# LOW IMPACT HYDROPOWER INSTITUTE RECERTIFICATION APPLICATION

# VERGENNES
# (FERC NO. 2674)

***Prepared for:***

Green Mountain Power Corporation
2152 Post Road
Rutland, Vermont 05701

***Prepared by:***

Kleinschmidt

Pittsfield, Maine
www.KleinschmidtGroup.com

February 2022

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# ACRONYMS

| | |
|---|---|
| cfs | cubic feet per second |
| CRMP | Cultural Resource Management Plan |
| DO | dissolved oxygen |
| EPA | Environmental Protection Agency |
| FPA | Federal Power Act |
| GMP or Licensee | Green Mountain Power Corporation |
| HP | Horsepower |
| kW | kilowatt |
| LIHI | Low Impact Hydropower Institute |
| MOA | Memorandum of Agreement |
| Project | Vergennes Hydroelectric Project, FERC No. 2674 |
| QCIP | Quality Control and Inspection Program |
| RM | River mile |
| ROR | run-of-river |
| SHPO | State Historic Preservation Officer |
| TCEAP | Temporary Construction Emergency Action Plan |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| VANR | Vermont Agency of Natural Resources |
| VDEC | Vermont Department of Environmental Conservation |
| VTFWD | Vermont Department of Fish and Wildlife Department |
| WQC | Water Quality Certificate |
| ZOE | Zone of Effect |

# 1.0 FACILITY DESCRIPTION

## 1.1 Overview

The Vergennes Hydroelectric Project (FERC No. 2674) (Project), owned and operated by Green Mountain Power Corporation (GMP), is located in northeastern Vermont in Addison County, at river mile (RM) 7.6, on the Otter Creek (Figure 1 and Figure 2). The Otter Creek is Vermont's longest river and is a tributary to Lake Champlain. The Vergennes Dam is the first of seven hydroelectric dams located on the Otter Creek.

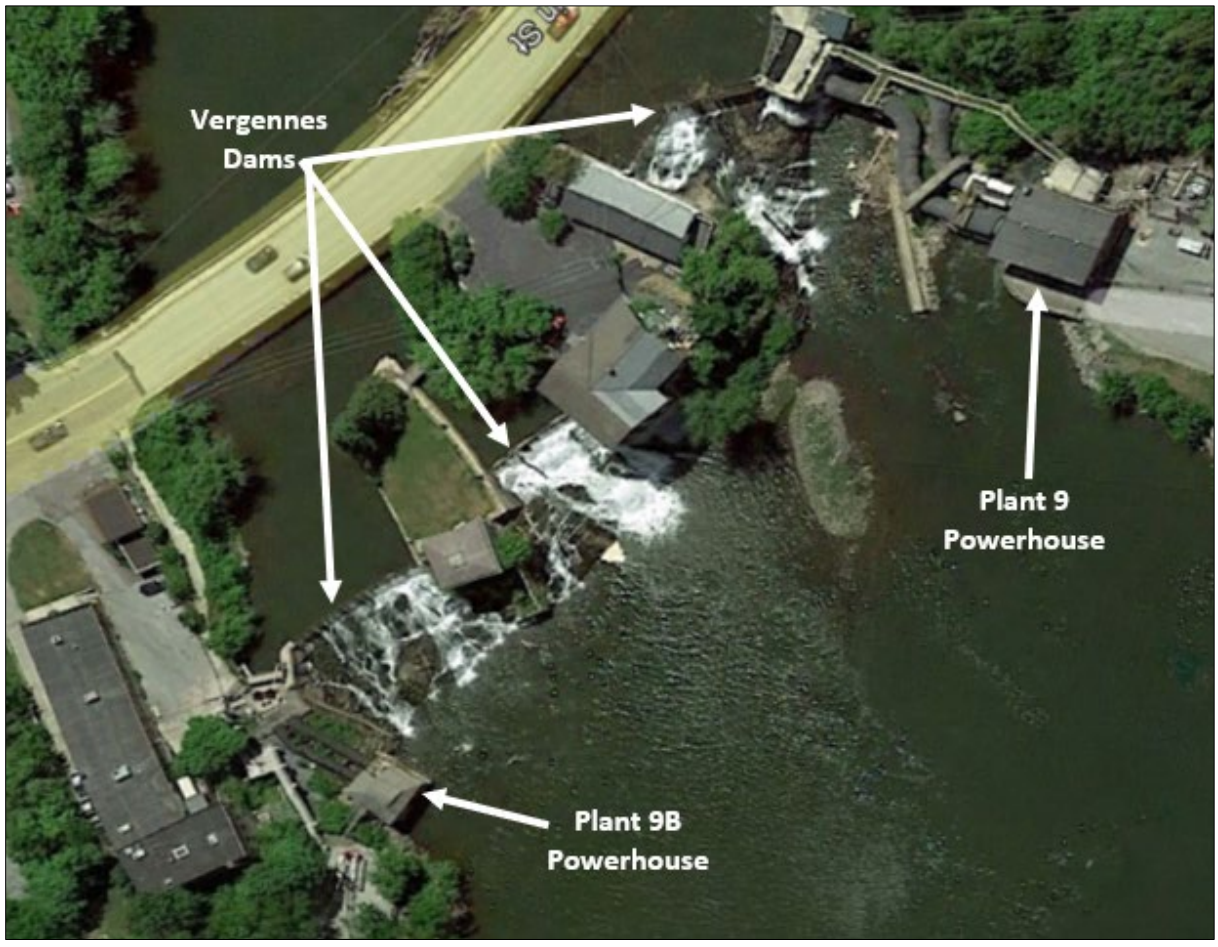


**Figure 1 Overview of Vergennes Project**

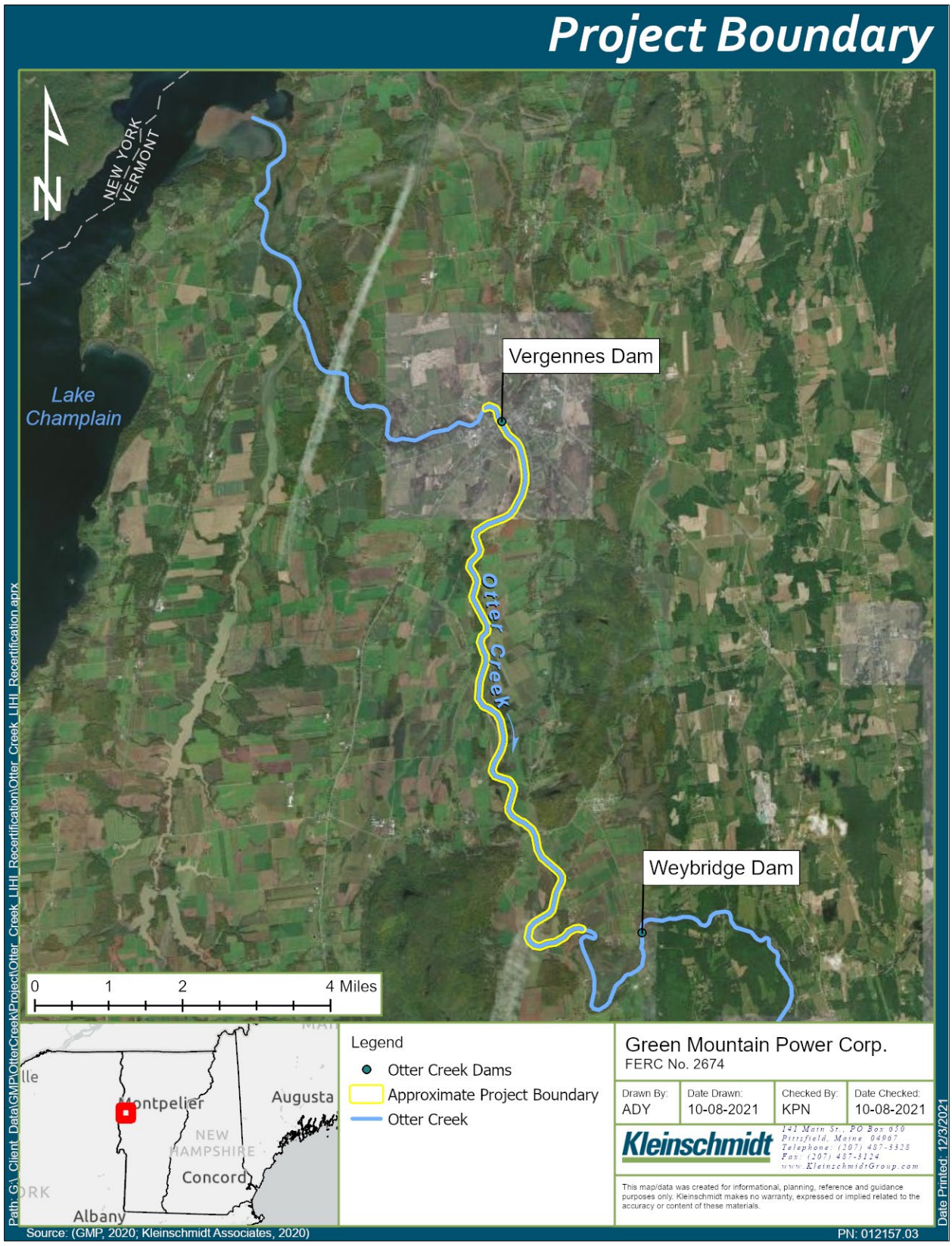


**Figure 2 Geographic Overview of the Vergennes Hydroelectric Project**

The Vergennes Project is downstream of the Weybridge Project (FERC No. 2731), the Otter Creek Project, made up of the Huntington Falls Dam, the Beldens Dam, and the Proctor Dam (FERC No. 2558), the Middlebury Lower Project (FERC No. 2737), the Center Rutland Project (FERC No. 2445), the Ripley Mills Dam, and the Emerald Lake Dam (Figure 3). The Otter Creek is a tributary to Lake Champlain and joins the lake approximately 7.6 miles downstream from the Vergennes Project. The drainage area for the Vergennes Project is approximately 873 square miles.

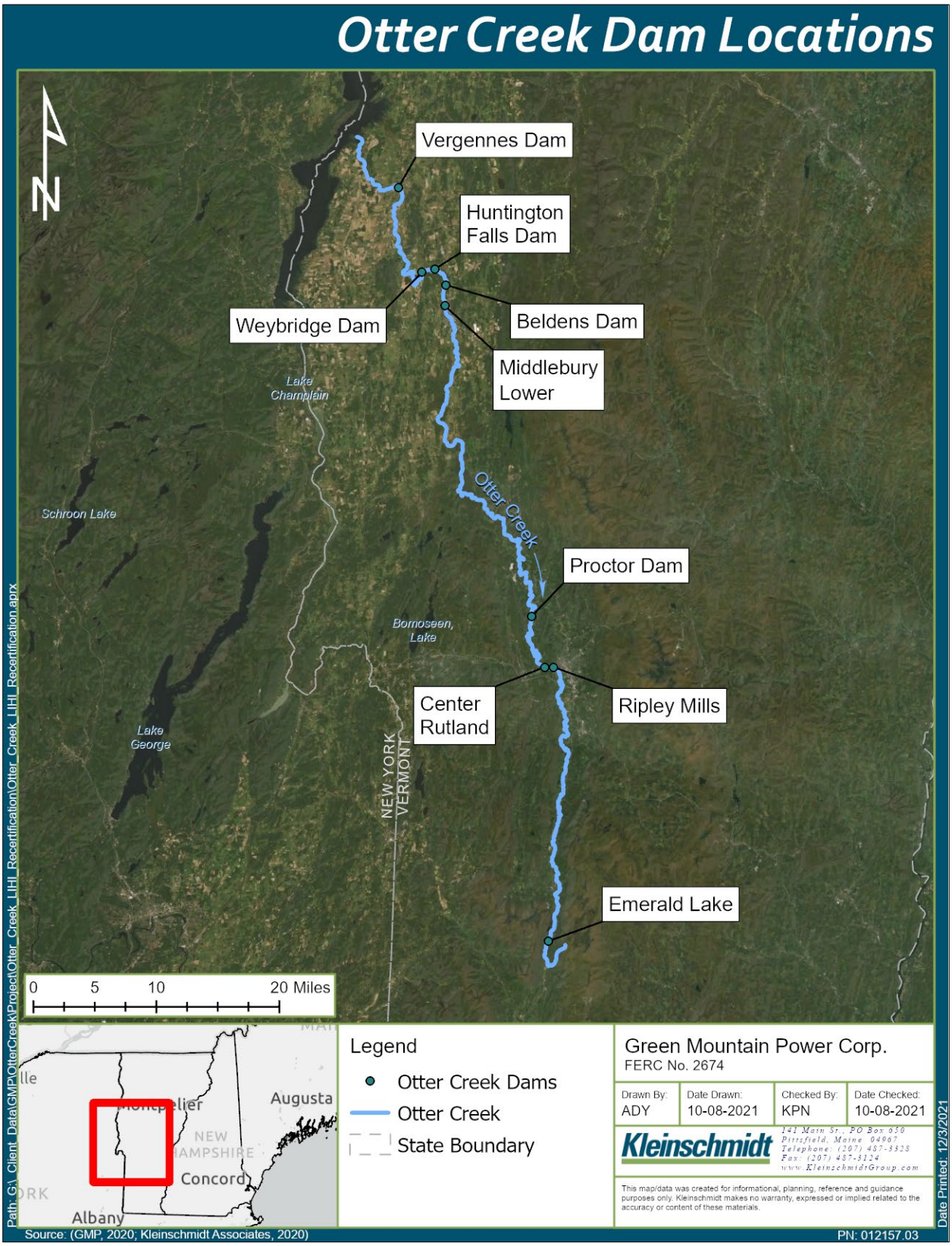


**Figure 3 Dams on the Otter Creek**

Electric power has been generated from Vergennes Falls since 1896. The current facilities of the Vergennes Hydroelectric Project were originally constructed between 1911 and 1943 and underwent a significant number of changes to enhance environmental performance, most notably the conversion from a daily peaking plant to run-of-river operation. The Project impounds an approximately 133-acre reservoir (with no storage capacity) that extends about 8.8 miles upstream with a water surface elevation of 134.28 feet mean seal level (msl) (Figure 1).

The Project consists of three approximately 10-foot-high concrete overflow dams, divided by two instream islands and one 29-foot-long non-overflow dam (Photo 1). The 84-foot north section runs from Plant 9B's intake structure to pump house island. The Plant 9B intake was modernized in 2018, including the replacement of twin wood headgates, replacement of the dual steel penstock, and replacement of the powerhouse electrical lines. The Plant 9B intake is equipped with trash racks with 2-inch clear spacing between bars. The 60-foot-long middle section runs from pump house island to grist mill island. The south section runs from the grist mill island 87 feet to Plant 9's intake structure, which is equipped with trash racks with 1-inch clear spacing. The non-overflow section of the dam is located on the south side of the creek. The dam is topped with 1.5-foot-high timber flashboards that are in place year-round. Due to differences in the spillway crest elevations, the side spillway flashboard is set about three inches lower than the center spillway boards. The crest elevation of the dam is approximately 132.78 feet msl.

The Project includes two powerhouses; Plant 9 located on the south bank of Otter Creek and Plant 9B located on the north bank (Photo 2 and Photo 3). The Plant 9B station was originally constructed in 1943 and consists of a single 1,000 kilowatt (kW) vertical Francis turbine directly connected to a generator. The Plant 9 powerhouse houses two 852 kW double discharge Francis turbines (Photo 4). The authorized installed capacity at the Project is 2,600 kW.

The Project operates in a run-of-river mode with minimum flows to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Otter Creek. Instantaneous flows below the project shall always equal instantaneous inflow to the impoundment. When the facility is not operating, all flows are spilled over the dam. The Project also has flows over the spillway to support aesthetics with the following flow schedule:

- April 1-October 31: 150 cfs daytime and 75 cfs nighttime
- November 1-December 15: 100 cfs daytime and 50 cfs nighttime
- December 16-March 31: No specific flow requirements

The Project is also operated such that one generating unit of Plant 9 is given first priority for use of diverted water for power production from April 1 to June 15 to protect walleye and lake sturgeon and from September 15 to November 15 to protect landlocked Atlantic salmon spawning.

**Photo 1 Upstream View of the Vergennes Project**

**Photo 2 Plant 9 Intake, Penstocks, and Powerhouse**

**Photo 3 Plant 9B Intake, Penstocks, And Powerhouse**

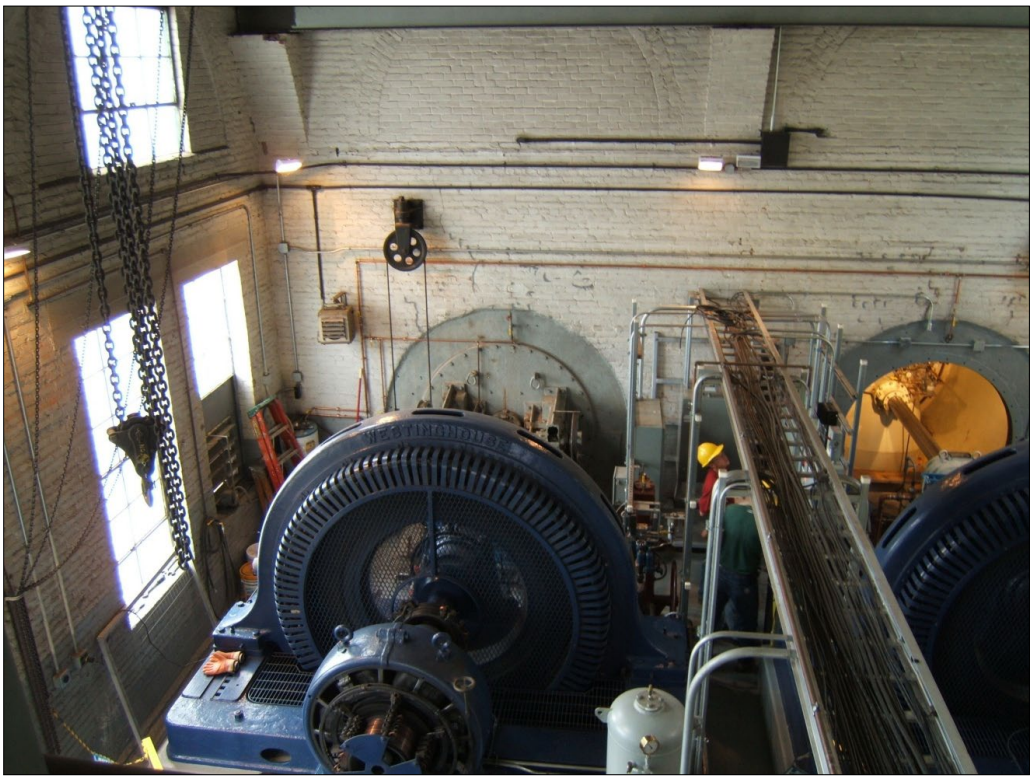

**Photo 4 Plant 9 Powerhouse Turbines**

## 1.2 Certification History and Conditions(s)

On December 30, 2016, GMP submitted an application for Low Impact Hydropower Institute Certification of the Project. On May 8, 2017, the LIHI Executive Director announced a Preliminary Certification Decision that the Project satisfied the LIHI Certification Criteria. By June 2017, the Project received a final decision that the facility satisfied the LIHI Certification Criteria (Appendix A). The certificate included the following condition:

> ***Condition 1.*** *The owner shall consult with the Vermont Department of Environmental Conservation to determine appropriate procedures to verify Run-of-River (RoR) operations at the Vergennes facility. Within 180 days after certification, the owner shall provide LIHI with documentation describing the agreed-upon procedures and then implement those procedures within the first year of LIHI certification. In the first annual compliance report to LIHI, the owner shall summarize the initial results from RoR verification. If RoR verification activities continue beyond the first year of certification, then the owner shall report on the results annually."*

LIHI deemed this condition as fully satisfied by GMP in 2020. Please reference Appendix A to view the Vergennes Hydroelectric Project LIHI Condition Status Report and correspondence with state agencies supporting the steps taken to satisfy the condition included with the original LIHI Certificate.

## 1.3 Changes Since the Last Certification

Since the last certification, GMP completed the replacement of the historic dual penstocks and twin headgates at Plant No. 9B. The purpose of this project was to replace deteriorating infrastructure to maintain the long-term operability of the Project. In addition to headgates and penstocks replacement, minor modifications were made to the powerhouse, an overhead electric transmission line was replaced with a steel galvanized conduit, and minor concrete resurfacing occurred. This work was completed in-kind, and because of this, should have no negative impacts on the criteria and zones of impacts.
During construction activities, ecological flows were maintained over the dam sections that were not impacted by construction. A cofferdam was installed to divert flows away from the construction area. Otherwise, operations at the Project were maintained per the Project License. Outside of lowering and raising the headpond for the installation and removal of the cofferdam, run-of-river operations were maintained. This helped protect surrounding resources and maintain water quality at the Project.

The penstocks and intake area were identified as being historic upon consultation with the Vermont State Historic Preservation Officer (SHPO). To ensure that cultural and historic resources were preserved with this project, GMP consulted with SHPO before and throughout the project. On July 27, 2018, a third-party consultant (VHB) provided a Memorandum of Agreement (MOA) between the SHPO and GMP, executed on June 29, 2018. See the link in the footnote[1] for the MOA, the Section 106 Report (dated April 2018) and the Preliminary Archaeological Assessment (March 14, 2018). Pursuant to the MOA, the required photo documentation and video documentation were completed and accepted by the VT SHPO, prior to the removal of the penstocks, headgates, and their associated features.

On April 16, 2018, and June 5, 2018, GMP submitted plans and specifications, a quality control and inspection program (QCIP) and a temporary construction emergency action

[1] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F7FCA9-66E2-5005-8110-C31FAFC91712

plan (TCEAP) for the Vergennes 9B penstock replacement and intake modernization project. FERC replied with approval to proceed with the project work on July 3, 2018[2]:

### 1.3.1 Zones of Effects (ZoEs)

The approximate areas of the Zones of Effects are shown below in Figure 4, Figure 5, and Figure 6. The criteria of the project for each of these zones is further discussed in Sections 3.0, 4.0, and 5.0.

[2] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F75B18-66E2-5005-8110-C31FAFC91712

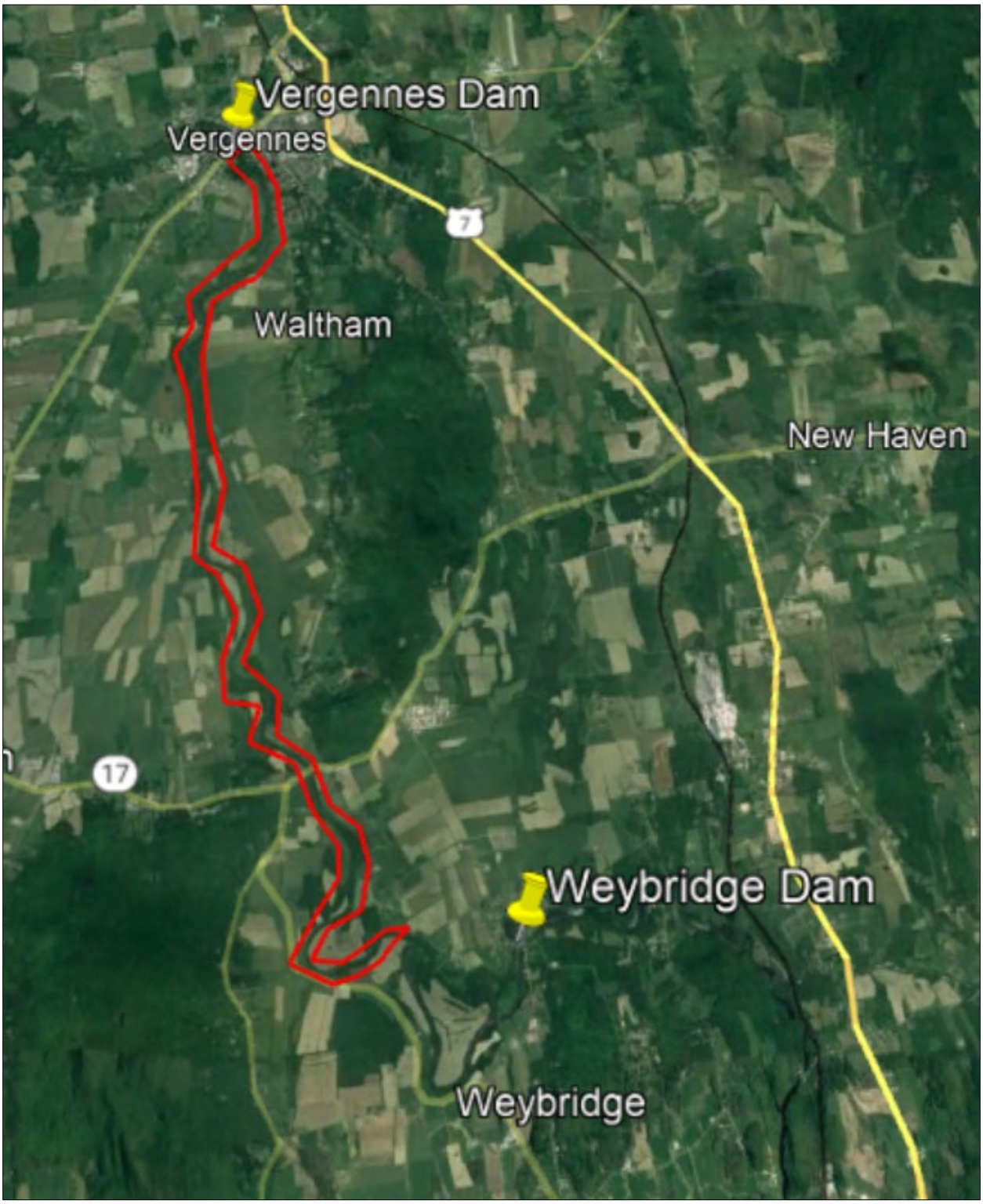


**Figure 4 Vergennes Project Impoundment ZOE**


**Figure 5 Vergennes Project Bypass Reach ZOE**

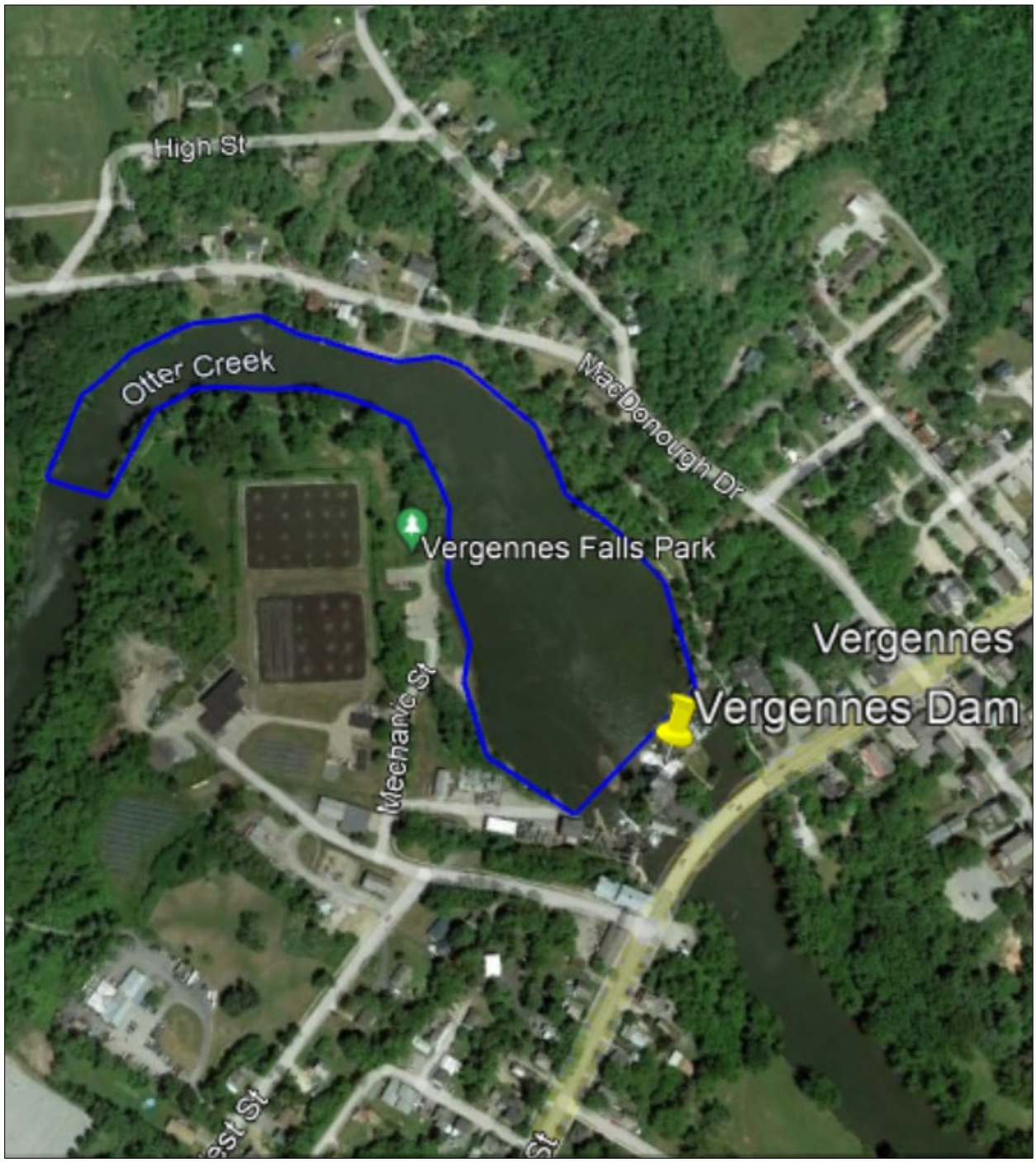


**Figure 6 Vergennes Project Downstream ZOE**

## 2.0 FACILITY INFORMATION

**Table 1 Facility Information**

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| ***Name of the Facility*** | Facility name (use FERC project name or other legal name) | Vergennes Hydroelectric Project (FERC No. 2674) |
| ***Reason for applying for LIHI Certification*** | 1. To participate in state RPS program<br>2. and specify the state and the total MW/MWh associated with that participation (value and % of facility total Mw/MWh).<br>3. To participate in voluntary REC market (e.g., Green-e)<br>4. To satisfy a direct energy buyer's purchasing requirement<br>5. To satisfy the facility's own corporate sustainability goals<br>6. For the facility's corporate marketing purposes<br>7. Other (describe) | GMP is applying for LIHI Certification to participate in the NEPOOL REC program. 100% of the 14,144 MWh generated at the Project in 2020 were part of this program.<br>Market: NEPOOL<br>Class: CT Class I Renewable Energy Source @ 8% output, CT Class II Renewable Energy Source @ 92%, VT Tier I @ 100%, CT CEO @ 100% |
| | If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification | In 2020, 14,144 MWh were generated at the Project. RECs were received for 100% of the energy generated, and the same would be expected upon recertification. |
| ***Location*** | River name (USGS proper name) | Otter Creek, a tributary to Lake Champlain |
| | Watershed name - Select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: | Otter Basin<br>HUC: 02010002 |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | https://water.usgs.gov/wsc/map_index.html | |
| | Nearest town(s), county(ies), and state(s) to dam | Vergennes, Addison County, Vermont |
| | River mile of dam above mouth | 7.6 |
| | Geographic latitude of dam | 44° 9'59.80"N |
| | Geographic longitude of dam | 73°15'22.11"W |
| ***Facility Owner*** | Application contact names (Complete the Contact Form in Section 7.0 also): | John Tedesco – Green Mountain Power Corporation<br>John Greenan – Green Mountain Power Corporation<br>Andy Qua – Kleinschmidt Associates<br>Jessica Antonez – Kleinschmidt Associates<br>Please see Section 7.0 for the Facilities Contact Form |
| | Facility owner company and authorized owner representative name.<br>**For recertifications: If ownership has changed since last certification, provide the effective date of the change.** | Green Mountain Power Corporation (GMP or Licensee) |
| | FERC licensee company name (if different from owner) | N/A |
| ***Regulatory Status*** | FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption | FERC Project No. P-2674<br>30-year License issued July 30, 1999, and expires on May 31, 2029 |
| | FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional") | Minor Project License |
| | Water Quality Certificate identifier, issuance date, and issuing agency | Water Quality Certificate[3] was issued by the Vermont |

[3] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0010ba77-66e2-5005-8110-c31fafc01712

| *Item* | *Information Requested* | *Response (include references to further details)* |
|---|---|---|
| | name. Include information on amendments. | Department of Environmental Conservation on May 4, 1999 |
| | Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories[1] | 1999 Water Quality Certificate: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990511-0310&optimized=false<br><br>1999 FERC License: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990802-0450&optimized=false<br><br>1999 Advisory Council on Historic Preservation Programmatic Agreement: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19991025-0118&optimized=false<br><br>2000 Monitoring and Operations Plan: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000317-0187&optimized=false<br><br>2000 Recreation Plan: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000601-0371&optimized=false<br><br>FERC Order Modifying and Approving Water Quality Monitoring and Operations Plan: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000810-0341&optimized=false<br><br>FERC Order Approving Recreation Plan: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000825-0100&optimized=false |

| *Item* | *Information Requested* | *Response (include references to further details)* |
|---|---|---|
| | | FERC Order Approving Cultural Resources Management Plan: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20010109-0333&optimized=false<br><br>FERC Order Approving Debris Disposal Plan: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20010410-0150&optimized=false<br><br>FERC Order Approving Additions to Monitoring and Operations Plan under Article 404: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20010518-0173&optimized=false<br><br>FERC Order Amending License to Change Project Boundary: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20040407-3018&optimized=false<br><br>2004 Revised Exhibit G-1 in Compliance with Ordering Paragraph B of the 4/7/04 FERC Order Amending License to Change Project Boundary: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20040608-0770&optimized=false<br><br>2005 Scheduled Repair/Replacement of the Unit 2 Turbine: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20050608-0083&optimized=false |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | | FERC Order Certifying Incremental Hydropower Generation for Production Tax Credit: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20070227-4000&optimized=false<br><br>FERC Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20080226-3008&optimized=false<br><br>VT Agency of Natural Resources Authorization of Trashrack Replacement: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20080911-5089&optimized=false<br><br>Copies of Documentation filed with the VT State Historic Preservation Office related to proposed demolition of the Benton Wheelhouse. MOA between FERC, VT SHPO, and GMP: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20140703-5035&optimized=false |
| ***Powerhouse*** | Date of initial operation (past or future for pre-operational applications) | The Plant 9 powerhouse was constructed in 1911.<br>The Plant 9B powerhouse was constructed in 1943. |
| | Total installed capacity (MW)<br>**For recertifications: Indicate if installed capacity has changed since last certification** | The Project has an installed capacity of 2.6 MW. This has not changed since the last certification. |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | Average annual generation (MWh) and period of record used<br>**For recertifications: Indicate if average annual generation has changed since last certification** | Average annual generation from October 1, 2014, to September 30, 2021, was 10,285 MWh. This has not significantly changed since the last recertification. The previous recertification included annual gross generation from October 1, 2013, through September 30, 2014. This was 11,405 MWh. |
| | Mode of operation (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.)<br>**For recertifications: Indicate if mode of operation has changed since last certification** | The project is operated in run-of-river mode. This mode of operation has not changed since the last certification. |
| | Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit | The Project has three turbine units and a total installed capacity of the entire station of 2,600 kW. The total hydraulic capacity of the project turbines is approximately 1,206 cfs.<br>The Plant 9 powerhouse houses two 852 kW double discharge Francis turbines each rated at 1137 HP and 35.5 ft of net head with a maximum hydraulic capacity of 363 cfs. Plant 9's operating flow range is approximately 140 cfs to 726 cfs. Plant 9B has one 1,000 kW vertical Francis turbine generator. Plant 9B's operating flow range is approximately 200 cfs to 480 cfs. |
| | Trashrack clear spacing (inches) for each trashrack | The Plant 9 intake is equipped with trashracks with 1-inch clear spacing. The Plant 9B intake is |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | | equipped with 2-inch clear spacing between bars. |
| | Approach water velocity (ft/s) at each intake if known | The approach water velocity at each intake is not readily available. |
| | Dates and types of major equipment upgrades<br>**For recertifications: Indicate only those since last certification** | In 2018, the penstock and intake of Plant No 9B were replaced and modernized due to deteriorating infrastructure. The construction activities included alterations to the concrete intake structure next to the dam, replacement of twin wood head gates mounted inside the intake structure, including their associated manual actuators, replacement of the dual steel penstocks and their associated anchor support system, alterations to the southwest corner of the powerhouse, and replacement of the powerhouse electrical lines. |
| | Dates, purpose, and type of any recent operational changes<br>**For recertifications: Indicate only those since last certification** | There have been no operational changes since the last certification. |
| | Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments | There are currently no plans for Project upgrades or license or exemption amendments. |
| ***Dam or Diversion*** | Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications | Electric power has been generated from Vergennes Falls since 1896. The Vergennes Dam was completed in 1912. The dam has undergone repairs and concrete modifications over time. |
| | Dam or diversion structure length, height including separately the | The Project consists of three approximately 10-foot-high |

| *Item* | *Information Requested* | *Response (include references to further details)* |
|---|---|---|
| | height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like | concrete overflow dams, divided by two instream islands and one 29-foot-long non-overflow dam. The 84-foot north section runs from Plant 9B's intake structure to the pump house island. The 60-foot-long middle section runs from pump house island to grist mill island. The south section runs from the grist mill island 87 feet to Plant 9's intake structure. The non-overflow section of the dam is located on the south side of the creek. The dam is topped with 1.5-foot-high timber flashboards that are in place year-round. Due to differences in the spillway crest elevations, the side spillway flashboard is set about three inches lower than the center spillway boards. |
| | Spillway maximum hydraulic capacity | The spillway connecting the two islands has a crest elevation of 132.78 feet NGVD. The 84-foot-long north spillway section has a crest elevation of 132.52 feet NGVD. The southern 87-foot-long spillway has a crest elevation of 132.49 feet NGVD. The spillway's hydraulic capacity number is not readily available. |
| | Length and type of each penstock and water conveyance structure between the impoundment and powerhouse | At Powerhouse 9, water is transported approximately 110 feet to the powerhouse via two 10-foot diameter concrete encased penstocks that transition into two 9-foot diameter steel penstocks. The penstock |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | | entrances are covered by a trash rack with clear, one inch spacing. At Powerhouse 9B, two 7-foot steel penstocks carry water to the turbine. The penstock entrance is covered by a trash rack with 2-inch clear spacing between the bars. |
| | 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 power grid. |
| ***Conduit Facilities Only*** | Date of conduit construction and primary purpose of conduit | N/A |
| | Source water | N/A |
| | Receiving water and location of discharge | N/A |
| ***Impoundment and Watershed*** | Authorized maximum and minimum impoundment water surface elevations<br>**For recertifications: Indicate if these values have changed since last certification** | The impoundment height is 134.28 feet NGVD, and GMP maintains the height within 0.5 feet of this elevation under normal operations.<br>GMP installed and maintains headpond transducers at the intakes of both powerhouses to monitor the elevation of the impoundment. |
| | Normal operating elevations and normal fluctuation range<br>**For recertifications: Indicate if these values have changed since last certification** | The impoundment height is 134.28 feet NGVD, and GMP maintains the height within 0.5 feet of this elevation under normal operations since the automation of Plant 9. These values have not changed since the last certification. |
| | Gross storage volume and surface area at full pool | The project has a 133-acre surface area reservoir with a 200-acre-foot usable storage capacity |

| *Item* | *Information Requested* | *Response (include references to further details)* |
|---|---|---|
| | **For recertifications: Indicate if these values have changed since last certification** | at normal water surface elevation of 134.28 NGVD.<br>These values have not changed since last certification. |
| | Usable storage volume and surface area<br>**For recertifications: Indicate if these values have changed since last certification** | With run-of-river operations, there is no usable storage volume and surface area at the Project.<br>This has not changed since last certification. |
| | Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions. | Under run-of-river operations, impoundment inflow shall be equal to outflow immediately downstream of the project tailrace.<br>When the impoundment needs to be refilled following flashboard reinstallation or other construction events, up to 10% of project inflow can be placed in storage. To ensure adequate flow below the project during refill, the refill is limited to 1-inch per hour, unless a slower refill is required to allow the project to pass 90% of project inflow during refill. |
| | Upstream dams by name, ownership, and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage. | Upstream of the Vergennes Project is:<br>• Green Mountain Power owns the Weybridge Dam, FERC Project No. 2731, at RM 19.5.<br>• Green Mountain Power owns the Otter Creek Project, made up of the Huntington Falls Dam at RM 21, Beldens Dam at RM 23, |

| *Item* | *Information Requested* | *Response (include references to further details)* |
|---|---|---|
| | | and the Proctor Dam at RM 64.2 FERC No. 2558.<br>• Green Mountain Power owns the Middlebury Lower, FERC No. 2737, at RM 24.<br>• Green Mountain Power owns the Center Rutland Dam, FERC No. 2445, at RM 71.<br>• The Rutland Plywood Corporation owns the Ripley Mills Dam at RM 72 is not a FERC regulated project.<br>• The State of Vermont owns the Emerald Lake Dam at RM 100 is not a FERC regulated project.<br>No downstream fish passage is provided at upstream dams. |
| | Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage | The Vergennes dam is the first dam on the Otter Creek, and there are no dams downstream of it. |
| | Operating agreements with upstream or downstream facilities that affect water availability and facility operation | N/A |
| | Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property. | The project boundary occupied by primary Project features, not including reservoirs, is approximately 7 acres. The project impounds a 133-acre reservoir of water.<br>The licensee has the flowage rights to operate within the river. |
| ***Hydrologic Setting*** | Average annual flow at the dam, and period of record used | According to the 1999 WQC, the USGS gage No. 04282500 on the |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | | Otter Creek at Middlebury records flows from 73% of the watershed above Vergennes. Based on the gage, the mean annual flow estimated for the Vergennes site from 1903-1999 was 1,380 cfs. |
| | Average monthly flows and period of record used | Average monthly flows (1905-2020) as measured at USGS Gage 04282500 Otter Creek at Middlebury, Vermont.<br><br>January: 955 cfs<br>February: 883 cfs<br>March: 1,530 cfs<br>April: 2,550 cfs<br>May: 1,550 cfs<br>June: 882 cfs<br>July: 604 cfs<br>August: 495 cfs<br>September: 482 cfs<br>October: 678 cfs<br>November: 938 cfs<br>December: 1,000 cfs |
| | Location and name of closest stream gaging stations above and below the facility | USGS Gage 04282500 upstream of the Project on Otter Creek in Middlebury is used to provide verification for minimum flow requirement.<br>The Vergennes Project is at RM 7.6, with the confluence at Lake Champlain downstream. There are no gaging stations on the Otter Creek below the Project. |
| | Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations | The drainage area at the upstream gaging station is 628 square miles. A proration factor of 1.12 was used to calculate data |

| ***Item*** | ***Information Requested*** | ***Response (include references to further details)*** |
|---|---|---|
| | and provide the basis for proration calculation. | for the Vergennes site, and the 1999 WQC stated that the watershed area at the dam determined to be 873 square miles. |
| | Other facility specific hydrologic information | N/A |
| ***Designated Zones of Effect*** | Number of zones of effect | There are three zones of effect: 1) impoundment, 2) bypassed reach, 3) downstream.<br>See Figure 4, Figure 5, and Figure 6 to see the approximate areas of the zones of effect. |
| | Type of waterbody (river, impoundment, bypassed reach, etc.) | The waters located within the impoundment ZOE, bypassed reach ZOE, and downstream ZOE are classified as Riverine by the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (USWFS 2021). |
| | Upstream and downstream locations by river miles | The impoundment ZOE includes the waters stretching from approximately RM 16.4 to RM 7.6.<br>The bypassed reach ZOE includes waters spanning RM 7.6<br>The downstream ZOE includes waters stretching from approximately RM 7.6 to RM 7.9. |
| | Delimiting structures or features | The impoundment ZOE is characterized by waters that are impounded by the dam to the reach of the dam structure at RM 7.6. This is in line with the FERC project boundary.<br>The bypassed reach ZOE starts at the spillway of the Project and stretches approximately 110-feet |

| *Item* | *Information Requested* | *Response (include references to further details)* |
|---|---|---|
| | | downstream to the tailrace. This ZOE stops where the tailrace waters converge with the bypassed reach.<br>The downstream ZOE begins where water from the tailrace meets with the bypassed reach. The ZOE stops where waters are no longer directly influenced by the Project. |

| ***Pre-Operational Facilities Only*** | | |
|---|---|---|
| ***Expected operational date*** | Date generation is expected to begin | N/A |
| ***Dam, diversion structure or conduit modification*** | Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height.<br>Date the modification is expected to be completed | N/A |
| ***Change in water flow regime*** | Description of any change in impoundment levels, water flows or operations required for new generation | N/A |

[1] For example, the FERC license or exemption, recent FERC Orders, Water Quality Certificates, Endangered Species Act documents, Special Use Permits from the U.S. Forest Service, 3rd-party agreements about water or land management, grants of right-of-way, U.S. Army Corps of Engineers permits, and other regulatory documents. If extensive, the list of hyperlinks can be provided separately in the application.

# 3.0 ZONES OF EFFECT DESCRIPTIONS

## 3.1 Impoundment

When full, the headpond is 133-acres and provides about 200 acre-feet of useable storage. The Project impounds a reach of river approximately 8.8 miles in length, about three-quarters of the way up to the Weybridge hydroelectric dam. The impoundment shoreline is predominantly composed of forest habitat, although there are wide variations in the vegetative buffer between the river and adjacent agricultural land. The Vergennes Project is operated in run-of-river mode, maintaining a relatively stable impoundment based on natural inflow.

## 3.2 Bypass Reach

At the main plant (Powerhouse 9), water is transported about 110 feet to the powerhouse via two 10-foot diameter concrete-encased penstocks that transition into two 9-foot diameter steel penstocks. The penstock entrances are protected by a trash rack 19 feet in length, with a clear spacing between the bars of one inch. At Powerhouse 9B, two 7-foot steel penstocks carry water to the turbine. The penstock entrance is protected by a trash rack 16 feet in length and 14 feet high, with a clear spacing between the bars of two inches. The following minimum flows are provided to the bypass reach of the Project:

- April 1 – October 31 150 cfs daytime and 75 cfs nighttime
- November 1 – December 15 100 cfs daytime and 50 cfs nighttime
- December 16 – March 31 No special flows

## 3.3 Downstream

The 8-acre basin immediately below Vergennes Falls is used heavily for recreational purposes, by boaters and anglers. Downstream of the project to Lake Champlain, the habitat primarily consists of slow-moving water, palustrine, emergent marshes, and floodplain broad-leafed, deciduous forests. The Project is operated in run-of-river mode, maintaining relatively stable downstream flows based on inflow.

## 4.0 STANDARD MATRIX

**Table 2 Standards Matrix –Alternate Format Template for Multiple ZoEs**

| | | CRITERION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Zone No., Zone Name, and Standard Selected (including PLUS if selected)** | **River Mile at upper and lower extent of Zone** | ***A*** | ***B*** | ***C*** | ***D*** | ***E*** | ***F*** | ***G*** | ***H*** |
| | | **Ecological Flows** | **Water Quality** | **Upstream Fish Passage** | **Downstream Fish Passage** | **Shoreline and Watershed Protection** | **Threatened and Endangered Species** | **Cultural and Historic Resources** | **Recreational** |
| Impoundment | RM 16.4 to RM 7.6 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 |
| Bypass Reach | RM 7.6 | 2 | 2 | n/a | 1 | 1 | 2 | 2 | 2 |
| Downstream | RM 7.6 to 7.9 | 1 | 2 | n/a | 1 | 1 | 2 | 2 | 2 |

# 5.0 SUPPORTING INFORMATION

## 5.1 Ecological Flows

**Table 3 Ecological Flows Standards – Impoundment ZOE**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| A | 1 | Not Applicable / De Minimis Effect:<br>Confirm the location of the powerhouse relative to dam/diversion structures and demonstrate that there are no bypassed reaches at the facility.<br><br>For run-of-river facilities, provide details on operations and describe how flows, water levels, and operations are monitored to ensure such an operational mode is maintained. In a conduit facility, identify the source waters, location of discharge points, and receiving waters for the conduit system within which the hydropower facility is located. This standard cannot be used for conduits that discharge to a natural waterbody.<br><br>For impoundment zones only, explain water management (e.g., fluctuations, ramping, refill rates) and how fish and wildlife habitat within the zone is evaluated and managed. NOTE: 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. |

- The Project includes two powerhouses below the dam: Plant 9 is located on the south bank of Otter Creek while Plant 9B is located on the north bank (Photo 3 and Photo 4). There is no bypass reach in the impoundment ZOE.
- On April 15, 1999, the Vermont Department of Environmental Conservation (VDEC) issued a Project WQC[4]. As prescribed within Condition B (Article 403 of the 1999 License), the Project operates in true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. This is monitored through continuous monitoring of the impoundment elevation by a pressure transducer located sufficiently upstream of the project structures to be unaffected by local effects of the unit drawdowns or flow distributions over the spillways. Output from the impoundment elevation monitor will be tied into the

[4] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0010BA77-66E2-5005-8110-C31FAFC91712

automated control system in Plant 9. These steps are outlined in the Project's 2000 Monitoring and Operations Plan[5].

- The impoundment elevation remains stable due to run-of-river operations. When the impoundment needs to be refilled following flashboard installation or other agency approved construction events, up to 10% of project inflow can be placed in storage. To ensure adequate flow below the project during refill, the refill is limited to 1-inch per hour, unless a slower refill is required to allow the project to pass 90%.
- Impoundment elevation remains within 0.5 feet of 134.28 feet NGVD. GMP installed and maintains headpond transducers at the intakes of both powerhouses to monitor the elevation of the impoundment and to ensure that fish and wildlife habitat is not negatively impacted.

**Table 4 Ecological Flows Standards – Bypass Reach ZOE**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| A | 2 | Agency Recommendation:<br>• 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 protective).<br>• 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.<br>• Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife.<br>• 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).<br>Explain how flows are monitored for compliance. |

[5] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000EA582-66E2-5005-8110-C31FAFC91712

- On April 15, 1999, the Vermont Department of Environmental Conservation (VDEC) issued a Project WQC[6]. As prescribed within Condition B (Article 403 of the 1999 License), the Project operates in true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. This is monitored through continuous monitoring of the impoundment elevation by a pressure transducer located sufficiently upstream of the project structures to be unaffected by local effects of the unit drawdowns or flow distributions over the spillways. Output from the impoundment elevation monitor will be tied into the automated control system in Plant 9. These steps are outlined in the Project's 2000 Monitoring and Operations Plan[7].
- License article 403 requires the licensee to release the following minimum flows over the spillways at the Vergennes Project for the protection and enhancement of aesthetic and recreational resources of Otter Creek. GMP agreed, as a result of negotiations with the VANR and the city of Vergennes, to release the following flows over the dams and waterfalls. These flows were determined by a study team composed of representatives from the VANS, VDEC, the city of Vergennes, and GMP evaluating the flow. The study team evaluated the effect of various flows over Vergennes Falls based on the dimensions of sound, exposed rockface, and veil effect. The study team was divided in its opinion of the higher target flows of 200 and 300 cfs; some members found that these flows were considerably better than lower flows. Others did not see much difference or thought that lower flows were preferable. The study team members generally agreed that the 150 cfs target flow was better than the 100 cfs target flow, though not substantially. All members thought that the target flow of 100 cfs was substantially better than the 50 cfs target flow.

  When the facility is not operating, all flows must be spilled at the dam. Minimum bypass flows are provided in accordance with the following schedule according to Article 403:

  - April 1 – October 31 150 cfs daytime and 75 cfs nighttime
  - November 1 – December 15 100 cfs daytime and 50 cfs nighttime
  - December 16 – March 31 No special flows

  The 150 cfs daytime flow is apportioned between the spillways with 80 cfs at the center spillway and 35 cfs at each of the two flanking spillways. The 100 cfs daytime flow is apportioned similarly.

[6] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0010BA77-66E2-5005-8110-C31FAFC91712
[7] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000EA582-66E2-5005-8110-C31FAFC91712

- According to the WQC, bypass flows provide localized habitat improvement as highly oxygenated water will exist prior to mixing with the water in the downstream channel. The entrained bubbles in that zone will provide cover for fish.
- As stated in the WQC, the Project meets all criteria to support warmwater fish habitat by maintaining state DO criteria of 5 mg/L or 60 percent saturation at all times.
- The WQC also states that the Project maintains Class B waters 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.

**Table 5 Ecological Flows Standards – Downstream ZOE**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| A | 1 | Not Applicable / De Minimis Effect:<br>Confirm the location of the powerhouse relative to dam/diversion structures and demonstrate that there are no bypassed reaches at the facility.<br>For run-of-river facilities, provide details on operations and describe how flows, water levels, and operations are monitored to ensure such an operational mode is maintained. In a conduit facility, identify the source waters, location of discharge points, and receiving waters for the conduit system within which the hydropower facility is located. This standard cannot be used for conduits that discharge to a natural waterbody.<br>For impoundment zones only, explain water management (e.g., fluctuations, ramping, refill rates) and how fish and wildlife habitat within the zone is evaluated and managed. NOTE: 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. |

- The Project includes two powerhouses located below the dam: Plant 9 is located on the south bank of Otter Creek while Plant 9B is located on the north bank (Photo 3 and Photo 4).
- On April 15, 1999, the VDEC issued a Project WQC[8]. As prescribed within Condition B (Article 403 of the 1999 License), the Project operates in true run-of-river mode

[8] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0010BA77-66E2-5005-8110-C31FAFC91712

where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. This is monitored through continuous monitoring of the impoundment elevation by a pressure transducer located sufficiently upstream of the project structures to be unaffected by local effects of the unit drawdowns or flow distributions over the spillways. Output from the impoundment elevation monitor will be tied into the automated control system in Plant 9. These steps are outlined in the Project's 2000 Monitoring and Operations Plan[9].

- The Project operates such that one generating unit of Plant 9 is given priority for use of diverted water for power production from April 1 to June 15 (to protect walleye and lake sturgeon) and from September 15 to November 15 (to protect landlocked Atlantic salmon). GMP commences operation of Plant 9B after flows exceed 350 cfs at these times. The facility also provides seasonal flows over the dam from April 1 to June 15 for lake sturgeon and walleye and from September 15 to November 15 for Atlantic salmon.
- To the extent necessary, bypass flows may be suspended to facilitate flashboard replacement. After flashboard replacement and other similar necessary maintenance, during refill of the impoundment, up to 10% of instantaneous Project inflow may be placed in storage. Refill rates of the impoundment are limited to a rate of 1-inch per hour unless a slower refill is required to allow the Project to pass 90% of inflow during inflow.

## 5.2 Water Quality

**Table 6 Water Quality Standards – Impoundment, Bypass Reach and Downstream ZOE**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| B | 2 | Agency Recommendation:<br>• Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter from the agency).<br>• Identify any other agency recommendations related to water quality and explain their scientific or technical basis. |

[9] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000EA582-66E2-5005-8110-C31FAFC91712

| Criterion | Standard | Instructions |
|---|---|---|
| | | • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations. |

- The Otter Creek in the Project-affected reach is designated by the Vermont Water Resources Board as Class B waters. Class B stream reaches 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. Class B water uses include public water supply with filtration and disinfection, irrigation and other agricultural uses, swimming, and recreation.
- The lower Otter Creek from the mouth upstream to the Vergennes Dam, an approximately 7.6-mile stretch, is listed on page 4 of the 2020 303(d) List of Impaired Waters[10]. This area is identified as impaired with *E. coli* from periodic and recurring overflows at pump stations within the collection system.
- The Project operates in compliance with all conditions issued pursuant to the Clean Water Act Section 401 WQC[11] issued on April 15, 1999, by the VDEC. According to the WQC (p. 18), "There are no identified problems with respect to dissolved oxygen concentrations. Some slight enhancement may occur, however, due to the applicant's proposal to provide a continuous spillage during the summer and fall. Spillage over the cascade causes turbulent entrainment of oxygen in the water."
- The Project does not contribute to the impaired waters occurring within the Lower Otter Creek below the Vergennes Dam. The waters are identified as impaired for fish consumption from elevated mercury levels in fish tissue and the presence of E. coli. The Environmental Protection Agency (EPA) has identified the probable source contributing to the impairment to be combined sewer overflows. Please See Appendix B to view the 2020 EPA's Water Body Report generated for the lower Otter Creek.
- In 2006 GMP repaired/replaced Unit #1 turbine. The increased capacity did not require a change in water flow that worsened conditions for fish, wildlife, or water quality as concluded by the VDEC12. In 2009 GMP conducted penstock and intake repair and replacement work. Per Condition I of the WQC, GMP applied for and

[10] https://dec.vermont.gov/sites/dec/files/documents/mp_PriorityWatersList_PartA_303d_2020.pdf
[11] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0010BA77-66E2-5005-8110-C31FAFC91712
[12] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20060503-5069&optimized=false

received prior approval of the maintenance and repair work from VDEC[13]. In 2018, GMP completed additional work regarding the penstock at the Project, and again, applied for and received prior approval of the work from VDEC.

- GMP's consultant, Kleinschmidt Associates, reached out to VT DEC on November 5, 2021, November 19, 2021, and December 16, 2021, to confirm that the WQC terms and conditions remain valid. On January 5, 2022, VT DEC responded that to evaluate compliance with water quality certification and FERC license conditions, the Agency requests the prior full water year of operations data. As of the date of this application, GMP and Kleinschmidt are working on providing VT DEC with the information needed so that they can evaluate operations. This communication in included in Appendix D.

## 5.3 Fish Passage

Sturgeon and Atlantic salmon are naturally occurring potamodromous species within the Lake Champlain Basin. Within the vicinity of the Project, all the fish you would expect to find in shallow, warm water in Lake Champlain can be found here. This includes large and smallmouth bass, northern pike, walleye, chain pickerel, and yellow perch[14]. Additionally, walleye, trout species, and other fish common to Vermont can be found in the project vicinity.

**Table 7 Upstream Fish Passage Standards – Impoundment, Bypassed Reach, and Downstream ZOE**

| ***Criterion*** | ***Standard*** | ***Instructions*** |
|---|---|---|
| C | 1 | Not Applicable / De Minimis Effect:<br>• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no facility barrier to further upstream movement.<br>• Document available fish distribution data and the lack of migratory fish species in the vicinity. |

[13] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20081229-0148&optimized=false

[14] https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Where%20to%20Hunt/Essex%20District/Lower%20Otter%20Creek%20WMA.pdf

| Criterion | Standard | Instructions |
|---|---|---|
| | | • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation. |

Otter Creek is a Class B waterway that supports cold water and warm water fisheries.

There is no agency recommendation to support upstream fish passage at the Project. No fishway prescriptions or reservations of authority were filed under Section 18 of the FPA in the 1999 License.
Historically, migratory fish from Lake Champlain ascended many of its tributaries to access spawning waters. To develop Lake Champlain's salmonid fishery, upstream and downstream passage provisions are being sought at dams on certain Lake tributaries. In Vermont, the Winooski River and the Lamoille River are included in this effort, however, this initiative has not been extended to Otter Creek as the other tributaries present a better opportunity for coldwater fish spawning[15]. Today landlocked Atlantic salmon are stocked in the lower Otter Creek below the Vergennes Project by the Vermont Agency of Natural Resources and US Fish and Wildlife Service[16].

In 2009, a "Strategic Plan for Lake Champlain Fisheries"[17] was published by the Lake Champlain Fish and Wildlife Management Cooperative's Fisheries Technical Committee. The Plan includes the following goals listed for lake sturgeon: Enhance fish passage for landlocked Atlantic salmon and lake sturgeon; Monitor and assess lake sturgeon in Vermont rivers including the Missisiquoi, Lamoille, Winooski River, and Otter Creek; Recover lake sturgeon populations sufficient for removal from Vermont's list of endangered species. The Project provides flows for protection of lake sturgeon from April 1 to June 15 each year and will continue to work within the guidelines of the strategic plan.

The Project is operated in run-of-river mode to help protect aquatic habitat and fish species within the project vicinity. In addition, GMP maintains outflow from Plant 9 by operating at least one turbine during walleye and sturgeon spawning and incubation periods and during the fall when Atlantic salmon are present until the hydraulic capacity of one unit is reached (350 cfs). GMP provides continuous outflow from Plant 9 April 1 to June 15 for walleye and sturgeon spawning and steelhead migration and September 15 to November 15 for Atlantic salmon adults. Baseload operation of Plant 9 during these times would provide continuous flows to the western side of Otter Creek, which the

[15] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0010ba77-66e2-5005-8110-c31fafc91712
[16] https://www.fws.gov/LCFWRO/fisheries_restoration/science.html
[17] https://www.dec.ny.gov/docs/regions_pdf/09lcfishplan.pdf

Vermont Agency of Natural resources considers important for walleye, sturgeon, Atlantic salmon, and steelhead fisheries. These recommendations are further detailed in the 1998 Project Environmental Assessment[18].

Lake sturgeon, landlocked Atlantic salmon, and walleye only occur downstream of the Project and run Otter Creek from Lake Champlain seasonally. Lake sturgeon in Vermont are classified as an endangered species due to overharvest of the sturgeon stock, presence of dams, and degraded water quality[19]. The extent to which lake sturgeon historically entered the Otter Creek from Lake Champlain is unclear[20]. There is no agency recommendation for fish passage at the Project, but the Project does provide flows from April 1 to June 15 to protect lake sturgeon.
Natural populations of Atlantic salmon were extirpated from the Lake Champlain Basin approximately 150 years ago due to the presence of dams and the degradation of riverine spawning areas[21]. Atlantic salmon were extirpated from the Lake Champlain Basin before the Vergennes dam was constructed in 1912. Although dams are considered one of the main causes for salmon extirpation in the Lake Champlain Basin, the Vergennes dam was built after the fact and cannot be attributed to the cause of the salmon extirpation in the Lake Champlain Basin. Today, landlocked Atlantic salmon are stocked in the lower Otter Creek below the Vergennes Project by the Vermont Agency of Natural Resources and US Fish and Wildlife Service. There is no agency recommendation for fish passage at the Project, but the Project does provide flows from September 15 to November 15 to protect landlocked Atlantic salmon.

Walleye is a potamodromous species as well but is not a native species to the Lake Champlain Basin and therefore does not have a historic presence in the Lake Champlain Basin[22]. There is no agency recommendation for fish passage at the Project, but the Project does provide flows from April 1 to June 15 to protect walleye.

The section of Otter Creek that extends upstream is characterized by mostly slow water habitats segmented by elevation drops at existing dams. The Vermont Department of Fish and Wildlife (VTFWD) manages this reach as a mixed warmwater and coldwater fisheries consisting primarily of brown and rainbow trout, northern pike, yellow perch, smallmouth bass, panfish species and a variety of minnows. VTFWD considers the presence of trout just upstream of Vergennes to be incidental.

[18] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19981020-0316&optimized=false
[19] https://www.dec.ny.gov/animals/26035.html
[20] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19981020-0316&optimized=false
[21] https://www.fws.gov/recreation/stories/for-anglers-in-lake-champlain-basin-salmon-fishing-is-a-science.html
[22] https://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=831

**Table 8 Downstream Fish Passage Standards - Impoundment, Bypass Reach and Downstream ZOE.**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| D | 1 | Not Applicable / De Minimis Effect:<br>• 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). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective, and timely downstream migration.<br>• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles.<br>• Document available fish distribution data and the lack of fish species requiring passage in the vicinity.<br>• If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation. |

There is no agency recommendation to support downstream fish passage in any of the ZOEs at the Project.

Otter Creek is a Class B waterway that supports cold water and warm water fisheries.

In 2009, a "Strategic Plan for Lake Champlain Fisheries"[23] was published by the Lake Champlain Fish and Wildlife Management Cooperative's Fisheries Technical Committee. The Plan includes the following goals listed for lake sturgeon: Enhance fish passage for landlocked Atlantic salmon and lake sturgeon; Monitor and assess lake sturgeon in Vermont rivers including the Missisiquoi, Lamoille, Winooski River, and Otter Creek; Recover lake sturgeon populations sufficient for removal from Vermont's list of endangered species. The Project provides flows for protection of lake sturgeon from April

[23] https://www.dec.ny.gov/docs/regions_pdf/09lcfishplan.pdf

1 to June 15 each year and will continue to work within the guidelines of the strategic plan.

The Project is operated in run-of-river mode to help protect aquatic habitat and fish species within the project vicinity. This creates stable impoundment elevations and helps create aquatic habitat for resident species upstream of the Project.

Lake sturgeon, landlocked Atlantic salmon, and walleye only occur downstream of the Project and run Otter Creek from Lake Champlain seasonally. Lake sturgeon in Vermont are classified as an endangered species due to overharvest of the sturgeon stock, presence of dams, and degraded water quality[24]. The extent to which lake sturgeon historically entered the Otter Creek from Lake Champlain is unclear[25]. There is no agency recommendation for fish passage at the Project.

Natural populations of Atlantic salmon were extirpated from the Lake Champlain Basin approximately 150 years ago due to the presence of dams and the degradation of riverine spawning areas[26]. Atlantic salmon were extirpated from the Lake Champlain Basin before the Vergennes dam was constructed in 1912. Although dams are considered one of the main causes for salmon extirpation in the Lake Champlain Basin, the Vergennes dam was built after the fact and cannot be attributed to the cause of the salmon extirpation in the Lake Champlain Basin. Today, landlocked Atlantic salmon are stocked in the lower Otter Creek below the Vergennes Project by the Vermont Agency of Natural Resources and US Fish and Wildlife Service.

The section of Otter Creek that extends upstream is characterized by mostly slow water habitats segmented by elevation drops at existing dams. The VTFWD manages this reach as a mixed warmwater and coldwater fisheries consisting primarily of brown and rainbow trout, northern pike, yellow perch, smallmouth bass, panfish species and a variety of minnows. VTFWD considers the presence of trout just upstream of Vergennes to be incidental.

The Project has trashracks installed to prevent fish entrainment. The Plant 9 intake is equipped with trashracks with 1-inch clear spacing. The Plant 9B intake is equipped with 2-inch clear spacing between bars.

[24] https://www.dec.ny.gov/animals/26035.html
[25] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19981020-0316&optimized=false
[26] https://www.fws.gov/recreation/stories/for-anglers-in-lake-champlain-basin-salmon-fishing-is-a-science.html

Downstream fish passage can occur at the Project when flashboards are out. There is also the potential for downstream fish passage to occur when flashboards are in, pending the size of the fish and the size of the gaps between the boards installed.

## 5.4 Watershed Protection

**Table 9 Shoreline and Watershed Protection Standards - Impoundment, Bypass Reach and Downstream ZOEs.**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| E | 1 | Not Applicable / De Minimis Effect:<br>• If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the FERC project or facility boundary, and absence of critical habitat for protected species).<br>• Document that there have been no Shoreline Management Plans or similar protection requirements for the facility. |

- The Project property consists of 7 acres and there are no lands of significant value in the project area. The areas surrounding the Impoundment, Bypass Reach, and Downstream ZOE consists of areas of low, medium, and high intensity development, developed open space, deciduous forest, evergreen forest, mixed forest, woody wetlands, and open water. Mixed industrial, and commercial buildings, and housing are spaced on both sides of the river as the City of Vergennes. Land cover units identified in the vicinity of the Project can be found in Table 10 as identified within the National Land Cover Database 2019[27].
- The Project is operated in run-of-river mode, which helps prevent erosion from occurring on the shoreline.
- A shoreland management plan was not recommended for the Project when the 1999 License[28] was issued. A shoreland management plan has not been established through settlement agreements with stakeholders for the Project. The Facility does not have a buffer zone, approved watershed enhancement fund, or settlement agreement for this project.

[27] https://www.mrlc.gov/viewer/
[28] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000641B4-66E2-5005-8110-C31FAFC91712

**Table 10 Project Land Cover Classification.**

| Class/Value | Classification Description |
|---|---|
| 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% 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. |
| 24 | Developed, High Intensity – highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover. |
| 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. |
| 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. |

## 5.5 Threatened and Endangered Species

**Table 11 Threatened and Endangered Species Standards - Impoundment, Bypass Reach and Downstream ZOEs.**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| F | 2 | Finding of No Negative Effects:<br>• Identify all federal and state listed species that are or may be in the immediate facility area based on current data from the appropriate state and federal natural resource management agencies.<br>• Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency or provide documentation that habitat for the species does not exist within the ZoE or is not impacted by facility operations. |

- Based on an official USFWS species List populated on October 13, 2021, (Appendix C), the federally endangered Indiana bat (*Myotis sodalist*), federally threatened Northern Long-eared Bat (*Myotis septentrionalis*), and the candidate Monarch Butterfly (*Danaus plexipuss*) may occur within the project vicinity. Birds protected under the federal Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act identified within the USFWS species list as species that may have presence within the project area include: American Golden-plover (*Pluvialis dominica*), Bald Eagle (*Haliaeetus leucocephalus*), Black-billed Cuckoo (*Coccyzus erythropthalmus*), Blue-winged Warbler (*Vermivora pinus*), Boblink (*Dolichonyx oryzivorus*), Canada Warbler (*Cardellina canadensis*), Eastern Whip-poor-will (*Antrostomus vociferus*), Evening Grosbeak (*Coccothraustes vespertinus*), Golden Eagle *(Aquila crysaetos*), Golden-winged Warbler (*Vermivora chrysoptera*), Lesser Yellowlegs (*Tringa flavipes*), Long-eared Owl (*Asio otus*), Praierie Warbler (*Dendroica discolor*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Ruddy Turnstone (*Arenaria interpres morinella*), Short-billed Dowitcher (*Limnodromus griseus*), and Wood Thrush (*Hylocichla mustelina*).
- Under the Vermont Endangered Species Law, the Indiana bat and Northern long-eared bat are listed as state endangered species. Other state endangered species that may be in the project vicinity include Lake sturgeon (*Acipenser fulvescens*), Black sandshell (*Ligumia recta*), Fragile papershell (*Leptodea fragilis*), Pink heelsplitter (*Potamilus alatus*), Pocketbook mussel (*Lampsilis ovata*), Giant floater (*Pyganodon grandis*), Creeping love-grass (*Neeragrostis reptans*), Green dragon

(*Arisaema dracontium*), Mudpuppy (*Necturus maculosus*), Silvery Lamprey (*Ichthyomyzon unicuspis*), Eastern Sand Darter (*Ammocrpyta pellucida),* Channel Darter (*Percina copelandi*), Fluted-shell (*Lasmigona costata*), Silver Redhorse (*Lasmigona costata*), Three-parted beggar's ticks (*Bidens tripartite ssp. Comosa*), Red-root flat-sedge (*Cyperus erythorhizos*). GMP's consultant, Kleinschmidt Associates, reached out to VT DEC on November 5, 2021, November 19, 2021, and February 8, 2022, to confirm the rare, threatened, and endangered species in the vicinity of the project. terms and conditions remain valid. On February 9, 2022, VT DEC responded with an updated list. This communication in included in Appendix D.

- The Project area and run-of-river operations are not anticipated to negatively affect federal or state listed endangered and threatened species.
- The Indiana bat and northern long-eared bat may feed within the Project boundary since the Project operates in a run-of-river mode. However, the project boundary does not contain critical habitat for either species. The continued operation of the Project is not anticipated to negatively affect Indiana or northern long-eared bats that may utilize the area. GMP is in compliance with the current goals for the strategic plan and will continue to comply with resource agency recommendations for any maintenance activities[29]. GMP will consult with agencies if any tree cutting must occur at the Project to minimize impacts.
- The Project operates in a run-of-river mode and provides flows for the protection of lake sturgeon from April 1 to June 15, operations are not anticipated to negatively affect lake sturgeon30.
- Project operations are not anticipated to negatively affect sand darter, or mussel populations located downstream; during Project relicensing, the VANR concluded that run-of-river Project operations would not negatively affect mussel populations (see FERC's Environmental Assessment[31]).
- Additionally, because of existing run-of-river operations, the Project is not anticipated to negatively affect the creeping love-grass or green dragon.
- The diverse wetlands downstream of the Project offer a variety of habitats for migratory birds. In FERC's Environmental Assessment[32], it was concluded that project operations have virtually no bearing on the riparian wetland habitat downstream of the Project where many of the migratory birds occur.

[29] https://vtrans.vermont.gov/sites/aot/files/highway/documents/environmental/VTrans%20Bat%20Guidance.pdf
[30] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000641B4-66E2-5005-8110-C31FAFC91712
[31] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990802-0450&optimized=false
[32] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990802-0450&optimized=false

## 5.6 Cultural and Historical Resources

**Table 12 Cultural and Historic Resources Standards - Impoundment, Bypass Reach and Downstream ZOEs.**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| G | 2 | Approved Plan:<br>• Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.<br>• Document that the facility is in compliance with all such plans. |

- In compliance with the 1999 Programmatic Agreement (PA) and the 1999 License Article 405, GMP submitted a Cultural Resource Management Plan (CRMP) on August 2, 2000. On January 8, 2001, FERC issued an Order Approving the CRMP[33] and required that GMP file an annual report of activities conducted under the CRMP with the VT SHPO.
- The CRMP identifies the buildings and structures within the Vergennes Historic District listed in the National Register of Historic Places on September 3, 1976. The Historic District boundary encompasses all of the buildings and structures presently owned by the licensee. Within the project boundary, the contributing elements owned by GMP include Norton's grist mill and storage building, the former Plant 9 office building, the former Vermont Shade Roller Company buildings, and the Benton Machine Shop wheelhouse. Additionally, the Vergennes dam is included of historic significance.
- Since its last LIHI certification, GMP has submitted CRMP required Annual Reports for 2017[34], 2018(filed CEII), 2019[35], 2020[36], and 2021[37].
    - In summary, the archaeologist found the riverbanks in the lower half of the Project continue to be healthy and stable because they support well-developed riparian buffer zones. The 2021 Annual Report of the CRMP for the Vergennes Project identified the VT-AD-496 area in Weybridge as a location of moderate to severe erosion, with approximately 400 meters of

[33] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20010109-0333&optimized=false
[34] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01ECE879-66E2-5005-8110-C31FAFC91712
[35] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0204A64B-66E2-5005-8110-C31FAFC91712
[36] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0209548D-66E2-5005-8110-C31FAFC91712
[37] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020E44FA-66E2-5005-8110-C31FAFC91712

the western left bank of the Otter Creek being impacted. To preserve archaeological information threatened by erosion documented at this site, a Phase IB study was conducted on behalf of GMP. Additionally, the historic Brittal Azra Stow Cemetery, European American site VT-AD-1121 in Weybridge suffered slope failure roughly 50 meters to the northwest of the shoreline on May 14, 2018. Riparian growth still protects this shoreline, but evidence of the bank failure is visible from the river. Minor erosion related to livestock access, cropland, and water level fluctuations was observed downstream of the Weybridge and New Haven town boundaries in the lower section of the Vergennes Project impoundment, but the clay soils that form the Otter Creek shorelines and the healthy riparian buffers that they support have protected the known and potential archaeological information that they contain. No exposed soils were observed in the vicinity of previously identified archaeological sites along the lower section of the Vergennes Project during the 2021 inspection. For the locations with noted erosion, the Proposed Management Actions to be undertaken include monitoring the Project shoreline, with specific attention given to locations near known archaeological sites. Future monitoring actions will evaluate and compare conditions at locations where erosion was observed in the past.

- In accordance with the 1999 PA, GMP entered into a MOA on March 15, 2004, with David Shlansky, FERC, and the VT SHPO to convey project boundary lands listed on the National Register of Historic Places and to ensure their proper continued management. GMP additionally developed a MOA[38] on August 26, 2014, with the Vermont State Historic Preservation Officer and FERC for removal of the Benton Wheelhouse, a historic component of the Project. A corresponding Section 106 Report, describing the property, its history, the proposed action, and structure condition, was submitted with the MOA.
- Prior to the Vergennes 9B penstock replacement and intake modernization project, a third-party consultant (VHB) provided a MOA between the VT SHPO and GMP, which was executed on June 29, 2018. See link[39] below for the MOA, the Section 106 Report (dated April 2018) and the Preliminary Archaeological Assessment (March 14, 2018). Pursuant to the MOA, the required photo documentation and

[38] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20140703-5035&optimized=false
[39] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F7FCA9-66E2-5005-8110-C31FAFC91712

video documentation were completed and accepted by the VT SHPO, prior to the removal of the penstocks, headgates, and their associated features.

## 5.7 Recreational Resources

**Table 13 Recreational Resources Standards - Impoundment, Bypass Reach and Downstream ZOEs.**

| *Criterion* | *Standard* | *Instructions* |
|---|---|---|
| H | 2 | Agency Recommendation:<br>• Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.<br>• Document that the facility is in compliance with all such recommendations and plans. |

- Recreational resources at the Project include boat access, portage routes, picnic areas, and interpretative signage. The Project's Recreation Plan was developed to provide improved boat access, parking, portage routes, picnic tables, and landscaping improvements. The primary recreational uses in the project area include shoreline and boat fishing, motor boating, canoeing, picnicking, hiking, and sightseeing. Public access is provided free of charge.
- The Project is in compliance with the 1999 FERC License Article 406 Recreation Plan. A FERC approved Recreation Plan[40] was developed in consultation with the City of Vergennes, the VDEC, and the Vermont Division of Historic Preservation in 2002 to ensure that recreational goals at the Project were met.
- There are four formal recreation sites within the Project area (Figure 7):
    - Settler's Park: Located just upstream of the Project provides a parking area and a car-top boat launch. The park is owned and operated by GMP.
    - Canoe Portage: The boat launch at Settler's Park serves as the take-out and City Falls Park serves as the Put-In.
    - Vergennes Falls Park: Is owned and operated by the City of Vergennes and located downstream of the Project. The park offers walking paths, shoreline fishing, picnic areas, and a boat launch.
    - Plant 9 Fishing Platform: Located adjacent to the Plant 9 Powerhouse the platform provides universal fishing access.

[40] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20030427-0778&optimized=false

- The MacDonough Park is an informal recreation site owned and operated by the City of Vergennes. The park is located downstream of the Project on the east bank and offers views of Vergennes Falls (Figure 7).
- Per Article 406, GMP included the following improvements at the Project: (1) directional and interpretive signs for recreation in the project area; (2) improved access for small boats and parking at Settler's Park; (3) improved trail, shoreline fishing access, vegetative plantings, and picnic area along the western bank near Plant 9; (4) construction of a disabled-accessible fishing platform on the western bank near Plant 9; (5) installation of portable toilet facilities, including disabled-accessible facilities; and (6) installation of signs interpreting the history of Vergennes Falls and the surrounding historic structures.
- Revised Exhibit R drawings were approved by FERC on April 14, 2008[41].

  Per the August 2015 FERC Environmental Inspection Report[42], it was determined that the boat ramp needed repair and that a missing interpretative sign needed replacement. Within GMP's January 4, 2016, letter[43], it was recorded that repairs to the boat ramp were completed in December 2015 but that the replacement of the missing interpretative sign remained incomplete. GMP reported that the City of Vergennes possessed the missing sign and was continuing to work with the city to complete its reinstallation. Per FERC Letter dated January 27, 2016[44], repairs to the boat ramp were approved and a deadline of June 6, 2016, was set for completion of the sign reinstallation. On June 6, 2016[45] GMP filed a letter and photo evidence to show that the missing interpretative had been re-installed at the Project.

[41] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20080414-3011&optimized=false
[42] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20150818-3054&optimized=false
[43] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20160104-5271&optimized=false
[44] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20160127-3016&optimized=false
[45] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20160606-5222&optimized=false

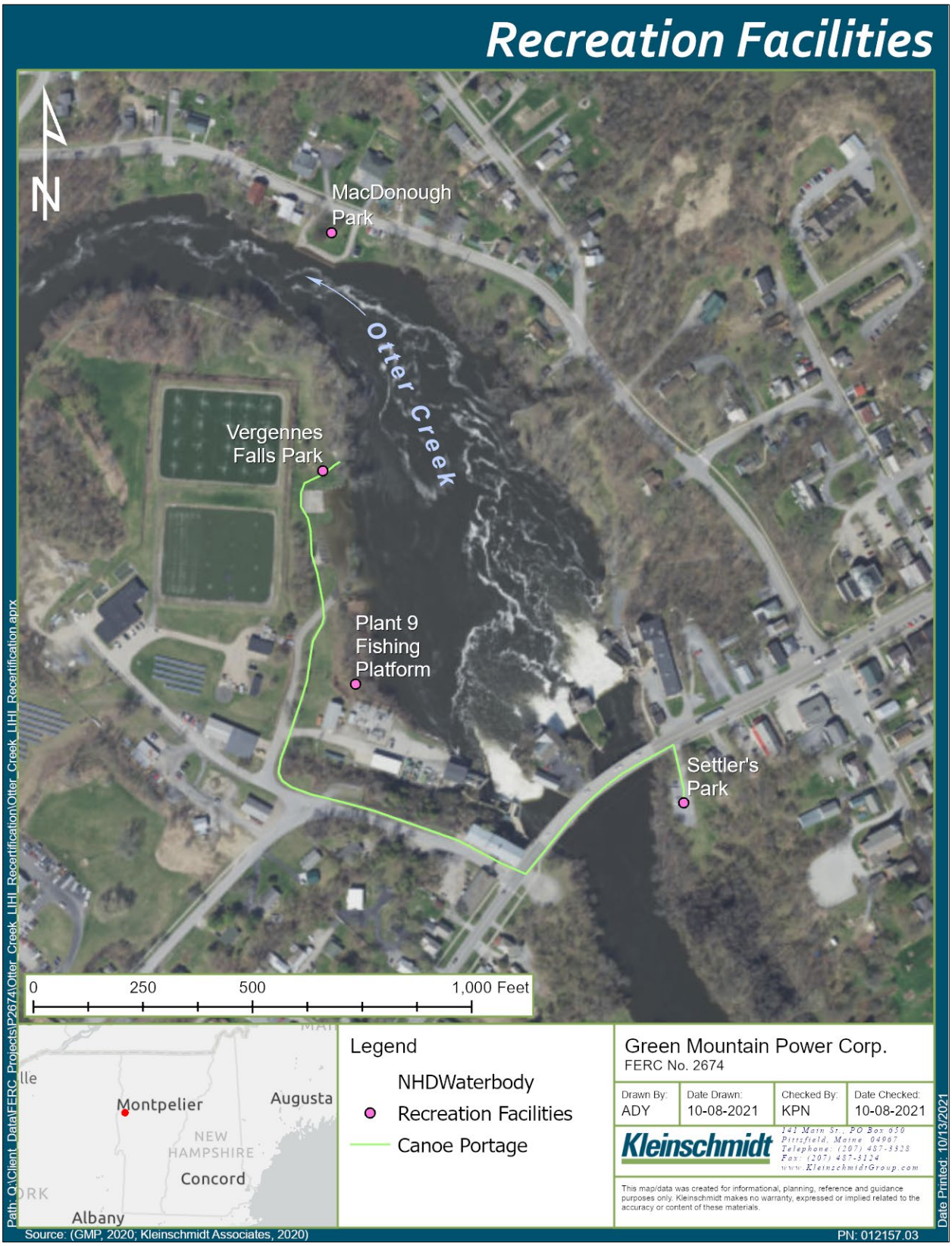


**Figure 7 Recreational Sites at the Project Area**

# 6.0 SIGNED SWORN STATEMENT AND WAIVER

## 6.1 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 *, 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 LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified®.*

*The Undersigned 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.*

**FOR PRE-OPERATIONAL CERTIFICATIONS:**

*The Undersigned acknowledges that LIHI may suspend or revoke the LIHI Certification should the impacts of the facility, once operational, fail to comply with the LIHI program requirements.*

Company Name: Green Mountain Power
Authorized Representative: John C. Greenan
Name: John C. Greenan
Title: Engineer
Authorized Signature: _____
Date: 3 Mar 22

## 7.0 CONTACTS FORMS

All applications for LIHI Certification must include complete contact information.

A. Applicant-related contacts

| **Facility Owner and Operator:** | |
|---|---|
| Name and Title | John Greenan and John Tedesco |
| Company | Green Mountain Power Corporation |
| Phone | (802) 770-3213 and (802) 324-7318 |
| Email Address | John.Greenan@greenmountainpower.com and John.Tedesco@greenmountainpower.com |
| Mailing Address | 163 Acorn Lane, Colchester, Vermont 05446 |
| **Consulting Firm / Agent for LIHI Program (if different from above):** | |
| Name and Title | Andy Qua and Jessica Antonez |
| Company | Kleinschmidt Associates |
| Phone | (207) 416-1246 and (207) 416-1214 |
| Email Address | Andy.Qua@KleinschmidtGroup.com and Jessica.Antonez@KleinschmidtGroup.com |
| Mailing Address | 6 Fundy Road Suite 500 Falmouth Maine 04105 |
| **Compliance Contact (responsible for LIHI Program requirements):** | |
| Name and Title | John Greenan and John Tedesco |
| Company | Green Mountain Power Corporation |
| Phone | 802) 770-3213 and (802) 324-7318 |
| Email Address | John.Greenan@greenmountainpower.com and John.Tedesco@greenmountainpower.com |
| Mailing Address | 163 Acorn Lane, Colchester, Vermont 05446 |
| **Party responsible for accounts payable:** | |
| Name and Title | John Greenan and John Tedesco |
| Company | Green Mountain Power Corporation |
| Phone | (802) 770-3213 and (802) 324-7318 |
| Email Address | John.Greenan@greenmountainpower.com and John.Tedesco@greenmountainpower.com |
| Mailing Address | 163 Acorn Lane, Colchester, Vermont 05446 |

B. Current and relevant state, federal, and tribal resource agency contacts with knowledge of the facility (copy and repeat the following table as needed).

| ***Agency Contact*** | | ***Area of Responsibility*** |
|---|---|---|
| Agency Name | Vermont Department of Environmental Conservation | __X_ Flows<br>__X_ Water Quality<br>____ Fish/Wildlife<br>_X_ Watershed<br>___ T&E Species<br>___ Cultural/Historic<br>___ Recreation |
| Name and Title | Eric Davis, River Ecologist | |
| Phone | (802) 490-6180 | |
| Email address | Eric.Davis@vermont.gov | |
| Mailing Address | Watershed Management Division, Main Building – 2nd Floor, One National Life Drive, Montpelier, VT 05620 | |

| ***Agency Contact*** | | ***Area of Responsibility*** |
|---|---|---|
| Agency Name | Vermont Department of Fish and Wildlife | ___ Flows<br>___ Water Quality<br>_X_ Fish/Wildlife<br>___ Watershed<br>___ T&E Species<br>___ Cultural/Historic<br>___ Recreation |
| Name and Title | Mark Ferguson, Zoologist | |
| Phone | (802) 279-3422 | |
| Email address | Mark.Ferguson@vermont.gov | |
| Mailing Address | One National Life Drive, Davis 2, Montpelier, VT 05620 | |

| ***Agency Contact*** | | ***Area of Responsibility*** |
|---|---|---|
| Agency Name | Vermont Department of Fish and Wildlife | ___ Flows<br>___ Water Quality<br>_X_ Fish/Wildlife<br>___ Watershed<br>___ T&E Species<br>___ Cultural/Historic<br>___ Recreation |
| Name and Title | Chet Mackenzie, Fisheries Program Manager | |
| Phone | (802) 786-3864 | |
| Email address | Chet.Mackenzie@vermont.gov | |
| Mailing Address | One National Life Drive, Davis 2, Montpelier, VT 05620 | |

| ***Agency Contact*** | | ***Area of Responsibility*** |
|---|---|---|
| Agency Name | Vermont Department of Fish and Wildlife | ___ Flows<br>___ Water Quality |
| Name and Title | Bob Popp, Department Botanist | |

| ***Agency Contact*** | | ***Area of Responsibility*** |
|---|---|---|
| Phone | (802) 476-0127 | _X_ Fish/Wildlife<br>___ Watershed<br>_X_ T&E Species<br>___ Cultural/Historic<br>___ Recreation |
| Email address | Bob.Popp@vermont.gov | |
| Mailing Address | 5 Perry St. Suite 40 Barret, Vermont 05641 | |

| ***Agency Contact*** | | ***Area of Responsibility*** |
|---|---|---|
| Agency Name | U.S. Fish and Wildlife Service | _X_ Flows<br>___ Water Quality<br>_X_ Fish/Wildlife<br>___ Watershed<br>_X_ T&E Species<br>___ Cultural/Historic<br>___ Recreation |
| Name and Title | Melissa Grader | |
| Phone | (413) 548-8002 x 8124 | |
| Email address | Melissa_Grader@fws.gov | |
| Mailing Address | 103 East Plumtree Road<br>Sunderland, MA 01375 | |

# APPENDIX A

## LIHI CERTIFICATION THAT CONDITIONS FOR THE VERGENNES PROJECT HAVE BEEN MET

# VERGENNES HYDROELECTRIC PROJECT
# LIHI CONDITION STATUS REPORT

***Condition 1.*** *The owner shall consult with the Vermont Department of Environmental Conservation to determine appropriate procedures to verify Run-of-River (RoR) operations at the Vergennes facility. Within 180 days after certification, the owner shall provide LIHI with documentation describing the agreed-upon procedures and then implement those procedures within the first year of LIHI certification. In the first annual compliance report to LIHI, the owner shall summarize the initial results from RoR verification. If RoR verification activities continue beyond the first year of certification, then the owner shall report on the results annually.*

As noted in the 2018 LIHI Annual Compliance Report, Vermont Department of Environmental Conservation (DEC) approved of GMP's proposed monitoring protocol on August 22, 2018. As stated within the approved protocol, GMP committed to submitting operations data to DEC four times a year for a year starting in May 2018 and ending in May 2019.

GMP submitted May 2018 - July 2018 operations data on October 3, 2018, August 2018 – October 2018 operations data on January 2, 2019, and November 2018 – January 2019 data and February 2019 – May 2019 data on February 14, 2020 (submittal emails attached).

Unless GMP hears otherwise from DEC, GMP considers this compliance obligation complete.

**From:** Katie Sellers
**To:** "Davis, Eric"
**Cc:** Crocker, Jeff; Andy Qua; Greenan, John; Bent, Jacob
**Subject:** RE: Vergennes Project - Operations Review
**Date:** Wednesday, October 03, 2018 5:21:00 PM

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This message contains attachments delivered via ShareFile.

- Vergennes May - July 2018 Project Discharge & Ops.xlsx (4.1 MB)

Download the attachments by clicking here.

Hi Eric – Attached for your review you will find our first quarterly data submission for Vergennes. This submission includes operations data from May 2018 – July 2018. We have included discharge tab calculations for the full dataset, but note that discharge from May 18-July 31 was <1356 cfs. The first two discharge tabs should ultimately not require an in-depth review as that time period was >1356 cfs (when maximum hydraulic capacity (1206 cfs) + daytime flow requirement (150 cfs) is exceeded).

Within the data you will see that the G4 headpond level was lowered on 6/7/18 in preparation for the penstock work that took place this summer. The cofferdam was installed from June 12 – June 20th and remains in place throughout the rest of the dataset.

As with the other datasets, this 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.

---

**From:** Davis, Eric <Eric.Davis@vermont.gov>
**Sent:** Wednesday, August 22, 2018 3:42 PM
**To:** Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
**Cc:** Crocker, Jeff <Jeff.Crocker@vermont.gov>; Andy Qua <Andy.Qua@KleinschmidtGroup.com>; Greenan, John <John.Greenan@greenmountainpower.com>; Bent, Jacob <Jacob.Bent@greenmountainpower.com>
**Subject:** RE: Vergennes Project - Operations Review

Good afternoon Katie (& all),

The Agency has reviewed the operations compliance monitoring protocol, as well as the operations data submitted for the months of March to September of 2017. The Agency doesn't have any substantive comments on the protocol itself. It sets forth a robust procedure for documenting

compliance at the project, is detailed in the information that will be included, and sets out a defined time frame for reporting (4 quarters). This will allow for the parties to determine that the necessary data to ensure compliance is being collected, identify any potential issues, while also providing a timeline for suspending the reporting component.

In regards to the spreadsheet and format, the data is thorough and well presented. Most importantly, all of the data needed to demonstrate compliance is recorded allowing for a detailed assessment of run-of-river operations and minimum flow requirements. Additionally, I added the project discharge values to the operations graphs that include gage discharge. They correlate well, verifying run-of-river operations.

The one issue that warrants further discussion are minimum spillway releases, particularly during lower water conditions when flashboards are out. Flashboards were initially lost on 4/7 and additional flashboards were lost on 4/30. Despite the flashboards being out, releases look good until 7/20 when issues appear to crop up and then persist through September. While maintaining aesthetic spillage under these conditions is certainly challenging, if they are out for an extended period of time, it may be worth considering what water level is needed to maintain the spillage requirements given the state of the flashboards.

Thank you for your work in documenting and ensuring compliance at the Vergennes project. Constructing this reporting spreadsheet was certainly a significant undertaking given the multiple spillway and turbine rating curves at the project. We look forward to continue to work collaboratively through this interim reporting period.

Eric

**Eric Davis,** *River Ecologist*

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

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
RIVERS PROGRAM

**See what we're up to on our Blog, Flow.**

---

**From:** Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
**Sent:** Thursday, August 09, 2018 10:05 AM
**To:** Davis, Eric <Eric.Davis@vermont.gov>
**Cc:** Crocker, Jeff <Jeff.Crocker@vermont.gov>; Andy Qua <Andy.Qua@KleinschmidtGroup.com>; Greenan, John <John.Greenan@greenmountainpower.com>; Bent, Jacob <Jacob.Bent@greenmountainpower.com>
**Subject:** RE: Vergennes Project - Operations Review

Morning Eric – Just checking in on your review of this data. If you have any follow-up questions, let us know.
Best!
Katie

---

**From:** Katie Sellers
**Sent:** Thursday, May 10, 2018 10:01 AM
**To:** 'Davis, Eric' <Eric.Davis@vermont.gov>
**Cc:** 'Crocker, Jeff' <Jeff.Crocker@vermont.gov>; Andy Qua <Andy.Qua@KleinschmidtGroup.com>; 'Greenan, John' <John.Greenan@greenmountainpower.com>; 'Bent, Jacob' <Jacob.Bent@greenmountainpower.com>
**Subject:** RE: Vergennes Project - Operations Review

This message contains attachments delivered via ShareFile.

- Vergennes March - Sept 2017 Project Discharge & Ops_FINAL.xlsx (12.2 MB)
- Vergennes_Draft Operations Compliance Monitoring Protocol.docx (47.3 kB)

Download the attachments by clicking here.

Hi Eric – Attached via ShareFile please find the Vergennes operations data submission as well as a the proposed monitoring protocol for review in accordance with LIHI Certification Condition 1.

As recommended in your email dated September 18, 2017, GMP has developed an excel spreadsheet that includes weekly Project discharge tabs that calculate total Project flashboard discharge and total Project discharge for each day of the week at 6-hour intervals. So to reduce the volume of data included in this discharge analysis, the following information has been removed from weekly discharge tabs:

- Data ranging from December 16 – March 31 (time when no minimum flows are required).
- Total Project Discharge Flows from November 1 - December 15 that are above 1,306 cfs. 1,306 cfs is the point at which the three turbines are at maximum hydraulic capacity (1,206 cfs) plus the 100 cfs daytime flow requirement.
- Total Project Discharge Flows from April 1 – October 31 that are above 1,356 cfs. 1,356 cfs is the point at which the three turbines are at maximum hydraulic capacity (1,206 cfs) plus the 150 cfs daytime flow requirement.

The spreadsheet also includes all SCADA data and prorated flow data as well as monthly flow, headpond, generation charts.

Additionally, attached please find the drafted operations compliance monitoring protocol prepared for this year-long data sharing exercise. The protocol reviews proposed data submission frequency and data analysis methods. GMP anticipates that in the future, GMP and VTDEC, may revise the protocol and format/frequency of data summaries to better meet appropriate level of operations review to confirm operational compliance.

Thank you for your ongoing help with this,

Katie

**Katie E. Sellers, M.S.**
**Regulatory Coordinator**
Kleinschmidt
**Office: 207-416-1218**
**www.KleinschmidtGroup.com**
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*

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**From:** Katie Sellers
**Sent:** Thursday, October 05, 2017 2:12 PM
**To:** 'Davis, Eric' <Eric.Davis@vermont.gov>
**Cc:** Crocker, Jeff <Jeff.Crocker@vermont.gov>; Andy Qua <Andy.Qua@KleinschmidtGroup.com>; Greenan, John <John.Greenan@greenmountainpower.com>
**Subject:** RE: Vergennes Project - Operations Review

Hi Eric – Would you have availability for a brief call with John, Andy, and myself next week or the following week to discuss Vergennes? We are working through completing the last of Vergennes operations needs and would like to talk with you about the spreadsheet pdf you sent and the SCADA data files we used to develop the operations graphs. We seem to be pretty close to getting what you need to confirm operations compliance and think a brief discussion would be beneficial.

Thank you,
Katie

**Katie E. Sellers, M.S.**
**Regulatory Coordinator**
Kleinschmidt
**Office: 207-416-1218**
**www.KleinschmidtGroup.com**
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*

---

**From:** Davis, Eric [mailto:Eric.Davis@vermont.gov]
**Sent:** Monday, September 18, 2017 11:38 AM
**To:** Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
**Cc:** Crocker, Jeff <Jeff.Crocker@vermont.gov>; Andy Qua <Andy.Qua@KleinschmidtGroup.com>; Greenan, John <John.Greenan@greenmountainpower.com>; Bent, Jacob <Jacob.Bent@greenmountainpower.com>
**Subject:** RE: Vergennes Project - Operations Review

Hi Katie,

Thank you for the Vergennes operations graphs. Considering that we are also trying to come up with a reporting framework for other projects, I want to comment generally on the layout. In general, generation and headpond level with a local gage if one exists is a useful way to document run-of-river compliance. Where available it would be helpful to incorporate the turbine rating curve, even if theoretical, to capture the changing relationship between flow and generation at various points on the curve. In addition to the graphs, the data behind them in spreadsheet format would be great.

Specific to Vergennes, I think we are almost there in terms of documenting run-of-river compliance. For this particular project the incorporation of flashboard status is an integral component, so thank you for including this information. During post-relicensing plan development, GMP developed turbine and spillway rating curves were for the project. In the past, GMP has reported compliance by incorporating headpond level and generation from the different units into the respective curves to determine project discharge (see attached, Apologies if I haven't shared this before). So, one additional step that the Agency would recommend is to incorporate the curves into the data presented here. We have copies of the curves that are relatively readily available that I could provide, if needed.

Please feel free to reach out if you have any questions.

Thanks,
Eric

**Eric Davis,** *River Ecologist*

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

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
RIVERS PROGRAM

**See what we're up to on our Blog, Flow.**

---

**From:** Katie Sellers [mailto:Katie.Sellers@KleinschmidtGroup.com]
**Sent:** Monday, August 28, 2017 9:10 AM
**To:** Davis, Eric <Eric.Davis@vermont.gov>
**Cc:** Crocker, Jeff <Jeff.Crocker@vermont.gov>; Andy Qua <Andy.Qua@KleinschmidtGroup.com>; Greenan, John <John.Greenan@greenmountainpower.com>; Bent, Jacob <Jacob.Bent@greenmountainpower.com>
**Subject:** Vergennes Project - Operations Review

Good Morning Eric,

I wanted to make contact so to kick-off consultation regarding LIHI's condition for the Vergennes Project certification. LIHI's condition reads as follows:

***Condition 1.*** *The owner shall consult with the Vermont Department of Environmental Conservation to determine appropriate procedures to verify Run-of-River (RoR) operations at the Vergennes facility. Within 180 days after certification, the owner shall provide LIHI with documentation describing the agreed-upon procedures and then implement those procedures within the first year of LIHI certification. In the first annual compliance report to LIHI, the owner shall summarize the initial results from RoR verification. If RoR verification activities continue beyond the first year of certification, then the owner shall report on the results annually.*

As a first step in this process, we have graphed operations and flow data for the period March 2017 - April 2017 and have included information about project flashboard operations on each graph (attached). The graphs show run of river operations well. Flashboards were up from 3/1 – 4/6 and then a high flow event removed part of the board configuration on 4/7. Headpond levels continued to follow run of river flows after partial removal of the 1.5 foot flashboards.

Moving forward to develop procedures for verifying run of river operation, would an annual or bi-annual submission of monthly summary graphs that mimic the attached layout with flow, operations, and flashboard data act as an appropriate submission for verification of run of river operations? I can create a more formalized procedure document, but wanted to check in and see if this submission layout made sense to move forward with.

Keep us posted with your thoughts. If it would help to schedule a brief call to discuss, please let me know.

Thank you!
Katie

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**From:** Katie Sellers
**To:** "Davis, Eric"
**Cc:** Andy Qua; Greenan, John; Bent, Jacob
**Subject:** Vergennes Project - Operations Review Submission
**Date:** Wednesday, January 02, 2019 2:39:00 PM

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This message contains attachments delivered via ShareFile.

- Vergennes August - Oct 2018 Project Discharge & Ops.xlsx (4 MB)

Download the attachments by clicking here.

Hi Eric – Attached for your review you will find GMP's second quarterly data submission for Vergennes. This submission includes operations data from August 2018 – October 2018.

You will see that work at 9b penstock continued during this timeframe (reason for continued lower G4 headpond level) and that Unit 1 was out of service in October due to a bearing issue.

As with the other datasets, this 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 and Happy New Year!
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.

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| | |
|---|---|
| **From:** | Katie Sellers |
| **To:** | eric.davis@vermont.gov; jeff.crocker@vermont.gov; Simard, Betsy |
| **Cc:** | Greenan, John; tedesco@greenmountainpower.com; Bent, Jacob; Andy Qua |
| **Subject:** | Vergennes Operations Data - Submission #3 & #4 |
| **Date:** | Friday, February 14, 2020 12:07:00 PM |

Hi Eric – Linked below for your review via Microsoft OneDrive, please find GMP's third quarterly data submission for Vergennes Project LIHI compliance. This submittal contains operations data from November 2018 - January 2019.

The analysis was done for each week Nov 1, 2018 to Jan 31, 2019, and there is a sheet for each week. For the total discharge sheet, the following data was removed in accordance our developed protocol:

* Data ranging from December 16 – March 31 (time when no minimum flows are required);
* Total Project Discharge Flows from November 1 - December 15 that are above 1,306 cfs. 1,306 cfs is the point at which the three turbines are at maximum hydraulic capacity (1,206 cfs) plus the 100 cfs daytime flow requirement.

As with the other datasets, this operational data is considered provisional by GMP. 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 information as needed.

GMP additionally processed its operational dataset from February 2019 – May 2019. Per our protocol, we removed data from Dec 16 - March 31 (time when no minimum flows are required) and discharge >1,356 cfs from April 1 to Oct 31 (1,356 cfs is the point at which the three turbines are at maximum hydraulic capacity plus the 150 cfs daytime flow requirement). Based on that, all of the total discharge data was actually removed from that time period. We therefore are not providing a dataset for review for the February 2019 – May 2019 time period (fourth quarter) as either minimum flows were not required or river flows were above project hydraulic capacity and minimum flow requirements during that period.

In accordance with the protocol developed for this data submittal process, GMP views this LIHI compliance requirement as complete.

Data: https://kleinschmidtgroup-my.sharepoint.com/:x:/p/katie_sellers/EbP4czsQ4llKiTu6k_4h2gsBTje3PB6N6p03gKgPl_EO2Q?e=f8GYY9

Thank you,
Katie

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# APPENDIX B

# WATER QUALITY REPORT

# How's My Waterway?

Informing the conversation about your waters.

## Waterbody Report

### Lower Otter Creek below Vergennes

**Assessment Unit ID:** VT03-01.02

**Waterbody Condition:** Impaired

**Existing Plans for Restoration:** Yes

**303(d) Listed:** Yes

**Year Reported:** 2020

**Organization Name (ID):** Vermont (1VTDECWQ)

**What type of water is this?**

River (7.6 Miles)

**Where is this water located?**

Lower Otter Creek, Mouth Upstream to Vergennes Dam (Approx 7.6 Miles)


### Assessment Information from 2020

**What is this water used for?**

Expand All

| | |
|---|---|
| **Aquatic Biota and Wildlife That May Utilize or Are Present in the Waters** | Good |
| **Aquatic Habitat to Support Aquatic Biota, Wildlife, or Plant Life** | Good |
| **Fish Consumption** | Impaired |

Impairments Evaluated

| Impairment | Plan in Place |
|---|---|
| Mercury in Fish Tissue | Yes |

Other Parameters Evaluated

No other parameters evaluated for this use.

**The Use of the Water for Public Water Source** — Not Assessed

**The Use of Water for Irrigation of Crops and Other Agricultural Uses** — Not Assessed

**The Use of Waters for Boating and Related Recreational Uses** — Not Assessed

**The Use of Waters for Fishing and Related Recreational Uses** — Insufficient Info

**The Use of Waters for Swimming and Other Primary Contact Recreation** — Impaired

Impairments Evaluated

| Impairment | Plan in Place |
|---|---|
| Escherichia Coli (E. coli) | No |

Other Parameters Evaluated

No other parameters evaluated for this use.

**The Use of Waters for the Enjoyment of Aesthetic Conditions** — Good

**Probable sources contributing to impairment from 2020:**

| Source | Confirmed |
|---|---|
| Atmospheric Deposition - Acidity | No |
| Combined Sewer Overflows | Yes |

## Plans to Restore Water Quality

**What plans are in place to protect or restore water quality?**

*Links below open in a new browser tab.*

| Plan | Impairments | Type | Date |
|---|---|---|---|
| Ne Regional Mercury Tmdl | Mercury | TMDL | 2007-12-20 |

# APPENDIX C

# THREATENED AND ENDANGERED SPECIES

**IPaC** **U.S. Fish & Wildlife Service**

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.



## Location

Addison County, Vermont


## Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.



1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

| NAME | STATUS |
|---|---|

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/9045

## Insects

| NAME | STATUS |
|---|---|
| Monarch Butterfly Danaus plexippus<br>Wherever found<br>No critical habitat has been designated for this species.<br>http://ecos.fws.gov/ecp/species/9743 | Candidate |

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.



## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php

- Nationwide conservation measures for birds
  http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.



| NAME | BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.) |
|---|---|
| American Golden-plover Pluvialis dominica<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Bald Eagle Haliaeetus leucocephalus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.<br>http://ecos.fws.gov/ecp/species/1626 | Breeds Dec 1 to Aug 31 |
| Black-billed Cuckoo Coccyzus erythropthalmus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>http://ecos.fws.gov/ecp/species/9399 | Breeds May 15 to Oct 10 |

Blue-winged Warbler Vermivora pinus — Breeds May 1 to Jun 30
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
http://ecos.fws.gov/ecp/species/1680

Golden-winged Warbler Vermivora chrysoptera — Breeds May 1 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/8745

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/9679

Long-eared Owl asio otus — Breeds Mar 1 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/3631

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

| | |
|---|---|
| Red-headed Woodpecker Melanerpes erythrocephalus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Sep 10 |
| Ruddy Turnstone Arenaria interpres morinella<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Short-billed Dowitcher Limnodromus griseus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>http://ecos.fws.gov/ecp/species/9480 | Breeds elsewhere |
| Wood Thrush Hylocichla mustelina<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Aug 31 |

# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

**Breeding Season** (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

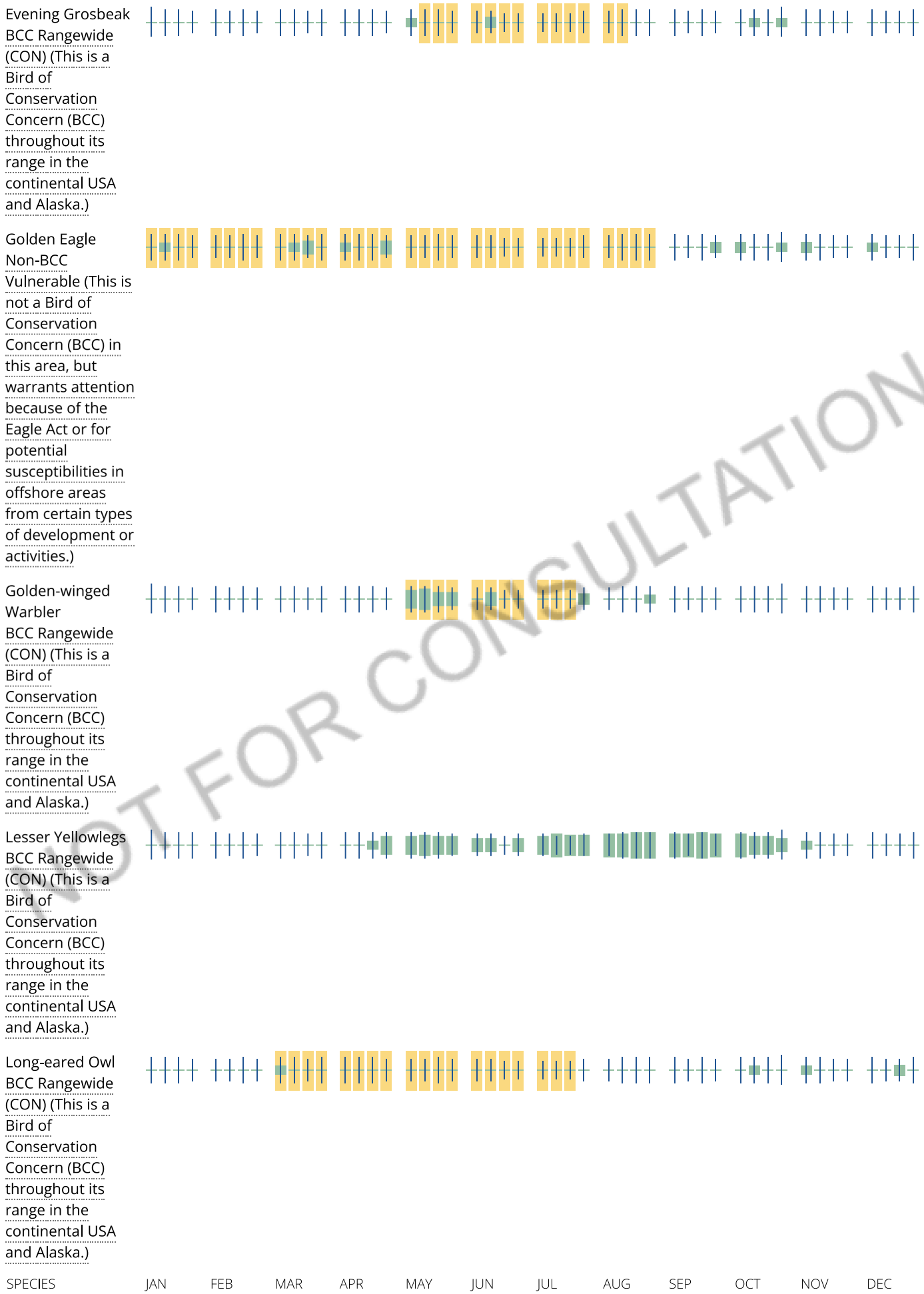
Black-billed Cuckoo BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Blue-winged Warbler BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

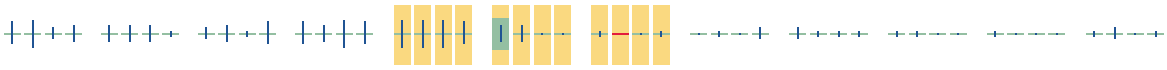
Bobolink BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Canada Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

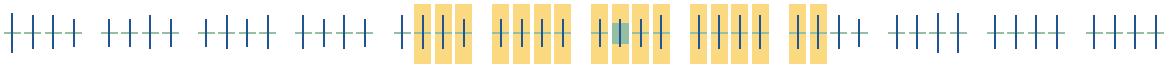
Eastern Whip-poor-will BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Prairie Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Ruddy Turnstone BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and

avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird

impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.



# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

# Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

# Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1E
- PEM1Ed
- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1C
- PFO1A
- PFO1/EM1E
- PFO4/1E
- PFO1/4C
- PFO1E
- PFO4C
- PSS1E

OTHER

- Pf

RIVERINE

- R2UBH
- R5UBH
- R5UBFx
- R2USC

A full description for each wetland code can be found at the National Wetlands Inventory website

**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

# APPENDIX D

# AGENCY CONSULTATION

## Re: Middlebury Lower Hydroelectric Project and Weybridge Hydroelectric Project - Review for LIHI Recertification Application

Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>

Thu 1/13/2022 9:20 AM

To: Davis, Eric <eric.davis@vermont.gov>; Simard, Betsy <betsy.simard@vermont.gov>; Crocker, Jeff <jeff.crocker@vermont.gov>

Hi Eric,

I completely understand. Thank you so much for the help!

Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
www.kleinschmidtgroup.com

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**From:** Davis, Eric <Eric.Davis@vermont.gov>
**Sent:** Wednesday, January 12, 2022 2:01 PM
**To:** Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>; Simard, Betsy <betsy.simard@vermont.gov>; Crocker, Jeff <Jeff.Crocker@vermont.gov>
**Subject:** RE: Middlebury Lower Hydroelectric Project and Weybridge Hydroelectric Project - Review for LIHI Recertification Application

Hi Jessica,

Thanks so much for letting us know that. We've been working through the list of projects, but have been short staffed as of late, so it's taken longer than we would've liked to get back to you. We'll make sure that the RTE list is up to date for Vergennes.

Thanks,
Eric

VERMONT

**Eric Davis** | River Ecologist (he/him)
Vermont Agency of Natural Resources | Department of Environmental Conservation
Watershed Management Division | Rivers Program
Davis 3, 1 National Life Dr | Montpelier, VT 05620-3522
802-490-6180 (cell)
eric.davis@vermont.gov
dec.vermont.gov/watershed/rivers

---

**From:** Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>
**Sent:** Wednesday, January 12, 2022 1:35 PM
**To:** Davis, Eric <Eric.Davis@vermont.gov>; Simard, Betsy <Betsy.Simard@vermont.gov>; Crocker, Jeff <Jeff.Crocker@vermont.gov>

**Subject:** Re: Middlebury Lower Hydroelectric Project and Weybridge Hydroelectric Project - Review for LIHI Recertification Application


Hi Eric,

Thank you so much for your response. With the new recertification process with LIHI, GMP has received extensions on all of their projects until 2027 except for the Vergennes Project. I will get the operations data from them for that Project, and send it to you all for your review. I apologize for the change, and I appreciate your help. Thank you for taking the time to get back to me on this. It is really appreciated!

Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
**www.kleinschmidtgroup.com**

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**From:** Davis, Eric <Eric.Davis@vermont.gov>
**Sent:** Wednesday, January 5, 2022 9:22 AM
**To:** Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>; Simard, Betsy <betsy.simard@vermont.gov>; Crocker, Jeff <Jeff.Crocker@vermont.gov>
**Subject:** RE: Middlebury Lower Hydroelectric Project and Weybridge Hydroelectric Project - Review for LIHI Recertification Application

Hi Jessica,

Thank you for proactively reaching out regarding the recertification of the Middlebury Lower and Weybridge Hydroelectric Projects.

The Agency can confirm that the 1999 Water Quality Certificate for Middlebury Lower and the 2001 WQC for the Weybridge Project are still valid and applicable to the facilities. The Agency has also reviewed the lists of rare, threatened, and endangered species at the Projects. The Agency does not have additional species to add and can confirm that the Project, if operated in compliance, and with no plans for tree removal or other major construction activities, would not negatively impact any of the currently listed species identified in your e-mail dated December 6, 2021.

To evaluate compliance with water quality certification and FERC license conditions, the Agency has developed a practice of requesting the prior full water year of operations data, which in this case would be the 2021 WY (Oct. 2020 through Sept. 2021). We also understand that the Middlebury Lower project may not have been operating for all or much of this period.

Thanks again for touching base on these applications,
Eric

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**From:** Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>
**Sent:** Thursday, December 16, 2021 3:48 PM
**To:** Simard, Betsy <Betsy.Simard@vermont.gov>; Davis, Eric <Eric.Davis@vermont.gov>; Crocker, Jeff <Jeff.Crocker@vermont.gov>

**Subject:** Re: Middlebury Lower Hydroelectric Project and Weybridge Hydroelectric Project - Review for LIHI Recertification Application

**EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.**
Hi Jeff, Betsy, and Eric,

I wanted to follow up with you to see if there was any further information that you would need for this review, or to see if there was someone else that I should reach out to instead.

Thanks so much,
Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
www.kleinschmidtgroup.com

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**From:** Jessica Antonez
**Sent:** Monday, December 6, 2021 5:10 PM
**To:** Simard, Betsy <betsy.simard@vermont.gov>; Davis, Eric <eric.davis@vermont.gov>; jeff.crocker@vermont.gov <jeff.crocker@vermont.gov>
**Subject:** Middlebury Lower Hydroelectric Project and Weybridge Hydroelectric Project - Review for LIHI Recertification Application

Hi Jeff, Betsy, and Eric,

Kleinschmidt Associates is assisting Green Mountain Power (GMP) with the Low Impact Hydropower Institute (LIHI) re-certification application for GMP's Middlebury Lower Project (FERC No. 2737) and Webridge Project (FERC No. 2731). As part of this application process, LIHI requests correspondence from relevant resource agencies to confirm that the projects are in compliance with prescriptions and license articles. To that end, we are hoping for some feedback from regulatory agencies to confirm validity and compliance that the 1999 Water Quality Certificate for Middlebury Lower and the 2001 WQC for the Weybridge Project are still valid and applicable to the facilities, and that the Projects are in compliance. The WQC for Middlebury Lower is located on FERC's eLibrary here: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000681B6-66E2-5005-8110-C31FAFC91712. The WQC for the Weybridge Project is located on FERC's elibrary here: https://elibrary.ferc.gov/eLibrary/idmws/common/opennat.asp?fileid=6006239.

I am also looking to confirm the list of rare, threatened, and endangered species at the Project, and that the Project, as it currently operates and with no plans for tree removal or other major construction activities, continues to not negatively impact any of the currently listed species as identified below. These lists were compiled based on a review of the VANR website and from consultation with the agency in 2017. Please let me know if there have been any changes or additions that should also be considered.

**Middlebury Lower Project**

- Indiana Bat (federally and state endangered)
- Northern Long-eared Bat (federally and state endangered)
- Bald Eagle (state protected)

- Osprey ("uncommon"/species of greatest conservation need)
- Cuckoo flower (S2-Rare) - Cardamine dentata (syn. Cardamine pratensis var. palustris)
- Frank's love-grass (S3-Uncommon) - Eragrostis frankii
- Gray's sedge (S3-Uncommon) - Carex grayi

**Weybridge Project**

- Giant floater (state threatened)
- Creeping lovegrass (rare)
- Hybrid thread-leaved pondweed (rare)
- Riverweed (rare)
- Fluted-shell (state threatened)
- Creek heelsplitter (rare)
- Indiana Bat (federally and state endangered)
- Northern Long-eared Bat (federally and state endangered)
- Osprey ("uncommon"/species of greatest conservation need)
- Bald Eagle (state protected)

Please let me know if you have any questions or need any further information for this. Thank you for your help!

Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
www.kleinschmidtgroup.com

## Re: Vergennes Hydroelectric Project - Review for LIHI Recertification Application

Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>

Fri 11/19/2021 1:18 PM

To: jeff.crocker@vermont.gov <jeff.crocker@vermont.gov>; Simard, Betsy <betsy.simard@vermont.gov>; Davis, Eric <eric.davis@vermont.gov>

Hello,

I wanted to follow up and make sure that this email got to you and check to see if this would be something that you would be available to help with. If there is someone else that I should contact, please let me know.

Thank you for your help!
Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
www.kleinschmidtgroup.com

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**From:** Jessica Antonez
**Sent:** Friday, November 5, 2021 3:13 PM
**To:** jeff.crocker@vermont.gov <jeff.crocker@vermont.gov>; Simard, Betsy <betsy.simard@vermont.gov>; Davis, Eric <eric.davis@vermont.gov>
**Subject:** Vergennes Hydroelectric Project - Review for LIHI Recertification Application

Hi Jeff, Betsy, and Eric,

Kleinschmidt Associates is assisting Green Mountain Power (GMP) with the Low Impact Hydropower Institute (LIHI) re-certification application for GMP's Vergennes Project (FERC No. 2674). As part of this application process, LIHI requests correspondence from relevant resource agencies to confirm that the projects are in compliance with prescriptions and license articles. To that end, I am requesting feedback from regulatory agencies to confirm validity and compliance that the 1999 Water Quality Certificate is still valid and applicable to the facility, and that the Project is in compliance. The WQC is located on elibrary following this link: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990511-0310&optimized=false.

I am also looking to confirm the list of rare, threatened, and endangered species at the Project, and that the Project, as it currently operates and with no plans for tree removal, continues to not negatively impact any of the currently listed species as identified in the list below. This list was compiled based on a review of the VANR website and from consultation with the agency in 2016. Please let me know if there have been any changes or additions.

- Indiana Bat (federally endangered and state endangered)
- Northern long-eared bat (federally threatened species and state endangered)
- Monarch Butterfly (candidate species)
- Lake sturgeon (state endangered)
- Black sandshell (state endangered species)

- Fragile papershell (state endangered species)
- Pink heelsplitter (state endangered species)
- Pocketbook mussel (state endangered species)
- Giant floater (state threatened species)
- Creeping love-grass (state rare species)
- Green dragon (state threatened species)

We have some more re-certification applications that are upcoming that will require similar consultation. Would it be helpful for you to be provided the requests for all of those projects at once, receive them based on watershed, or receive them individually?

Please let me know if you need any more information and thank you for your help!
Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
www.kleinschmidtgroup.com

## Re: Vergennes Hydroelectric Project - Review for LIHI Recertification Application

Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>

Mon 2/14/2022 2:55 PM

To: Davis, Eric <eric.davis@vermont.gov>; Crocker, Jeff <jeff.crocker@vermont.gov>; Simard, Betsy <betsy.simard@vermont.gov>

Hi Eric,

Thank you so much for sending that along. I really appreciate it. I will send you the operations data as soon as I have all of it compiled together for you.

Thanks again!
Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
www.kleinschmidtgroup.com

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**From:** Davis, Eric <Eric.Davis@vermont.gov>
**Sent:** Wednesday, February 9, 2022 8:56 AM
**To:** Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>; Crocker, Jeff <Jeff.Crocker@vermont.gov>; Simard, Betsy <betsy.simard@vermont.gov>
**Subject:** RE: Vergennes Hydroelectric Project - Review for LIHI Recertification Application

Hi Jessica,

Thanks for circling back on this and for pulling together the operations data.

We have checked in with our Natural Heritage staff and they did have some additions to the previously circulated list, which are included below:

Mudpuppy (*Necturus maculosus*) S2
Silvery Lamprey (I*chthyomyzon unicuspis*) S2
Eastern Sand Darter (*Ammocrypta pellucida*) S1
Channel Darter (*Percina copelandi*)
Fluted-shell (*Lasmigona costata*) S2
Silver Redhorse (*Lasmigona costata)* S2
Three-parted beggar's-ticks (*Bidens tripartita ssp. comosa*) SU. Not rankable due to lack of information
Red-root flat-sedge (*Cyperus erythrorhizos*) S2/S3

Thanks,
Eric

VERMONT

**Eric Davis** | River Ecologist (he/him)
Vermont Agency of Natural Resources | Department of Environmental Conservation
Watershed Management Division | Rivers Program

Davis 3, 1 National Life Dr | Montpelier, VT 05620-3522
802-490-6180 (cell)
eric.davis@vermont.gov
dec.vermont.gov/watershed/rivers

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**From:** Jessica Antonez <Jessica.Antonez@Kleinschmidtgroup.com>
**Sent:** Tuesday, February 8, 2022 10:59 AM
**To:** Crocker, Jeff <Jeff.Crocker@vermont.gov>; Simard, Betsy <Betsy.Simard@vermont.gov>; Davis, Eric <Eric.Davis@vermont.gov>
**Subject:** Re: Vergennes Hydroelectric Project - Review for LIHI Recertification Application

**EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.**
Hi Jeff, Betsy, and Eric,

I wanted to follow up with you all on the LIHI Vergennes RTE species list, and see if there were any others that should be added to it. We are working on pulling the 2021 WY data together for you all, and will have that sent your way for review soon. Please let me know if there is anything else that you need in the meantime.

Thanks so much!
Jessica

**Jessica Antonez**
**Associate Licensing Coordinator**
Kleinschmidt
**Office: 207-416-1214**
**www.kleinschmidtgroup.com**

---

**From:** Jessica Antonez
**Sent:** Friday, November 5, 2021 3:13 PM
**To:** jeff.crocker@vermont.gov <jeff.crocker@vermont.gov>; Simard, Betsy <betsy.simard@vermont.gov>; Davis, Eric <eric.davis@vermont.gov>
**Subject:** Vergennes Hydroelectric Project - Review for LIHI Recertification Application

Hi Jeff, Betsy, and Eric,

Kleinschmidt Associates is assisting Green Mountain Power (GMP) with the Low Impact Hydropower Institute (LIHI) re-certification application for GMP's Vergennes Project (FERC No. 2674). As part of this application process, LIHI requests correspondence from relevant resource agencies to confirm that the projects are in compliance with prescriptions and license articles. To that end, I am requesting feedback from regulatory agencies to confirm validity and compliance that the 1999 Water Quality Certificate is still valid and applicable to the facility, and that the Project is in compliance. The WQC is located on elibrary following this link: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990511-0310&optimized=false.

I am also looking to confirm the list of rare, threatened, and endangered species at the Project, and that the Project, as it currently operates and with no plans for tree removal, continues to not negatively impact any of the currently listed species as identified in the list below. This list was compiled based on a review of the VANR website and from consultation with the agency in 2016. Please let me know if there have been any changes or additions.

- Indiana Bat (federally endangered and state endangered)

- Northern long-eared bat (federally threatened species and state endangered)
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- Fragile papershell (state endangered species)
- Pink heelsplitter (state endangered species)
- Pocketbook mussel (state endangered species)
- Giant floater (state threatened species)
- Creeping love-grass (state rare species)
- Green dragon (state threatened species)

We have some more re-certification applications that are upcoming that will require similar consultation. Would it be helpful for you to be provided the requests for all of those projects at once, receive them based on watershed, or receive them individually?

Please let me know if you need any more information and thank you for your help!
Jessica

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