 1992: A steep slumping clay bank next to the river. Plants growing up through a more stable moss-covered section of the bank with other horsetails.			4990

**While some animals in the above list are not listed by New York State as Endangered or Threatened, they are considered rare by the New York Natural Heritage Program, and are of conservation concern to the state.**

This report only includes records from the NY Natural Heritage database.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at [www.guides.nynhp.org](http://www.guides.nynhp.org).



**From:** [Post, Tim \(DEC\)](#)  
**To:** [Kayla Easler](#)  
**Cc:** [Durfey, Lance \(DEC\)](#); [Pinheiro, James M \(DEC\)](#)  
**Subject:** RE: Carver Falls LIHI (FERC No. 11475) info request  
**Date:** Tuesday, August 29, 2017 11:01:35 AM  
**Attachments:** [image002.png](#)  
[image004.png](#)  
[image006.png](#)

---

Hi,

Thanks for the information, never heard of LIHI before.

At this point, NYSDEC is still not prepared to draw any conclusions about the operation of the project, and its effects on fish and wildlife. There are rare and threatened species below the project, and we have not completed any kind of review of the population status for these species. We also have not looked at whether spring spawning flows in the bypass (particularly for walleye) are adequate.

Tim Post  
Habitat Manager  
NYSDEC

Hi Tim,

Thank you for your response, I would like to give a little more background on our request. We would like to clarify that this is a LIHI Application and not relicensing. I believe this may be the first New York, application that we have had for LIHI certification. However, we have had many projects in Vermont. The Vermont ANR has been identifying species present and providing a simple review as to whether or not continued use and project operations will negatively affect the identified species or not.

I am not sure if you have dealt with any LIHI application before. If you haven't reviewed any LIHI applications and would like more information here is the link to the LIHI website:  
<http://lowimpacthydro.org/>

It may also be worth while to contact Mike Sales or Shannon Ames:

Michael J. Sale, PhD  
[mjsale@lowimpacthydro.org](mailto:mjsale@lowimpacthydro.org)  
Senior Technical Advisor, Low Impact Hydropower Institute (LIHI)  
Mobile: [865-719-4794](tel:865-719-4794)

Shannon Ames, Executive Director  
[sames@lowimpacthydro.org](mailto:sames@lowimpacthydro.org)  
781.538.4266 office  
617.501.3428 cell

I would be happy to speak with you over the phone if you have any questions or would like to discuss the project further.

Thank you,

Kayla A. Easler  
Regulatory Coordinator  
  
Direct: (207) 416-1271  
[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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*and the environment*

---

**From:** Post, Tim (DEC) [<mailto:tim.post@dec.ny.gov>]  
**Sent:** Monday, August 21, 2017 8:00 AM  
**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>  
**Cc:** Durfey, Lance (DEC) <[lance.durfey@dec.ny.gov](mailto:lance.durfey@dec.ny.gov)>; Pinheiro, James M (DEC) <[james.pinheiro@dec.ny.gov](mailto:james.pinheiro@dec.ny.gov)>  
**Subject:** RE: Carver Falls LIHI (FERC No. 11475) info request

Hi,

Lance forwarded your email to me, I will be the primary NYSDEC Division of Fish and Wildlife contact for this relicensing.

NYSDEC is not prepared to draw any conclusions about the operation of the project, and its effects on fish and wildlife, at this time. We will need to look over any existing data and discuss population status; and then determine if further study is needed to evaluate the status of the populations of rare and threatened species, as well as fish and wildlife resources impacted by the project.

Any questions let me know.

Tim Post  
Habitat Manager  
NYSDEC

Good morning Lance,

I am forwarding you the response that I received from the Natural Heritage for environmental review of the Carver Falls LIHI application project. Could you please do a review of the generated NHP list to confirm that the Project, as it currently operates, continues to not negatively affect any of the currently listed species that may occur within the Project area.

If you have questions please let me know,

Thank you,

Kayla A. Easler  
Regulatory Coordinator

**Kleinschmidt**

Direct: (207) 416-1271

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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---

**From:** dec.sm.NaturalHeritage [<mailto:NaturalHeritage@dec.ny.gov>]  
**Sent:** Tuesday, July 11, 2017 5:34 PM  
**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>  
**Subject:** RE: Carver Falls LIHI (FERC No. 11475) info request

Ms. Easler,

In response to your request, please see the attached letter and report of state-listed and rare species in the vicinity of the Carver Falls Dam. We do not have any records of rare bats, peregrine falcon, or lake sturgeon in the vicinity of the Carver Falls Dam

Regarding confirmation that the Project continues to not negatively affect any of the currently listed species that occur within the Project area, the New York Natural Heritage Program is not authorized to officially make such determinations on behalf of NYSDEC. Those determinations are made by the respective NYSDEC Regional Office, in this case the Region 5 office, contact information for which is in the attached report.

Sincerely,

**Nicholas Conrad**

**Information Resources Coordinator**

**New York Natural Heritage Program**

SUNY College of Environmental Science and Forestry

In partnership with NYS Department of Environmental Conservation

625 Broadway

Albany, NY 12233-4757

(518) 402-8935

[www.nynhp.org](http://www.nynhp.org)

---

**From:** Kayla Easler [<mailto:Kayla.Easler@KleinschmidtGroup.com>]

**Sent:** Wednesday, June 14, 2017 1:23 PM

**To:** dec.sm.NaturalHeritage <[NaturalHeritage@dec.ny.gov](mailto:NaturalHeritage@dec.ny.gov)>

**Subject:** FW: Carver Falls LIHI (FERC No. 11475) info request

Good afternoon,

This is a request for threatened and endangered species review for the Carver Falls (FERC No. 11475) (LIHI application) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The Project dam is located at the top of the 80-foot drop of Carver Falls, with one abutment on the Vermont shore of the river and the other abutment on the New York side of the river. The powerhouse, several hundred feet downstream of the falls, is on the New York side of the river. The Project impounds a 10-acre reservoir that extends 2400-feet upstream with an elevation of 233.3-feet above mean sea level (msl), and a useable storage capacity of 800,000 cubic feet. The dam is 514-feet-long, with two spillway sections. The northern spillway is 110-feet-long and topped with 6-foot flashboards. The southern spillway is 150-feet-long and topped with 1.5-foot flashboards. The steel penstock is 220-feet-long and 7-feet in diameter. It bifurcates into two 132-foot-long, 3 to 4-foot diameter penstocks. Two steel surge tanks are located approximately 20-feet below the point of bifurcation, one for each penstock. A butterfly valve is located in the 4-foot penstock below the surge tank. Both surge tanks are 44-feet-high and have respective diameters of 72-inches and 48-inches. The bypass reach is 250-feet-long, and includes the bedrock gorge occupied by the falls and the plunge pool at its base. It also includes immediately adjoining areas on the left bank of the river that are presently occupied by the electrical substation and other Project facilities. The powerhouse contains two turbine generating units, one with a capacity of 1,451 kW and the other with a capacity of 800 kW, as well as appurtenant facilities. Project power is transmitted through a 275-foot-long, 2.4-kilovolt transmission line connected to the regional grid.

The Project operates in a run-of-river mode to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Poultney River. When the Project is not operating, all flows are spilled at the dam. GMP provides the following bypassed reach flow release schedule for the preservation of walleye spawning habitat: 18.5 cfs between May 16 - March 31 and 50 cfs between April 1 - May 15 or instantaneous inflow, if less. Bypass conservation flows, except for uncontrolled leakage, is released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods (noted below), any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during

the period November through March. Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway is provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release commences at 9:00am and continues through the daylight hours.

At this time no changes are planned for the project.

Based on an U.S. Fish and Wildlife Service Species List (IPaC) populated on June 8, 2017, the federally endangered Indian bat (*Myotis sodalis*) and the threatened Northern long-eared bat (*Myotis septentrionalis*) may occur within the Project Vicinity. In addition, the bald eagle which was delisted and removed from the federal list of endangered and threatened species in 2007, but still protected under the federal Migratory Bird Treaty Act and Bald and Golden Eagle Act, is considered a potential transient species only. Within the state of Vermont, the Indiana bat, Northern long-eared bat and bald eagle are listed as state endangered species. Within the state of New York, the Indiana bat is listed as state endangered and the Northern long-eared bat and bald eagle are listed as state threatened species.

The peregrine falcon (*Falco peregrines*) was also identified during licensing as occurring on an occasional transient basis around the Project area. Peregrines were removed from Vermont's List in April 2005 but remain listed as an endangered species in New York, with possible breeding habitat in the vicinity of the Project area, although none have been observed there.

Several species of fish are listed as threatened or endangered in Vermont and/or New York including the eastern sand darter, channel darter and lake sturgeon, all of which may be found in the Poultney River within the Project area, downstream of the falls and project dam. In addition, several species of mussels are also listed in one or both states including the black sand shell mussel, giant floater, fluted shell, fragile papershell, and pink heelsplitter, all found downstream of the project's tailrace.

Vermont State Species (<http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229831>)

Eastern sand darter

Channel Darter

Lake Sturgeon

Black sandshell

Giant Floater

Fluted Shell

Fragile Papershell

Pink Heelsplitter

New York State Species (<http://www.dec.ny.gov/animals/7494.html>)

Eastern sand darter

Lake Sturgeon

Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the Project continues to not negatively affect any of the currently listed species that may occur within the Project area?

If you are not the correct contact, please let me know who I should be directing this email. Thank you,

Kayla A. Easler  
Regulatory Coordinator



Direct: (207) 416-1271

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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---

**From:** dec.sm.fwfish5 [<mailto:fwfish5@dec.ny.gov>]

**Sent:** Wednesday, June 14, 2017 11:57 AM

**To:** Kayla Easler <[Kayla.Easler@KleinschmidtGroup.com](mailto:Kayla.Easler@KleinschmidtGroup.com)>

**Subject:** RE: Carver Falls LIHI (FERC No. 11475) Environmental Review

Hello Kayla. Threatened and endangered species reviews are handled by our Natural Heritage Program. Details and instructions on how to request Natural Heritage data for a project site are located on our website at:

<http://www.dec.ny.gov/animals/31181.html> .

Thank you.

Lance

## Lance Durfey

Region 5 Fisheries Manager, Division of Fish and Wildlife

### New York State Department of Environmental Conservation

PO Box 296, 1115 Route 86, Ray Brook, NY 12977

P: (518) 897-1290 | F: (518) 897-1370 | [lance.durfey@dec.ny.gov](mailto:lance.durfey@dec.ny.gov)

[www.dec.ny.gov](http://www.dec.ny.gov) |  | 

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**From:** Kayla Easler [<mailto:Kayla.Easler@KleinschmidtGroup.com>]

**Sent:** Wednesday, June 14, 2017 11:21 AM

**To:** Popp, Bob <[Bob.Popp@vermont.gov](mailto:Bob.Popp@vermont.gov)>; dec.sm.fwfish5 <[fwfish5@dec.ny.gov](mailto:fwfish5@dec.ny.gov)>; Appleton, Tim <[Tim.Appleton@vermont.gov](mailto:Tim.Appleton@vermont.gov)>; McHugh, Peter <[Peter.McHugh@vermont.gov](mailto:Peter.McHugh@vermont.gov)>

**Cc:** Katie Sellers <[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Subject:** Carver Falls LIHI (FERC No. 11475) Environmental Review

*ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.*

Good afternoon,

This is a request for threatened and endangered species review for the Carver Falls (FERC No.

11475) (LIHI application) located on the Poultney River in the Town of Hampton, Washington County, New York and the Towns of Fair Haven and West Haven, Rutland County, Vermont.

The Project dam is located at the top of the 80-foot drop of Carver Falls, with one abutment on the Vermont shore of the river and the other abutment on the New York side of the river. The powerhouse, several hundred feet downstream of the falls, is on the New York side of the river. The Project impounds a 10-acre reservoir that extends 2400-feet upstream with an elevation of 233.3-feet above mean sea level (msl), and a useable storage capacity of 800,000 cubic feet. The dam is 514-feet-long, with two spillway sections. The northern spillway is 110-feet-long and topped with 6-foot flashboards. The southern spillway is 150-feet-long and topped with 1.5-foot flashboards. The steel penstock is 220-feet-long and 7-feet in diameter. It bifurcates into two 132-foot-long, 3 to 4-foot diameter penstocks. Two steel surge tanks are located approximately 20-feet below the point of bifurcation, one for each penstock. A butterfly valve is located in the 4-foot penstock below the surge tank. Both surge tanks are 44-feet-high and have respective diameters of 72-inches and 48-inches. The bypass reach is 250-feet-long, and includes the bedrock gorge occupied by the falls and the plunge pool at its base. It also includes immediately adjoining areas on the left bank of the river that are presently occupied by the electrical substation and other Project facilities. The powerhouse contains two turbine generating units, one with a capacity of 1,451 kW and the other with a capacity of 800 kW, as well as appurtenant facilities. Project power is transmitted through a 275-foot-long, 2.4-kilovolt transmission line connected to the regional grid.

The Project operates in a run-of-river mode to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Poultney River. When the Project is not operating, all flows are spilled at the dam. GMP provides the following bypassed reach flow release schedule for the preservation of walleye spawning habitat: 18.5 cfs between May 16 - March 31 and 50 cfs between April 1 - May 15 or instantaneous inflow, if less. Bypass conservation flows, except for uncontrolled leakage, is released as full crest spillage over the south spillway section. Except during the aesthetic flow release periods (noted below), any portion of the flow that would exceed 1.0 inch of spillage may be routed through a gate. The full crest spillage requirement does not apply during the period November through March. Aesthetics flow releases consisting of no less than 2.5 inches of spillage (or inflow, if less) over the south spillway is provided on Memorial Day, Independence Day, Labor Day, Columbus Day and every Sunday during the months of July and August. The flow release commences at 9:00am and continues through the daylight hours.

At this time no changes are planned for the project.

Based on an U.S. Fish and Wildlife Service Species List (IPaC) populated on June 8, 2017, the federally endangered Indian bat (*Myotis sodalis*) and the threatened Northern long-eared bat (*Myotis septentrionalis*) may occur within the Project Vicinity. In addition, the bald eagle which was delisted and removed from the federal list of endangered and threatened species in 2007, but still protected under the federal Migratory Bird Treaty Act and Bald and Golden Eagle Act, is considered a potential transient species only. Within the state of Vermont, the Indiana bat, Northern long-eared bat and bald eagle are listed as state endangered species. Within the state of New York, the Indiana bat is listed as state endangered and the Northern long-eared bat and bald eagle are listed as state threatened species.

The peregrine falcon (*Falco peregrines*) was also identified during licensing as occurring on an occasional transient basis around the Project area. Peregrines were removed from Vermont's List in April 2005 but remain listed as an endangered species in New York, with possible breeding habitat in the vicinity of the Project area, although none have been observed there.

Several species of fish are listed as threatened or endangered in Vermont and/or New York including the eastern sand darter, channel darter and lake sturgeon, all of which may be found in the Poultney River within the Project area, downstream of the falls and project dam. In addition, several species of mussels are also listed in one or both states including the black sand shell mussel, giant floater, fluted shell, fragile papershell, and pink heelsplitter, all found downstream of the project's tailrace.

[itemId=229831](#))

Eastern sand darter

Channel Darter

Lake Sturgeon

Black sandshell

Giant Floater

Fluted Shell

Fragile Papershell

Pink Heelsplitter

New York State Species (<http://www.dec.ny.gov/animals/7494.html>)

Eastern sand darter

Lake Sturgeon

Could you a) review the list to make sure it is accurate and/or suggest updates as appropriate; and  
b) review this list to confirm that the Project continues to not negatively affect any of the currently  
listed species that may occur within the Project area?

If you are not the correct contact, please let me know who I should be directing this email. Thank  
you,

Kayla A. Easler  
Regulatory Coordinator

**Kleinschmidt**

Direct: (207) 416-1271

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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