

# LOW IMPACT HYDROPOWER INSTITUTE APPLICATION

## Newbury Hydroelectric Project (FERC NO. 5261)



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## LIST OF ATTACHMENTS

Attachment A	Agency Consultation [To be included in the Stage II Application]
Attachment B	2025 USFWS Information for Planning and Consultations (IPAC)
Attachment C	Reference Documents [To be included in the Stage II Application]

## 1.0 FACILITY DESCRIPTION

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### 1.1 Project Overview

The Newbury Hydroelectric Project (FERC No. 5261) (Project or Newbury Project) is an existing, licensed hydroelectric project operated by Green Mountain Power Corporation (GMP or Licensee). The 0.365-megawatt (MW) Newbury Project is located on the Wells River, in the Village of Wells River, Town of Newbury, Orange County, Vermont. The Project is located approximately 0.9 river miles from the Wells River's confluence with the Connecticut River (Figure 1-1).

Originally built in 1912, the dam is a concrete, gravity-type structure that is 90-feet-long by 26-feet-high with a south abutment crest at 464.9 feet National Geodetic Vertical Datum (NGVD 29)<sup>1</sup> and a north abutment crest at 464.4 feet NGVD 29. The spillway is 73.3-feet-long by approximately 20-feet-high and topped with a 5-foot-high and 73.3-foot-long pneumatic crest gate<sup>2</sup> system. The spillway crest elevation is 458.9 feet NGVD 29, and normal impoundment level is 463.9 feet NGVD 29 with the crest gate system inflated. The bypassed reach is approximately 590-feet-long, and the impoundment is approximately 0.4 miles in length and covers a surface area of 11.4 acres at full pond, with 25 acre-feet of gross storage capacity. The average net head at the Project is 34 feet, and the normal tailwater elevation is 430.0 feet NGVD 29.

Additional Project facilities include: a 5-foot-diameter, 435-foot-long underground steel penstock; an intake structure; a powerhouse located within the former Adams Paper Company mill building containing a single turbine-generator unit (Unit No. 1) rated at 0.315 MW; a minimum flow unit (Unit No. 2) located approximately 75 feet downstream of the dam rated at 0.05 MW; a tailrace; three 150-foot-long generator leads creating a 480 Volt (V), 3-phase, 150-foot-long underground transmission line connecting to three pole-mounted 167 kVA<sup>3</sup> step-up transformers; appurtenant facilities.

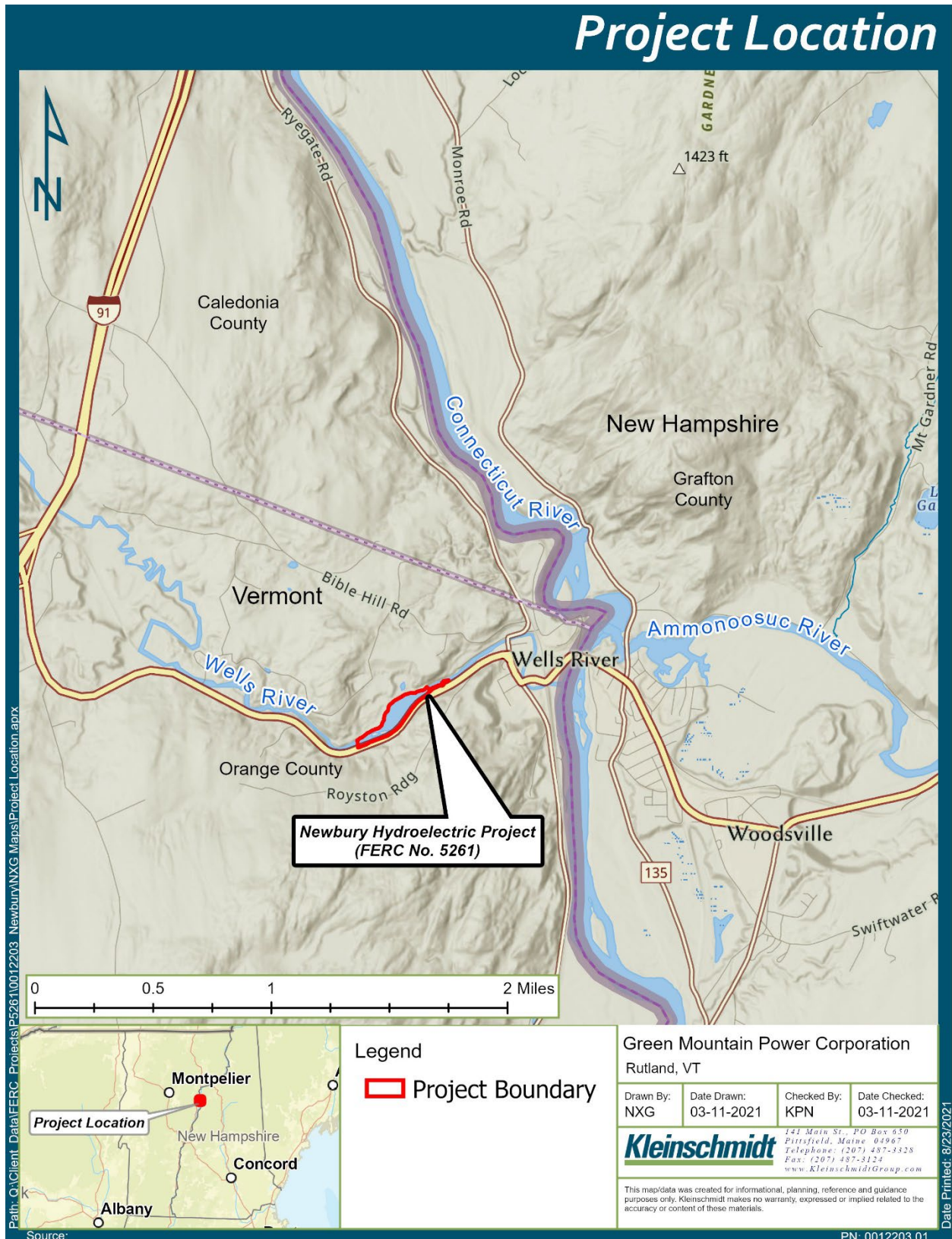
A Water Quality Certification was issued for the project on [May 11, 2023](#) by the Vermont Agency of Natural Resources (VANR) and a subsequent 40-year license was issued by the Federal Energy Regulatory Commission (FERC) on [March 28, 2024](#).

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<sup>1</sup> Elevations are referenced in NGVD 29. NAVD 88 = NGVD 29 – 0.394.

<sup>2</sup> Also known as an Obermeyer system.

<sup>3</sup> kVA is equal to 1,000 volt-amperes.



**Figure 1-1 Newbury Project Location Map**





**Figure 1-2 Newbury Project Facilities**



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**Photo 1-1 Newbury Project Facilities**



**Photo 1-2 Newbury Project Dam and Spillway**





**Photo 1-3 Newbury Project Bypassed Reach and Minimum Flow Unit**



**Photo 1-4 Newbury Project Tailrace**



**Photo 1-5 Newbury Project's Downstream Fish Passage Chute**



**Photo 1-6 View of Newbury Impoundment Looking Upstream**



## 1.2 Facility Information – Newbury Project

**Table 1-1 Facility Information**

Item	Information Requested	Response (include references to further details)
<b>Name of the Facility</b>	Facility name (use FERC project name or other legal name)	Newbury Hydropower Project (FERC No. 5261)
<b>Reason for applying for LIHI Certification</b>	<ol style="list-style-type: none"> <li>1. To participate in state RPS program</li> <li>2. To participate in voluntary REC market (e.g., Green-e)</li> <li>3. To satisfy a direct energy buyer's purchasing requirement</li> <li>4. To satisfy the facility's own corporate sustainability goals</li> <li>5. For the facility's corporate marketing purposes</li> <li>6. Other (describe)</li> </ol>	To participate in the voluntary REC market.
	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	The Project would expect to receive RECs for 100% of generation.
<b>Location</b>	River name (USGS proper name)	Wells River
	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: <a href="https://water.usgs.gov/wsc/map/index.html">https://water.usgs.gov/wsc/map/index.html</a>	Wells R 01080103
	Nearest town(s), county(ies), and state(s) to dam	Newbury Town, Orange County, Vermont
	River mile of dam above mouth	0.9 upstream of the confluence of the Wells River and Connecticut River.
	Geographic latitude and longitude of dam	44.1519972 -72.0541666

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Item	Information Requested	Response (include references to further details)
<b>Facility Owner</b>	Application contact names	Jason Lisai John Tedesco
	Facility owner company and authorized owner representative name.	Green Mountain Power Corporation
	<b>For recertifications: If ownership has changed since last certification, provide the effective date of the change.</b>	N/A
	FERC licensee company name (if different from owner)	Same as owner.
<b>Regulatory Status</b>	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	P-5261-023, Issued March 28, 2024; Expires February 29, 2064.
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Minor
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments.	Water Quality Certification: <a href="#">May 11, 2023</a> ; Issued by Vermont Agency of Natural Resources
	Hyperlinks to key electronic records on FERC e-Library website or other publicly accessible data repositories <sup>4</sup>	Order Granting Extension of Time to June 2025 to File the Flow Management and Monitoring Plan Pursuant to Article 401: <a href="#">December 19, 2024</a>  Final Programmatic Agreement: <a href="#">December 14, 2023</a>  Order Issuing Subsequent License: <a href="#">March 28, 2024</a>

<sup>4</sup> 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, 3<sup>rd</sup>-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.

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Item	Information Requested	Response (include references to further details)
		Order Approving Revised Exhibit A and G: <a href="#">October 1, 2024</a>  FERC Environmental Assessment: <a href="#">September 26, 2023</a>  Water Quality Certification: <a href="#">May 11, 2023</a>
<b>Powerhouse</b>	Date of initial operation (past or future for pre-operational applications)	Dam construction – 1912 Powerhouses - 1984
	Total installed capacity (MW)	0.365 MW
	<b>For recertifications: Indicate if installed capacity has changed since last certification</b>	N/A
	Average annual generation (MWh) and period of record used	882 MWh, 2013-2020
	<b>For recertifications: Indicate if average annual generation has changed since last certification</b>	N/A
	<u>Mode of operation</u> (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.)	Run-of-river
	<b>For recertifications: Indicate if mode of operation has changed since last certification</b>	N/A



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Item	Information Requested	Response (include references to further details)
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	<p>The Project has two turbine units and a total installed capacity of the entire station of 0.365 MW. The main unit has a 0.315 MW Horizontal Ossberger cross-flow turbine with a capacity of 0.315 MW. The second unit is a minimum flow unit with a fixed blade propeller turbine with a capacity of 0.05 MW.</p> <p>The minimum and maximum hydraulic capacity of the main unit is 20 cfs and 134 cfs, respectively.</p> <p>The hydraulic capacity of the second unit (minimum flow unit) is 30 cfs.</p>
	Trashrack clear spacing (inches) for each trashrack	1 inch
	Approach water velocity (ft/s) at each intake if known	Less than 1 foot per second (fps) during full generation (0.97 fps)
	Dates and types of major equipment upgrades	<p>Minimum flow unit replacement: 1994</p> <p>Unit 1 Penstock and Turbine Replacement two remove two main units and replace with a single unit: 2012/2013</p>
	<b>For recertifications: Indicate only those since last certification</b>	N/A
	Dates, purpose, and type of any recent operational changes	<p>As part of the new License:</p> <p>Implementation of new minimum flow requirements pursuant to subsequent license and WQC as of License Order Issued March 28, 2024.</p>

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Item	Information Requested	Response (include references to further details)
	<b>For recertifications: Indicate only those since last certification</b>	N/A
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	<p>As part of the new License:</p> <p>Flow Management and Monitoring Plan (Article 402) required by June 30, 2025.</p> <p>Protection of Tri-colored Bats (Article 404) – tree removal limited to August 1 through April 30, annually.</p> <p>Boating Access Plan required to be filed within 2 years of subsequent license (Article 405).</p> <p>Debris Disposal Plan (Article 406) – <a href="#">filed with FERC on August 27, 2024</a>.</p> <p>American Eel Passage Plan (Article 401) to be developed within one year of upstream eel passage at the downstream Wilder Project, in consultation with US Fish and Wildlife Service and Vermont Agency of Natural Resources.</p> <p>Historic Properties Management Plan (Article 408) required within one year of license issuance.</p>

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Item	Information Requested	Response (include references to further details)
<b>Dam or Diversion</b>	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	1912; Subsequently Modified in 1984 associated with prior 1983 FERC license.
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards	90-feet-long, 26-feet-high 5-foot-high by 73.3-foot long pneumatic crest; Run-of-river operations;
	Spillway maximum hydraulic capacity	5,511 cfs
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	Penstocks are 5-foot-diameter buried stainless steel and 435-feet-long. The intake is reinforced concrete, 11-feet 2-inches-wide by 9-feet-long with a 6-foot hydraulically operated slide gate. There is a 5-feet-wide, 7-feet high minimum flow unit knife gate. The downstream fish chute is 8-foot-long by 4-foot-wide steel sluice box that extends to the plunge pool and is installed seasonally.
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Hydroelectric power generation
<b>Conduit Facilities Only</b>	Date of conduit construction and primary purpose of conduit	N/A
	Source water	N/A
	Receiving water and location of discharge	N/A
<b>Impoundment and Watershed</b>	Authorized maximum and minimum impoundment water surface elevations	Normal water surface elevation is 463.87 feet NGVD 29.

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Item	Information Requested	Response (include references to further details)
	<b>For recertifications: Indicate if these values have changed since last certification</b>	N/A
	Normal operating elevations and normal fluctuation range	Normal water surface elevation is 463.87 feet NGVD 29, minimal fluctuations due to run-of-river operation.
	<b>For recertifications: Indicate if these values have changed since last certification</b>	N/A
	Gross storage volume and surface area at full pool	25 acre-feet gross storage 11.4 acres surface area
	<b>For recertifications: Indicate if these values have changed since last certification</b>	N/A
	Usable storage volume and surface area	No useable storage, project is operated as run-of-river
	<b>For recertifications: Indicate if these values have changed since last certification</b>	N/A
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Run-of-river mode where inflow equals outflow to protect aquatic resources. Seasonal spring (April 1 to June 1) and fall (September 1 to November 15) passage of 10 cfs through the downstream fish passage chute (instead of the current amount of 20 cfs) during the spring and fall. Continuous 10 cfs aesthetic flow pass over the spillway. Continuous 37 cfs (or inflow if less) at all times to the bypassed reach.

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Item	Information Requested	Response (include references to further details)
	Upstream dams by name, ownership (including if owned by an affiliate of the applicant's company) and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	Boltonville dam - Wells River Project (FERC exemption No. 4770), owned by Wells River Hydro Associates. River Mile approx. 5.3. No upstream fish passage; downstream unknown.
	Downstream dams by name, ownership (including if owned by an affiliate of the applicant's company), river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage.	<p>Wilder Hydroelectric Project (FERC No. P-1892), owned by Great River Hydro, River Mile 217 on the Connecticut River. Has a fishway.</p> <p>Bellows Falls Hydroelectric Project (FERC No. 1855), owned by Great River Hydro, River Mile 174 on the Connecticut River. Has a fish ladder.</p> <p>Vernon Hydroelectric Project (FERC No. 1904), owned by Great River Hydro, River Mile 143 on the Connecticut River. Has a fish ladder.</p> <p>Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain (FERC No. 2485), owned by FirstLight, River Mile 120 on the Connecticut River. Turners Falls has a fish ladder.</p> <p><i>Note: all above listed dams are currently in relicensing.</i></p>



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Item	Information Requested	Response (include references to further details)
		Holyoke Hydroelectric Project (FERC No. 1889), owned by City of Holyoke Gas and Electric, River Mile 82 on the Connecticut River. Has a fish ladder and lift.
	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 encompasses approximately 13.63 acres, of which 3.4 acres is terrestrial lands, leased to GMP by a private landowner. The impoundment is 11.4 acres at normal pond elevation for which GMP holds flowage rights.
<b>Hydrologic Setting</b>	Average annual flow at the dam, and period of record used	Average annual flow of 170 cfs from January 1, 1991 to December 31, 2020.
	Average monthly flows and period of record used	Period of record: January 1, 1991 to December 31, 2020 January: 142 cfs February: 107 cfs March: 201 cfs April: 464 cfs May: 244 cfs June: 155 cfs July: 121 cfs August: 86 cfs September: 68 cfs October: 134 cfs November: 155 cfs December: 165 cfs

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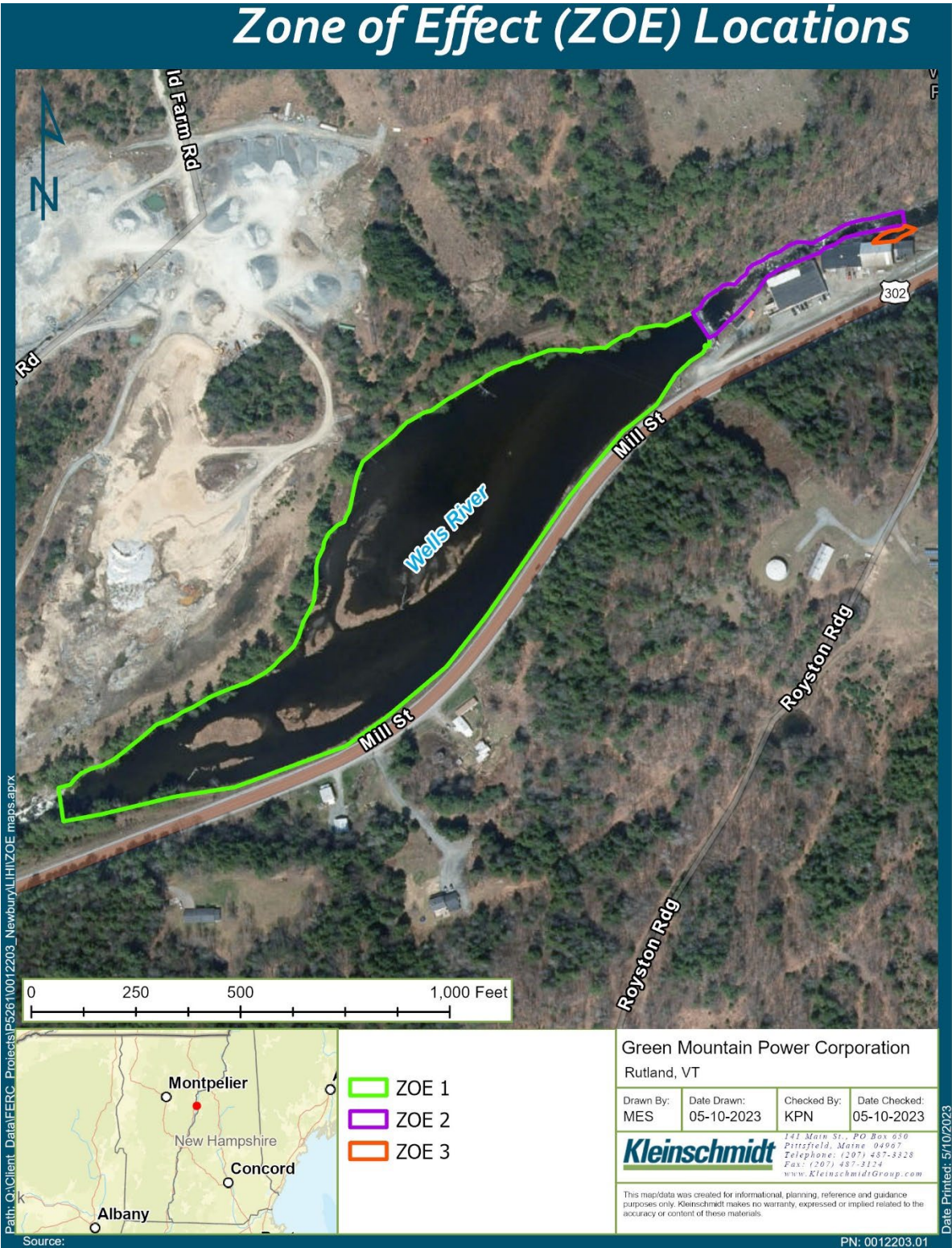
Item	Information Requested	Response (include references to further details)
	Location and name of closest stream gaging stations above and below the facility	<p>Above: Wells River at Wells River, VT USGS gage No. 01139000</p> <p>Below: Connecticut River at Wells River, VT USGS gage No. 01138500</p>
	Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.	Approximately 102 square miles
	Other facility specific hydrologic information (e.g., average hydrograph)	N/A
<b>Designated Zones of Effect</b>	Numbers and names of each zone of effect (e.g., "Zone 1: Impoundment")	
	River mile of upstream and downstream limits of each zone of effect (e.g., "Zone 1 Impoundment: RM 6.3 - 5.1")	<p>Zone 1 Impoundment: River Mile 1.3 - 0.9</p> <p>Zone 2 Bypassed Reach: River Mile 0.9 - 0.8</p> <p>Zone 3 Tailwater: River Mile 0.8 - 0.7</p>

## 2.0 STANDARDS MATRICES

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### 2.1 Zones of Effect

There are three zones of effect (ZOE) at the Newbury Hydroelectric Project. Zone 1 is the impoundment, extending from the dam upstream 0.4 river miles. Zone 2 is the bypassed reach, 590 feet in length (0.1 RM). Zone 3 is the tailrace, extending 600 feet downstream (0.1 RM) from the powerhouse to the point where the bypass and tailwater converge.



**Figure 2-1 Newbury Hydroelectric Project's ZOE map. Green = ZOE 1 Impoundment, Purple = ZOE 2 Bypass, Orange = ZOE 3 Tailrace.**

**Table 2-1 Standards Matrix**

		<b>Zone:</b>	<b>ZOE 1: Impoundment</b>	<b>ZOE 2: Bypassed Reach</b>	<b>ZOE 3: Tailrace</b>
		<b>Approximate River Mile (RM) at upper and lower extent of Zone</b>	RM 1.3 - 0.9	RM 0.9 - 0.8	RM 0.8 - 0.7
<b>Criterion</b>			<b>Standard Selected</b>		
<b>A</b>	<b>Ecological Flows</b>		1	2	1
<b>B</b>	<b>Water Quality</b>		2	2	2
<b>C</b>	<b>Upstream Fish Passage</b>		2	2	2
<b>D</b>	<b>Downstream Fish Passage</b>		2	2	2
<b>E</b>	<b>Shoreline and Watershed Protection</b>		1	1	1
<b>F</b>	<b>Threatened and Endangered Species</b>		2	2	2
<b>G</b>	<b>Cultural and Historic Resources</b>		2	2	2
<b>H</b>	<b>Recreational Resources</b>		2	1	1



## 3.0 SUPPORTING INFORMATION

### 3.1 Ecological Flows Regimes

#### 3.1.1 ZOE 1 – Impoundment and ZOE 3 - Tailrace

Criterion	Standard	Instructions
A	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>The flow regime at the facility was developed in accordance with a science-based resource agency recommendation,</li></ul>

##### 3.1.1.1 ZOE 1 - Impoundment

The Newbury Project is operated in a run-of-river mode, where inflow approximates outflow, with no utilization of reservoir storage for power generation. The 11.4-acre reservoir extends approximately 0.4 miles upstream from the dam and is maintained at an elevation of 463.9 feet NGVD 29, with no peaking or store-and-release operations. If a drawdown is required for project maintenance or repair, GMP consults with the relevant resource agencies regarding the timing and duration to avoid adverse effects to aquatic resources.

As required by WQC Condition C, a Flow Management and Monitoring Plan (FMMP) is being developed detailing how the Project maintains impoundment levels and manages inflows, downstream fish passage flows, aesthetic flows, and conservation flows to the bypassed reach, with provisions for the flow data to be available on a near real-time basis. The FMMP is required to include:

- a detailed description of how the licensee will monitor compliance with the operational requirements of Article 403, including descriptions of the mechanisms and instrumentation or gages used (*i.e.*, type and exact locations of all flow and impoundment elevation monitoring equipment), impoundment elevations needed during run-of-river operation to provide the bypassed reach minimum flow, aesthetic spill flow, and flows through the downstream fish passage chute, and procedures for maintaining and calibrating all compliance monitoring equipment;
- a provision to maintain a log of project operation; and
- an implementation schedule.

Due to a need to revise the Water Quality Certification to clarify flow requirements for the downstream fish passage chute, which includes a public comment period, GMP obtained an extension of time until June 30, 2025 to file a final FMMP with the Commission.

#### **3.1.1.2 ZOE 3 - Tailrace**

Due to the run-of-river mode of operation, the tailrace is completely dependent upon inflow to the Project and does not have flow requirements in place outside of the Project operating requirements. While in operation the tailrace can receive up to 134 cfs from turbine discharge, and no less than 20 cfs, due to the operating limitations of the single turbine-generator unit within the powerhouse. All inflow to the impoundment is ultimately routed to the confluence of the bypassed reach and tailrace approximately 125 feet downstream of the powerhouse, via a combination of the downstream fish passage chute, spillage, and through the generating units.

Article 406 requires a Debris Disposal Plan that describes procedures for collecting, managing and disposing of organic and inorganic debris at the project. GMP filed a draft plan developed in consultation with VANR for FERC review and approval on August 27, 2024 and awaits approval.

### 3.1.2 ZOE 2 – Bypassed Reach

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

Based upon bypassed reach instream habitat and aesthetic flow evaluation studies associated with relicensing (See [Exhibit E, Appendix F](#)), WQC Condition B requires that GMP provide 37 cfs, or inflow if less, to the 590-foot-long bypassed reach year-round. This minimum flow includes 10 cfs spilled over the spillway for aesthetic purposes. The Newbury Project operates a minimum flow unit approximately 75 feet downstream of the dam that provides 30 cfs of the required minimum flow, with the additional minimum flow 7 cfs requirement met by the 10 cfs aesthetic spill. The minimum flow unit is operated in an “on” or “off” mode, therefore if less than 30 cfs is available to operate the unit is shut down and all inflow is spilled over the spillway.

Article 406 requires a Debris Disposal Plan that describes procedures for collecting, managing and disposing of organic and inorganic debris at the project. GMP filed a draft plan developed in consultation with VANR for FERC review and approval on August 27, 2024 and awaits approval.

The WQC for the Project used the best available science-based data to set requirements for maintaining optimal ecological flows within the Project bypassed reach. The required

FMMP will detail how the Project operates and achieves instantaneous run-of-river mode, manages seasonal flow, and maintains ecological flows. Compliance with the requirements set forth in the FMMP will ensure minimal adverse environmental effects occur due to Project operation. The required Debris Disposal Plan will ensure that debris disposal is consistent with the requirements specified in the Vermont Department of Environmental Conservation's (DEC) WQC condition G.



## 3.2 Water Quality Standard

### 3.2.1 All ZOES

<i><b>Criterion</b></i>	<i><b>Standard</b></i>	<i><b>Instructions</b></i>
B	2	<p><u>Agency Recommendation:</u></p> <p>The facility is in compliance with all water quality conditions contained in a recent Water Quality Certification or science-based resource agency recommendation providing reasonable assurance that water quality standards will be met for all waterbodies that are directly affected by the facility. Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses, and recreation.</p>

The Wells River is not listed on the Vermont 303(d) List of Impaired Waters requiring a Total Maximum Daily Limit and is not included on the Vermont 2020 Stressed Rivers List (VANR 2020a; VANR 2020b). The Wells River was previously included on the Vermont 2016 Stressed Rivers List for the designated use of aesthetics because of leachate, specifically iron and manganese, leaking into the Wells River via groundwater at the Newbury landfill site (VANR 2015; 2016). The Newbury landfill, approximately 3.5 RMs upstream of the Newbury Project, was closed in the 1990s.

The DEC periodically conducts water quality and benthic macroinvertebrate sampling at several sites within the Wells River. Dissolved oxygen (DO), pH, total nitrogen (NO<sub>3</sub>-N), total phosphorus, and turbidity samples were collected at five stations in the river between 1992 and 2017 demonstrated that the Wells River attained the standards for Class B (2) waters (Table 4.4 and Table 4.5) (VANR 2021a). DEC evaluates the biological integrity of the macroinvertebrate community by comparing specific metrics to the values expected for a naturally occurring macroinvertebrate population. Assessments completed between 1992 and 2017 in the Wells River found the macroinvertebrate community to be Very Good to Excellent, to meet Class B (2) water quality standards, and to fully support aquatic life standards; an assessment of Excellent indicates the community is near natural.

In accordance with study requests from DEC and CRC, GMP completed a water quality study during 2019. The objectives of the study were to collect DO and water temperature data to evaluate current water quality conditions within the Newbury Project area and to

assess whether Project operations affect water quality. Water temperature and DO were measured continuously at six sites in the Newbury Project area from July 8 to September 30, 2019. These sites were in the riverine reach upstream of the impoundment, within the impoundment, at the intake, adjacent to the minimum flow unit, in the bypass reach between the minimum flow unit and powerhouse, and in the tailrace.

The main findings of the 2019 water quality study were:

- Water temperature throughout the study area ranged from 11.9° Celsius (C) on September 19 to 26.4°C on July 20.
- Monthly average water temperatures at the six monitoring sites ranged from 21.8°C to 22.4°C in July, 20.7°C to 21.1°C in August, and 16.0°C to 16.7°C in September.
- Monthly average DO concentration (percent saturation) ranged from 8.3 mg/L to 8.6 mg/L (95.7 percent to 100.2 percent) in July; 8.5 mg/L to 8.7 mg/L (96.0 percent to 99.5 percent) in August; and 9.3 mg/L to 9.7 mg/L (96.0 percent to 100.8 percent) in September.
- DO was above the Class B(2) standard 99.3 percent and 99.9 percent of the time at the intake and tailwater, respectively.
- The DO concentration was above the Class B(2) standard (6 mg/L or 70 percent saturation) throughout the entire monitoring period upstream of the impoundment, within the impoundment, at the minimum flow unit, and in the bypassed reach.

More detailed water quality information can be found in Exhibit E of the Final License Application filed on [August 27, 2021](#).

Based on the available information, and the fact that the State of Vermont issued a new WQC for the Newbury Project in 2024, project operations do not adversely impact water quality in the Wells River. The Newbury Project operates as a ROR facility which provides a stable flow suitable for fish and wildlife habitat as required by the cold water fish habitat and Class B (2) classification prescribed to the Wells River.

### 3.3 Upstream Fish Passage

There is no upstream fish passage at Newbury, and it is not required due to lack of diadromous fish species. However, because the 2024 WQC and FERC license include provisions for eel passage plans dependent on timing of eel passage on the mainstem Connecticut River downstream of the project, upstream migrating American eels (*Anguilla rostrata*) may become present over the term of the new FERC license.

#### 3.3.1 All ZOE's

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
C	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>• The facility is in compliance with science-based fish passage resource agency recommendations for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</li></ul>

The Wells River Watershed Corridor Management plan reports information about fish species collected from the Wells River approximately 5.2 miles upstream of the Newbury Project. The Vermont Fish and Wildlife Department conducted an electrofishing survey approximately 1,000-feet downstream of the Newbury Dam in August 2018. Migratory fish have not been documented in these field efforts.

The 2024 WQC (Condition E) and FERC license include provisions to develop a plan for American eel passage within one year of American eel passage being installed at the Wilder Hydroelectric Project downstream of Newbury on the mainstem of the Connecticut River. GMP is required to consult with the Vermont Agency of Natural Resources and the U.S. Fish and Wildlife Service to initiate development of the plan including the method of passage, and an implementation schedule which can include monitoring studies and/or a trap and truck program or eel ramp installation, or other appropriate measures.

There is no agency recommendation for upstream fish passage aside from American eel due to the lack of diadromous species in the Wells River.

GMP agrees to initiate plans to develop passage for American eels within one year of American eel Passage being installed at the Wilder Hydroelectric Project on the mainstem of the Connecticut River. Because the Wilder Project is currently undergoing a relicensing process, timing of American eel passage installation is to be determined. Before developing the plan, GMP will consult with the Vermont Agency of Natural Resources and the U.S. Fish and Wildlife Service.

### 3.4 Downstream Fish Passage

#### 3.4.1 All ZOE's

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
D	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>The facility is in compliance with a science-based resource agency recommendation for downstream fish passage and/or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations</li></ul>

Fish passage at the site was initially developed as part of the Connecticut River Atlantic Salmon Restoration Program to pass Atlantic salmon (*Salmo salar*) smolts in the spring and fall (see VANR's 1988 amended Water Quality Certification in Appendix A). The Connecticut River Atlantic Salmon Restoration Program terminated after Tropical Storm Irene destroyed much of the program's infrastructure in Vermont (i.e., federal fish hatcheries) in 2011 and due to low annual salmon returns. Under the 2024 WQC, VANR concluded that GMP should continue to operate the downstream passage chute for resident species motivated to move downstream.

GMP installs and maintains the downstream fish passage facility from April 1<sup>st</sup> to June 1<sup>st</sup> and provides a flow of 20 cfs and from September 1<sup>st</sup> to November 15<sup>th</sup> and provides a flow of 10 cfs as spillage over the dam for aesthetics and minimum flow. GMP proposed to modify this downstream flow to be 10 cfs for both seasons. In its WQC, VANR did not raise specific objection to the proposed change in fish passage chute flows but noted that a flow of 25 cfs would be necessary to meet USFWS design criteria. GMP is currently consulting with VANR to amend the WQC to clarify flow requirements for the downstream passage chute.

Though not yet specifically defined by the WQC or Article 401 of the FERC license, it is assumed that downstream passage measures for American eel would be included in the overall plan and schedule within the required American Eel Passage Plan.

In the absence of migratory fish in the Wells River at present, the Project has no adverse effect on migratory fish passage. Including a plan and schedule for addressing future need of upstream and downstream eel passage at the Project, should American eel become present at the project, will ensure protective measures limit potential adverse effects on upstream and downstream migrants.



### 3.4.2 Shoreline and Watershed Protection

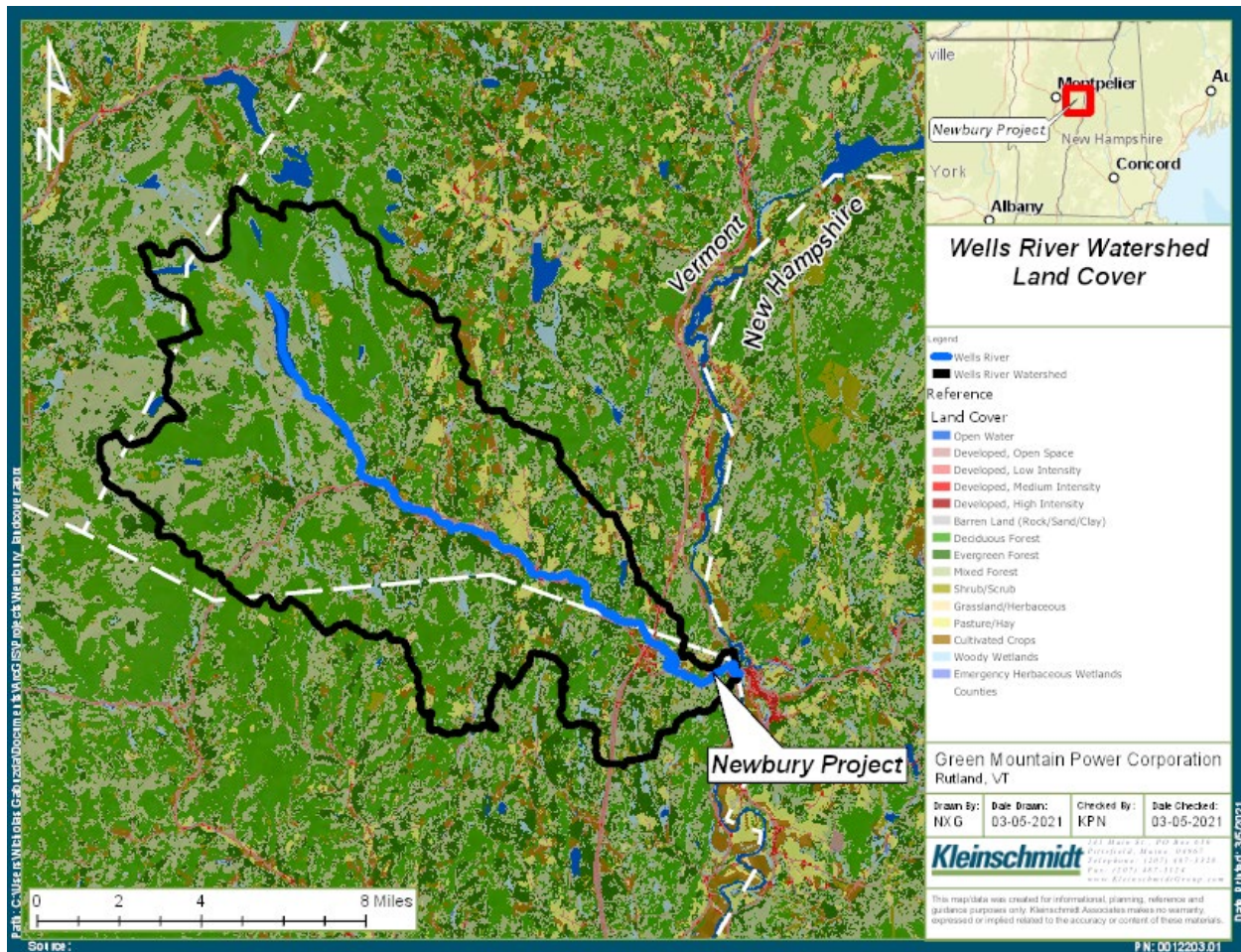
#### All ZOES

Criterion	Standard	Instructions
E	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>If there are no lands with significant ecological value associated with the designated ZoE, 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).</li> <li>Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.</li> </ul>

The shoreline perimeter of the Newbury Project impoundment is approximately 1 mile in length, with the southern portion made up of vegetation and riprap, and the northern portion being primarily forested with large areas of steeply sloped ledge outcrops. Artificial fluctuations in the impoundment are limited to maintenance activities due to the stable elevations from run-of-river operation, and if impoundment fluctuations for maintenance do occur, there are no streams within the Project area that are affected.

Within the Newbury Project area, the primary uses of the Wells River are non-Project related recreation and hydropower generation. There are no current or proposed water withdrawals in the vicinity of the Project. GMP holds all of the flowage easements required for the operation of the Newbury Project. Further, there is no formally required shoreline management program at the Project. Any temporary shoreline disturbance that may potentially result from future development of recreational access on the impoundment would require shoreland permitting through the State of Vermont and would include Best Management Practices to minimized temporary construction related erosion. The Newbury Project operates as a run of river facility and therefore has little impacts on the surrounding lands. There are no sensitive shoreland habitats present at the Project.

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**Figure 3-1 Map of the Wells River Watershed Land Cover**

**Table 3-1 Land cover within the Project area**

Land Cover	Area (Square Miles)	Percentage
Open Water	1.26	1.3%
Developed	4.13	4.1%
Barren Land	0.06	0.1%
Deciduous Forest	38.87	38.8%
Evergreen Forest	13.41	13.4%
Mixed Forest	29.19	29.1%
Shrub, Scrub	2.28	2.3%

Source: VCGI 2014

### 3.5 Threatened and Endangered Species

#### 3.5.1 All ZOE's

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
F	2	<p><u>Finding of No Negative Effects:</u></p> <ul style="list-style-type: none"> <li>Identify all federal and state listed species that are or may be in the immediate area of the designated ZoE based on current data from the appropriate state and federal natural resource management agencies.</li> <li>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 designated ZoE or is not impacted by facility operations.</li> </ul>

#### Federal Species

Federally listed endangered and threatened species that could potentially occur within the Project's ZOE's were identified using the USFWS Information for Planning and Consultation (IPaC) website on March 6, 2025 (Attachment B; USFWS 2025), as well as the VANR Natural Resources Atlas on May 11, 2023. Attachment B also includes screenshot images from the VANR Natural Resources Atlas.

#### Mammals

Two federally listed endangered species, the northern long-eared bat (*Myotis septentrionalis*) and tricolored bat (*Perimyotis subflavus*) may be found within the Project's vicinity. According to the VTFWD Natural Heritage Inventory (NHI), and in accordance with direct communications with the VTFWD, there are no known winter hibernacula or known summer maternity roost sites within the Newbury Project boundary or within at least 1-mile of the boundary, which is the typical distance threshold used for USFWS consideration of potential impacts from projects (Tim Appleton, personal communication April 12, 2018). Given there is no known winter hibernaculum or summer maternity roost site within the Newbury Project boundary or buffer area, it is likely that any northern long-

long-eared or tricolored bats utilizing the Newbury Project area would be utilizing the riparian and impoundment areas for feeding purposes or as a travel pathway. It is possible these bats feed near the Project, though no critical habitat is located in the Project Vicinity. The run-of-river operation of the Project is not anticipated to negatively impact bats that may transiently utilize the area. Further, Article 404 of the FERC license requires that GMP not remove or trim trees on project lands from May 1 through July 31 to protect tricolored bats during their roosting season. Tree removal to ensure public or project safety during this period is not prohibited by this requirement.

## **Insects**

The monarch butterfly (*Danaus plexippus*) was identified as a proposed threatened species within the Project vicinity via USFWS IPaC (USFWS 2025). The Newbury Project is located within the summer breeding range of the eastern North American migratory monarch butterfly population (Xerces 2022). No critical habitat has been designated for the monarch butterfly, however it is known that this species relies on common milkweed (*Asclepias syriaca*) for survival and reproduction (USFWS 2025). Project operations is not expected to impact the monarch butterfly.

## **State Species**

A Vermont Agency of Natural Resources Natural Resource Atlas (VANR NRA) was used on May 11, 2023, to review State rare, threatened, and endangered species with the potential to occur in the Project vicinity. This resource indicated no significant natural communities that may occur in or near the Project boundary.

The Project has been operating in accordance with the prior and current FERC license and has not had any incidental takes of any state or federally threatened or endangered species. It is not anticipated that the continued operation of the project would negatively impact Federal, or State listed wildlife species. The northern long-eared and tricolored bat may be found within the project boundary; however, the Licensee is not aware of critical habitat designated for any of the species within the project boundary. It is not expected that Project operations will impact these species. As identified in FERC's Environmental Assessment monarch butterfly and bald eagle (*Haliaeetus leucocephalus*) may also occur at the Project on a seasonal level, but no specific protective measures were recommended.



### 3.6 Cultural and Historic Resources

#### 3.6.1 All ZOES

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
G	2	<u>Approved Plan:</u> <ul style="list-style-type: none"><li>The facility is in compliance with approved state, federal, and recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility.</li></ul>

The Newbury Project VDHP-approved Area of Potential Effect (APE) is slightly larger than the FERC Project boundary, encompassing an area that extends 0.4 RM upstream of the dam to approximately 600 feet downstream of the dam, as well as 32.8 feet on both the north and south sides of the dam. The APE includes a 20-meter section of shoreline directly across from the Corning Fibers Mill containing powerhouse ruins not included in the FERC Project boundary.

In 2020, as part of the relicensing process Northeast Research Center completed an Archeological Resource Assessment, leading to a Phase I Archeological Resources Assessment that identified structural remains of the 1896-1938 Wells River Electric Light Plant and Pumping Station, as well as other artifacts not identified as Native American in origin. Due to the findings, a Phase II Archeological Resource Assessment was recommended and completed in 2021, where additional artifacts contemporaneous with the Wells River Electric Light Plant or later. The Wells River Electric Light Plant site has been recommended as eligible for the National Register of Historic Places (NRHP), however due to a lack of historic and architectural significance, the Newbury Project structures are not eligible for inclusion.

Additionally, although the Project area has historic documentation of being inhabited by the Abenaki Tribe, there were no Native American artifacts identified during the Phase I or Phase II work, and there are no tribal lands within the Project boundary or federal reservations in the area surrounding the Project (State of Vermont, 2021).

Maintenance activities resulting in reservoir drawdowns have some potential to cause erosion of the shoreline, and lead to embankment instability, potentially disturbing historical site grounds; however, these drawdowns are rare due to the pneumatic crest gate system to facilitate management of stable impoundment levels, and if a drawdown becomes required, GMP consults with the pertinent resource agencies regarding timing and duration. In addition, during a drawdown period GMP continues to provide the

minimum flows required for the Project to minimize potential effects on cultural resources. Due to the limited size of the Project area, and the run-of-river mode of operation resulting in stable water levels, the Newbury Project is not expected to affect cultural or archeological resources.

Article 408 of the FERC license requires GMP to implement the Programmatic Agreement Between the Federal Energy Regulatory Commission and the Vermont State Historic Preservation Officer for Managing Historic Properties that May be Affected by Issuance of a New License to Green Mountain Power for the Continued Operation of the Newbury Hydroelectric Project in Orange County, Vermont (FERC No. 5261-023), which was executed on November 29, 2023. The Programmatic Agreement requires GMP to file, for Commission approval, an HPMP within one year of license issuance. GMP is currently developing the HPMP in consultation with the State Historic Preservation Officer (SHPO). The HPMP will define measures for protection of historic resources under the new including consultation with the SHPO with any recreational improvements that may be developed for impoundment access.

### 3.7 Recreational Resources

#### 3.7.1 ZOE 1 Impoundment

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

GMP leases the Newbury Project land and the Project powerhouse area from a private landowner. There are currently no Project recreation facilities associated with the Newbury Project. Recreational development at the site has not previously been pursued because of high, steep banks on the river left<sup>5</sup> shoreline, proximity of U.S. Route 302 along the river right<sup>6</sup> shoreline, and commercial use of the parking lot associated with the Project dam and powerhouse area. In 1992, FERC granted the Newbury Project an exemption from

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<sup>5</sup> River left refers to the left side of the river when looking downstream.

<sup>6</sup> River right refers to the right side of the river when looking downstream.

filing the FERC Form 80 because there was only minor existing or potential recreational use of the Project (FERC 1992)<sup>7</sup>.

Based upon consultation with stakeholders under the relicensing, GMP proposed to evaluate the potential for development of recreational access in the form of a hand-carry boating access area on the impoundment. Article 405 of the FERC license requires that GMP:

- File a report within one year of license issuance on the feasibility of constructing a hand-carry boating access area within the project boundary prepared in consultation with the Vermont State Historic Preservation Office, Vermont Agency of Natural Resources, U.S. Fish and Wildlife Service, and Vermont Department of Environmental Conservation
- Within two years of license issuance, GMP must file with FERC, an upstream hand-carry boating access plan that includes:
  - provisions to develop and finalize designs, including site selection, for the hand-carry boating access area in consultation with Vermont SHPO, Vermont ANR, and FWS;
  - design plans that consider the needs of persons with disabilities;
  - estimates of the length, width, and composition of the proposed access area, including, but not limited to, a parking area (including any road access), signage, and trails;
  - a provision to implement best management practices that include erosion and sedimentation controls and revegetating areas disturbed during construction using native species;
  - a provision to, prior to commencing construction of the access site, secure the property rights for the site from a willing seller (if the land to be used is not owned by the licensee) in perpetuity;
  - prescribe methods for preventing the establishment of invasive plants and guidelines for detecting and treating invasive plant populations; and
  - include an implementation and construction schedule for constructing the hand-carry boating access area, pending landowner approval, within 4 years of license issuance.

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<sup>7</sup> FERC has since amended regulations to eliminate Form 80 recreation reporting requirements.

A Draft Boating Access Feasibility Study was developed during the fall of 2024 to comply with the requirements of Article 405 of the FERC license. A consultation draft of the study report was provided to VT SHPO, VANR, FWS, and VDEC on December 31, 2024, for a 30-day review period. To date, comments have been received from VANR and VDEC. GMP intends to address stakeholder comments and file the final study report with the Commission for approval on or before March 28, 2025.

### 3.7.2 ZOE 2 Bypassed Reach and ZOE 3 and Tailrace

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
H	1	<u>Not Applicable/De Minimis Effect:</u> <ul style="list-style-type: none"> <li>The facility does not occupy lands or waters to which the public can be granted safe access and does not otherwise impact recreational opportunities in the vicinity of the facility</li> </ul>

GMP leases the Newbury Project land and the Project powerhouse area from a private landowner. There are currently no Project recreation facilities associated with the Newbury Project or proposed in ZOE 2 or 3. Recreational development at the site has not previously been pursued because of high, steep banks on the river left<sup>8</sup> shoreline, proximity of U.S. Route 302 along the river right<sup>9</sup> shoreline, and the commercial use of the parking lot associated with the Project dam and powerhouse area.

<sup>8</sup> River left refers to the left side of the river when looking downstream.

<sup>9</sup> River right refers to the right side of the river when looking downstream.



## 4.0 REFERENCES

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- Federal Energy Regulatory Commission (FERC). 1992. Form 80 Exemption Letter. November 9, 1992.
- State of Vermont. 2021. State Recognized Tribes. Available online:  
<http://vcnaa.vermont.gov/recognition/recognized-tribes>.
- United States Fish and Wildlife (USFWS). 2025. Information for Planning and Consultation. Newbury Hydroelectric Project (P-5261). Available Online:  
<https://ipac.ecosphere.fws.gov/project/5EFQ6SENSJE7PCRMJDN65RJKV4/index>.
- Vermont Agency of Natural Resources (VANR). 2020a. State of Vermont 2020 303(d) list of Impaired Waters. Part A. Impaired Surface Waters in Need of TMDL. Available online:  
[https://dec.vermont.gov/sites/dec/files/documents/mp\\_PriorityWatersList\\_PartA\\_303d\\_2020.pdf](https://dec.vermont.gov/sites/dec/files/documents/mp_PriorityWatersList_PartA_303d_2020.pdf).
- Vermont Agency of Natural Resources (VANR). 2021a. Vermont Integrated Watershed Information System. Available Online: <https://anrweb.vt.gov/DEC/IWIS/>.
- Vermont Agency of Natural Resources (VANR). 2021b. Biofinder Map.  
<https://anrmaps.vermont.gov/websites/BioFinder/>.
- Vermont Agency of Natural Resources (VANR). 2016. Department of Environmental Conservation Watershed Management Division. State of Vermont 2016 Water Quality Integrated Assessment Report. Available online:  
<http://dec.vermont.gov/watershed/map/assessment>.
- Vermont Agency of Natural Resources (VANR). 2015. Watershed Management Division. Basin 14 Tactical Basin Plan-2015 including the Stevens River, Wells River, Waits River, Ompompanoosuc River, and Mid-Connecticut River Direct Tributaries. Available online: <http://dec.vermont.gov/watershed/map/assessment>.
- Vermont Center for Geographic Information (VCGI). 2017. Vermont Protected Lands. Available online: <http://geodata.vermont.gov/#data>.
- Xerces Society. 2022. Monarchs in Decline. Available online:  
<https://xerces.org/monarchs/conservation-efforts>.

## 5.0 CONTACTS FORMS

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### 5.1 Applicant Contact Information

<b>Project Owner:</b>	
Name and Title	John Tedesco, Generation Project Coordinator
Company	Green Mountain Power Corporation
Phone	802-655-8753
Email Address	<a href="mailto:John.Tedesco@greenmountainpower.com">John.Tedesco@greenmountainpower.com</a>
Mailing Address	163 Acorn Lane, Colchester, Vermont 05446
<b>Consulting Firm / Agent for LIHI Program (if different from above):</b>	
Name and Title	Karen Bishop, Licensing Coordinator
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<b>Compliance Contact (responsible for LIHI Program requirements):</b>	
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Mailing Address	163 Acorn Lane, Colchester, Vermont 05446
<b>Party responsible for accounts payable:</b>	
Name and Title	John Tedesco, Generation Project Coordinator
Company	Green Mountain Power Corporation
Phone	802-655-8753
Email Address	<a href="mailto:John.Tedesco@greenmountainpower.com">John.Tedesco@greenmountainpower.com</a>
Mailing Address	163 Acorn Lane, Colchester, Vermont 05446

## 5.2 State, Federal, Provincial, and Tribal Resource Agency Contacts

<b>Agency Contact</b>		<b>Area of Responsibility</b>
Agency Name	Vermont Agency of Natural Resources	<input checked="" type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input checked="" type="checkbox"/> Watershed <input type="checkbox"/> T & E Species <input type="checkbox"/> Cultural/Historic <input checked="" type="checkbox"/> Recreation
Name and Title	Eric Davis, River Ecologist	
Phone	802-490-6180	
Email address	<a href="mailto:Eric.Davis@vermont.gov">Eric.Davis@vermont.gov</a>	
Mailing Address	Watershed Management Division, Main Building – 2 <sup>nd</sup> Floor, One National Life Drive, Montpelier, VT 05620	

<b>Agency Contact</b>		<b>Area of Responsibility</b>
Agency Name	Vermont Department of Fish and Wildlife	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T & E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Jud Kratzer, Fisheries Biologist	
Phone	802-751-0486	
Email address	<a href="mailto:jud.kratzer@vermont.gov">jud.kratzer@vermont.gov</a>	
Mailing Address	Vermont Fish & Wildlife Department 374 Emerson Falls Road Suite 4 St. Johnsbury, VT 05819	

<b>Agency Contact</b>		<b>Area of Responsibility</b>
Agency Name	Vermont Agency of Natural Resources	<input checked="" type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input checked="" type="checkbox"/> Watershed <input checked="" type="checkbox"/> T & E Species <input type="checkbox"/> Cultural/Historic <input checked="" type="checkbox"/> Recreation
Name and Title	Jeff Crocker, Environmental Analyst	
Phone	802-490-6151	
Email address	<a href="mailto:jeff.crocker@vermont.gov">jeff.crocker@vermont.gov</a>	
Mailing Address	Watershed Management Division, Main Building – 2 <sup>nd</sup> Floor, One National Life Drive, Montpelier, VT 05620	

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Newbury Hydroelectric Project (FERC No. 5261)

<b>Agency Contact</b>		<b>Area of Responsibility</b>
Agency Name	Vermont Division for Historic Preservation	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T & E Species <input checked="" type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	R. Scott Dillon, Senior Historic Preservation Review Coordinator	
Phone	802-272-7358	
Email address	<a href="mailto:scott.dillon@vermont.gov">scott.dillon@vermont.gov</a>	
Mailing Address	One National Life Drive, Davis Bldg, 6th Floor Montpelier, VT 05620-0501	

<b>Agency Contact</b>		<b>Area of Responsibility</b>
Agency Name	US Fish and Wildlife Service	<input checked="" type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input checked="" type="checkbox"/> Watershed <input checked="" type="checkbox"/> T & E Species <input checked="" type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Ken Hogan, Hydropower Program Coordinator	
Phone	603-451-9266	
Email address	<a href="mailto:kenneth.hogan@fws.gov">kenneth.hogan@fws.gov</a>	
Mailing Address	70 Commercial Street Suite 300 Concord, NH 03301-5094	



## 6.0 ATTESTATION

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

### ATTESTATION

*As an Authorized Representative of Green Mountain Power Corporation*

*the Undersigned attests that the material presented in the application is true and complete.*

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

*The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to the final certification decision and prior to marketing the electricity product as LIHI Certified® (which includes selling RECs in a market that requires LIHI Certification).*

*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.*

Authorized Representative:

Name: John Tedesco

Title: Generation Project Coordinator

Authorized Signature:  \_\_\_\_\_

Date: March 7, 2025

## **ATTACHMENT A**

### **AGENCY CONSULTATION**

[GMP is submitting this application for Stage 1 Review and will consult with agencies and provide documentation as a supplement to the Stage 1 Application]

**ATTACHMENT B**

**2025 USFWS INFORMATION FOR PLANNING AND CONSULTATIONS (IPAC)**



# United States Department of the Interior



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

In Reply Refer To:

03/06/2025 17:55:49 UTC

Project Code: 2025-0065157

Project Name: Newbury Hydroelectric Project (P-5261)

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

To Whom It May Concern:

*Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.*

## **About Official Species Lists**

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

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

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

## **Endangered Species Act Project Review**

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

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

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

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

**Northern Long-eared Bat - (Updated 4/12/2023)** The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at [newengland@fws.gov](mailto:newengland@fws.gov) to see if reinitiation is necessary.

#### *Additional Info About Section 7 of the Act*

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

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

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

**Candidate species** that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to



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

### **Migratory Birds**

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

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

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

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

Attachment(s): Official Species List

Attachment(s):

- Official Species List

## **OFFICIAL SPECIES LIST**

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

This species list is provided by:

### **New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

## PROJECT SUMMARY

Project Code: 2025-0065157

Project Name: Newbury Hydroelectric Project (P-5261)

Project Type: Power Gen - Hydropower - FERC

Project Description: Newbury Hydroelectric Dam - LIHI Application 2025

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.15085044999999,-72.05642435066376,14z>



Counties: Orange County, Vermont

## ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

## MAMMALS

NAME	STATUS
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Proposed Threatened

## CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

## **IPAC USER CONTACT INFORMATION**

Agency: Kleinschmidt Associates  
Name: Karen Bishop  
Address: 35 Pratt Street Suite 201  
City: Essex  
State: CT  
Zip: 06246  
Email: karen.bishop@kleinschmidtgroup.com  
Phone: 8605815877

## **LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Federal Energy Regulatory Commission





## United States Department of the Interior

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



In Reply Refer To:

03/06/2025 17:52:12 UTC

Project code: 2025-0065157

Project Name: Newbury Hydroelectric Project (P-5261)

Federal Nexus: yes

Federal Action Agency (if applicable): Federal Energy Regulatory Commission

**Subject:** Record of project representative's no effect determination for 'Newbury Hydroelectric Project (P-5261)'

Dear Karen Bishop:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 06, 2025, for 'Newbury Hydroelectric Project (P-5261)' (here forward, Project). This project has been assigned Project Code 2025-0065157 and all future correspondence should clearly reference this number.

**Please carefully review this letter.**

### **Ensuring Accurate Determinations When Using IPaC**

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the **Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey)**, invalidates this letter. *Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.*

### **Determination for the Northern Long-Eared Bat and/or Tricolored Bat**

Based upon your IPaC submission and a standing analysis, your project has reached the following effect determinations:

Species	Listing Status	Determination
---------	----------------	---------------

Tricolored Bat (*Perimyotis subflavus*)Proposed  
Endangered

No effect

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

**Other Species and Critical Habitat that May be Present in the Action Area**

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

**Next Steps**

If there are no updates on listed species, no further consultation/coordination for this project is required with respect to the species covered by this key. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions

occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2025-0065157 associated with this Project.

**Action Description**

You provided to IPaC the following name and description for the subject Action.

**1. Name**

Newbury Hydroelectric Project (P-5261)

**2. Description**

The following description was provided for the project 'Newbury Hydroelectric Project (P-5261)':

Newbury Hydroelectric Dam - LIHI Application 2025

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.15085044999999,-72.05642435066376,14z>



## DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the species covered by this determination key. Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

## QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

**Note:** Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

**Automatically answered**

No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

**Automatically answered**

No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

**Note:** For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

**Note:** This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

*No*

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

*No*

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

*Yes*

10. Is FERC reviewing the proposed action under the Natural Gas Act, in whole or in part?

*No*

11. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

**Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

**Automatically answered**

*No*

12. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

*No*

13. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

*No*

14. Will the action cause effects to a bridge?

**Note:** Covered bridges should be considered as bridges in this question.

*No*

15. Will the action result in effects to a culvert or tunnel at any time of year?

*No*



16. Are trees present within 1000 feet of the action area?

**Note:** If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: <https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>.

Yes

17. Does the action include the intentional exclusion of bats from a building or structure?

**Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

No

18. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats**?

No

19. Will the action cause construction of one or more new roads open to the public?

For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

No

20. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic permanently or temporarily on one or more existing roads?

**Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

No

21. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

No

22. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

**Note:** For information regarding NSF/ANSI 60 please visit <https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects>

No

23. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

No

24. Will the action include drilling or blasting?

No

25. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

No

26. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

No

27. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

**Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: <https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>.

No

28. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

**Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: <https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>.

No

29. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

No

30. Will the proposed action result in the use of prescribed fire?

**Note:** If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

No

31. Does the action area intersect the tricolored bat species list area?

**Automatically answered**

Yes

32. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

**Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

**Automatically answered**

No

33. Has a presence/probable absence bat survey targeting the [tricolored bat and following the Service's Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines](#) been conducted within the project area?

No

34. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?

(If unsure, answer ""Yes."" )

**Note:** If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the [Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines](#).

Yes

35. Do you have any documents that you want to include with this submission?

*No*

# PROJECT QUESTIONNAIRE

## **IPAC USER CONTACT INFORMATION**

Agency: Kleinschmidt Associates

Name: Karen Bishop

Address: 35 Pratt Street Suite 201

City: Essex

State: CT

Zip: 06246

Email karen.bishop@kleinschmidtgroup.com

Phone: 8605815877

## **LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Federal Energy Regulatory Commission





Endangered and Threatened Animals of Vermont  
Vermont Natural Heritage Inventory  
Vermont Fish & Wildlife Department  
10 February 2022



The species in the following list are protected by **Vermont's Endangered Species Law (10 V.S.A. Chap. 123)**. There are 37 state-endangered and 16 state-threatened animals in Vermont. Those with a federal status of Threatened or Endangered are also protected by the **Federal Endangered Species Act (P.L. 93-205)**.

For further information contact the Vermont Natural Heritage Inventory, Vermont Fish & Wildlife Department, 1 National Life Drive, Davis 2, Montpelier, VT 05620-3702. (802) 828-1000.

English Name	Scientific Name	State Status	Federal Status
<b>Fishes</b>			
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	E	
American Brook Lamprey	<i>Lethenteron appendix</i> Synonym: <i>Lampetra appendix</i>	T	
Lake Sturgeon	<i>Acipenser fulvescens</i>	E	UR
Stonecat	<i>Noturus flavus</i>	E	
Eastern Sand Darter	<i>Ammocrypta pellucida</i>	T	
Channel Darter	<i>Percina copelandi</i>	E	
<b>Amphibians</b>			
Fowler's Toad	<i>Anaxyrus fowleri</i>	E	
Boreal Chorus Frog	<i>Pseudacris maculata</i>	E	
<b>Reptiles</b>			
Spotted Turtle	<i>Clemmys guttata</i>	E	UR
Spiny Softshell (Turtle)	<i>Apalone spinifera</i>	T	
Common Five-lined Skink	<i>Plestiodon fasciatus</i> Synonym: <i>Eumeces fasciatus</i>	E	
North American Racer	<i>Coluber constrictor</i>	T	
Eastern Ratsnake	<i>Pantherophis alleghaniensis</i> Synonym: <i>Elaphe obsoleta</i>	T	
Timber Rattlesnake	<i>Crotalus horridus</i>	E	
<b>Mammals</b>			
Eastern Small-footed Bat	<i>Myotis leibii</i>	T	
Little Brown Bat	<i>Myotis lucifugus</i>	E	UR

English Name	Scientific Name	State Status	Federal Status
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	E	E
Indiana Bat	<i>Myotis sodalis</i>	E	E
Tri-colored Bat	<i>Perimyotis subflavus</i> Synonym: <i>Pipistrellus subflavus</i>	E	PE
Canadian Lynx	<i>Lynx canadensis</i>	E	T
Eastern Mountain Lion	<i>Puma concolor couguar</i> Synonym: <i>Felis concolor couguar</i>	E	
American Marten	<i>Martes americana</i>	E	
<b>Birds</b>			
Spruce Grouse	<i>Canachites canadensis</i> Synonym: <i>Falcipennis canadensis</i>	E	
Eastern Whip-poor-will	<i>Antrostomus vociferus</i> Synonym: <i>Caprimulgus vociferus</i>	T	
Common Nighthawk	<i>Chordeiles minor</i>	E	
Upland Sandpiper	<i>Bartramia longicauda</i>	E	
Red Knot	<i>Calidris canutus</i>	T*	T
Black Tern	<i>Chlidonias niger</i>	E	
Common Tern	<i>Sterna hirundo</i>	E	
Loggerhead Shrike	<i>Lanius ludovicianus</i>	E	
Sedge Wren	<i>Cistothorus stellaris</i> Synonym: <i>Cistothorus platensis</i>	E	
Rusty Blackbird	<i>Euphagus carolinus</i>	E	
Eastern Meadowlark <sup>1</sup>	<i>Sturnella magna</i>	T	
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	T	
Henslow's Sparrow	<i>Centronyx henslowii</i> Synonym: <i>Ammodramus henslowii</i>	E	
<b>Amphipods</b>			
Taconic Cave Amphipod	<i>Stygobromus borealis</i>	E	
<b>Beetles</b>			
Hairy-necked Tiger Beetle	<i>Cicindela hirticollis</i>	T	
Cobblestone Tiger Beetle	<i>Cicindela marginipennis</i>	T	
Puritan Tiger Beetle	<i>Ellipsoptera puritana</i> Synonym: <i>Cicindela puritana</i>	T	T
<b>Bees</b>			
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	E	E

\* Red Knot (*Calidris canutus rufa*) was added to the Federal list on 12 January 2015. Listed in Vermont by default, per statute; has not undergone rule-making in Vermont.

<sup>1</sup> Listed 10 February 2022

English Name	Scientific Name	State Status	Federal Status
Ashton Cuckoo Bumble Bee	<i>Bombus ashtoni</i> ( <i>Bombus bohemicus</i> )	E	
American Bumble Bee <sup>2</sup>	<i>Bombus pensylvanicus</i>	E	UR
Yellow-banded Bumble Bee	<i>Bombus terricola</i>	T	
<b>Freshwater Mussels and Cla</b>			
Eastern Pearlshell	<i>Margaritifera margaritifera</i>	T	
Dwarf Wedgemussel	<i>Alasmidonta heterodon</i>	E	E
Brook Floater	<i>Alasmidonta varicosa</i>	E	
Cylindrical Papershell	<i>Anodontoides ferussacianus</i>	E	
Pocketbook	<i>Lampsilis ovata</i>	E	
Flutedshell	<i>Lasmigona costata</i>	E	
Fragile Papershell	<i>Leptodea fragilis</i>	E	
Black Sandshell	<i>Ligumia recta</i>	E	
Pink Heelsplitter	<i>Potamilus alatus</i>	E	
Giant Floater	<i>Pyganodon grandis</i>	T	

2 Listed 10 February 2022

**State Status** - Legal protection under Vermont Endangered Species Law (10 V.S.A. Chap. 123)

E = Endangered: in immediate danger of becoming extirpated in the state

T = Threatened: with high possibility of becoming endangered in the near future

**Federal Status** - Legal protection under the federal Endangered Species Act, U.S. Fish & Wildlife Service

E = Endangered

T = Threatened

P = Proposed

UR = Under Review





Layers

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☒ Significant

Natural Communities

☐ Uncommon Species

and other features

☐ Deer Wintering Areas

☐ Brook Trout Waters

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## **ATTACHMENT C**

### **REFERENCE DOCUMENTS**



2152 Post Road  
Rutland, Vermont 05701

August 27, 2021

**VIA E-FILING**

Honorable Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, DC 20426

Newbury Hydroelectric Project (FERC No. 5261-022)  
Final License Application

Dear Secretary Bose:

Green Mountain Power Corporation (GMP or Licensee) is the licensee and operator of the Newbury Hydroelectric Project, FERC No. 5261 (Project), located on the Wells River in the Town of Newbury, Orange County, Vermont. The existing Federal Energy Regulatory Commission (FERC or Commission) license for the Newbury Project expires on August 31, 2023.

GMP filed a Notice of Intent to File a License Application (NOI), the Pre-Application Document (PAD), and the request to use the Traditional Licensing Process (TLP) for the Newbury Project on August 29, 2018. FERC approved GMP's request to use the TLP on October 26, 2018.

In accordance with 18 CFR § 16.8(c)(4), GMP respectfully submits the Final License Application (FLA) for filing with the Commission. The FLA consists of the following technical exhibits and environmental report:

- Initial Statement;
- Exhibit A - Project Description and Operations (Single Line Diagram CEII);
- Exhibit E - Environmental Report;
- Exhibit F - General Design Drawings (CEII); and
- Exhibit G - Project Maps.

Exhibit E discusses the results of the studies conducted in support of the relicensing and considers how the information and data collected during those studies addresses issues that were raised by agencies and other relicensing participants, and how that data addresses the Licensee's proposal. In support of this proposal, Exhibit E evaluates the potential impacts to



August 27, 2021

environmental, recreational, and cultural resources that may occur as a result of continued Project operation under a subsequent license. As appropriate, Exhibit E includes Licensee's proposals for the protection and mitigation of effects on, or enhancement to, resources that are associated with the continued operation of the Project.


GMP provided electronic copies of the Draft License Application (DLA) to relevant resource agencies, tribes, non-governmental organizations, and other potential interested parties included on the attached distribution list on May 5, 2021. Exhibit E includes a summary of stakeholder comments regarding the DLA, and GMP's responses, as appropriate.

In accordance with 18 CFR § 388.112, Exhibit F - General Design Drawings, and the Single Line Diagram (Attachment 1 of Exhibit A), contain **Controlled Unclassified Information/Critical Energy Infrastructure Information** (CUI/CEII) and are being filed under separate cover with the Commission only. Additionally, Phase I and Phase II Archaeological Resource Reports (portions of Exhibit E – Appendix C) are being filed under a separate cover as **Privileged Information** with the Commission only.

If you have any questions or require additional information, please contact me at [john.greenan@greenmountainpower.com](mailto:john.greenan@greenmountainpower.com) or at 802-770-2195.

Sincerely,

John C.  
Greenan



Digitally signed by John C. Greenan  
DN: cn=John C. Greenan, o=ou,  
email=john.greenan@greenmountai  
npower.com, c=US  
Date: 2021.08.26 12:25:57 -0400

John Greenan, P.E.  
Engineer

cc: Distribution List

Enclosed: Final License Application for the Newbury Hydroelectric Project

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Final License Application Distribution List**

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**Newbury Hydroelectric Project (FERC No. 5261)  
Final License Application Distribution List**

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Final License Application Distribution List**

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Final License Application Distribution List**

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Final License Application Distribution List**

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Final License Application Distribution List**

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# FINAL LICENSE APPLICATION

NEWBURY HYDROELECTRIC PROJECT  
FERC No. 5261



*Submitted by:*

**Green Mountain Power Corporation  
Rutland, VT**

*Prepared by:*

***Kleinschmidt***

Pittsfield, Maine

August 2021

**NEWBURY HYDROELECTRIC PROJECT**

**FERC No. 5261**

**INITIAL STATEMENT**

**BEFORE THE  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

**NEWBURY HYDROELECTRIC PROJECT**

**FERC PROJECT NO. 5261**

**APPLICATION FOR A MINOR WATER POWER PROJECT**

**INITIAL STATEMENT**

*(Pursuant to 18 CFR §4.61 and §4.32)*

1. Green Mountain Power Corporation (GMP or Licensee) applies to the Federal Energy Regulatory Commission (FERC or Commission) for a subsequent license for the Newbury Hydroelectric Project (FERC Project No. 5261) (Project), as described in the attached exhibits.

The current license for the Newbury Project was issued by the FERC on September 8, 1983 to the Newbury Hydro Company for a term of 40-years. The license was transferred from Newbury Hydro Company to Newbury Hydro Company, LLC an indirect subsidiary of Enel Green Power North America, Inc on March 27, 2015 (150 FERC ¶ 62,210). On November 18, 2016, the license was then transferred from Newbury Hydro Company, LLC to Green Mountain Power Corporation (157 FERC ¶ 62,133). The current license for the Newbury Project expires on August 31, 2023.

2. The location of the Project is:

State: Vermont  
County: Orange County  
City: Village of Wells River  
Town: Newbury  
Body of Water: Wells River

The Newbury Project is located approximately 0.9 river miles from the Wells River's confluence with the Connecticut River.

3. All existing hydroelectric Project facilities are owned by:

Green Mountain Power Corporation  
2152 Post Road  
Rutland, Vermont 05701  
(802) 770-2195

GMP leases the dam and Project property from:

GRE LLC  
PO Box 753  
Wells River, VT 05081

4. The exact name, address, and telephone number of the applicant are:

Green Mountain Power Corporation  
2152 Post Road  
Rutland, Vermont 05701  
(802) 770-2195

5. The exact name, address, and telephone number of each person authorized to act as agent for the applicant in this application are:

John Greenan, P.E.  
Green Mountain Power Corporation  
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(802) 770-2195  
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John Tedesco  
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The Applicant requests that copies of all correspondence pertaining to this application be provided to:

Katie Sellers  
Kleinschmidt Associates  
6 Fundy Road  
Suite 500  
Falmouth, Maine 04105  
(207) 416-1218  
Katie.Sellers@kleinschmidtgroup.com

6. GMP is a public utility corporation incorporated in the State of Vermont and is not claiming preference under Section 7(a) of the Federal Power Act, 16 U.S.C. 800.
7. The statutory or regulatory requirements of the State of Vermont, the state in which the Project is located, which would, assuming jurisdiction and applicability, affect the Project with respect to bed and banks, and to the appropriation, diversion and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting and distributing power, and in any other business necessary to accomplish the purposes of the license under the Federal Power Act are:
  - a) 10 V.S.A. § 901, et. seq. Wetlands Protection and Water Resources Management. Established that the water resources of the State shall be protected, regulated and where necessary, controlled under authority of the state in the public interest and to promote the general welfare.
  - b) 10 V.S.A. § 1251, et. seq. Water Pollution Control. Establishes water pollution control and water quality standards.
  - c) 22 V.S.A. § 723, et. seq. Historic Preservation. Provides protections for any building, structure, object, district, area, or site that is significant in the history, architecture, archaeology or culture of this state, its communities, or the nation.
  - d) 11A V.S.A. §3.01 et. seq. Business Corporations. Domestic business corporations organized under the laws of the State of Vermont and with corporate offices located in Vermont are subject to the applicable provisions of Title 11A.
  - e) 30 V.S.A. § 3, et. seq. Public Utility Commission Regulates the generation, purchase, transmission and distribution of electric power and energy in the state of Vermont. Therefore, as an enterprise engaged in the business of an electric utility of Vermont, the Applicant is subject to the applicable provisions contained in Title 30.

The steps which the applicant has taken or plans to take to comply with each of the laws cited above are:

- a) 10 V.S.A. § 901, et. seq. Wetlands Protection and Water Resources Management. GMP has and will continue to operate the Project pursuant to the laws of the State of Vermont which is committed to making careful use of the waters of Vermont.
- b) 10 V.S.A. § 1251, et. seq. Water Pollution Control. GMP has and will continue to operate the Project pursuant to the regulations of the Department of Environmental Conservation. Likewise, GMP has been and remains committed to the prevention of pollution in the surface and groundwaters of the State.
- c) 22 V.S.A. § 723, et. seq. Historic Preservation. GMP continues to keep the Vermont Division of Historic Preservation informed on Project progress.
- d) 11A V.S.A. §3.01 et. seq. Business Corporations. The Applicant has complied with all state laws necessary for its corporate existence.
- e) 30 V.S.A. § 3, et. seq. Public Utility Commission. GMP generates, purchases, transmits, and distributes electric power and energy. The Applicant has complied with all state laws necessary for engaging in the business of an electric utility.

8. Brief Project Description:

The 0.365-megawatt Newbury Hydroelectric Project is an existing project located on the Wells River in Newbury, Orange County, Vermont. Newbury Project works consist of a concrete gravity dam, an 11.4-acre impoundment, a spillway topped with pneumatic crest gates, an intake structure, an underground steel penstock, a powerhouse containing a single turbine-generator unit, a minimum flow unit, a tailrace, an underground transmission line, three step-up transformers, and appurtenant facilities. The Newbury Project is operated as a run-of-river facility and maintains a stable impoundment. Approximately 590 feet of the Wells River between the dam and powerhouse tailwater is bypassed during normal operations.

9. No lands of the United States are affected by the Project.

10. This is an existing Project and no new construction is proposed in association with this relicensing.



## **ADDITIONAL GENERAL INFORMATION PURSUANT TO 4.32**

### **GENERAL INFORMATION**

1. Green Mountain Power Corporation leases property from GRE LLC to operate and maintain the Project.
2. The name and mailing address of the counties in which any part of the Project and any Federal facilities that would be used by the Project are located:

Orange County  
5 Court Street  
Chelsea, VT 05038

There are no federal facilities used by the Newbury Project.

3. The name and mailing address of every city, town, or similar local political subdivision in which any part of the Project and any Federal facilities that would be used by the project are located:

The Newbury Project is located entirely within the Town of Newbury.

Town of Newbury  
4982 Main Street South  
P.O. Box 126  
Newbury, Vermont 05051

There are no Federal facilities used by the Newbury Project.

4. The name and mailing address of every city, town, or similar local political subdivision that has a population of 5,000 or more people and is located within 15 miles of the Project dam:

Although there are 17 towns within 15 miles of the Newbury Project, none of the towns have a population of 5,000 or greater.

5. There are no irrigation districts, drainage districts, or similar special purpose political subdivisions in which any part of the project is located or affected as outlined in 18 CFR §4.32l(a)(2)(iii)(A) and (B).

6. There are no other political subdivisions in the general area of the project that GMP has reason to believe would likely be interested in or affected by the Application.
7. All Indian tribes that may be affected by the Project:

There are no federally recognized Indian tribes in the State of Vermont. Vermont state-recognized Indian tribes include:

ELNU Tribe of the Abenaki  
Tribal Headquarters  
5243 VT Route 30  
Jamaica, Vermont 05343

Nulhegan Band of the Coosuk Abenaki Nation  
156 Bacon Drive  
Shelburne, Vermont 05482

Traditional Koasek Abenaki Nation of the Koas  
P. O. Box 42  
Newbury, Vermont 05051

Abenaki Nation at Mississquoi  
100 Grand Avenue  
Swanton, Vermont 05488

By letter dated September 1, 2017, FERC invited the Saint Regis Mohawk Tribe to participate in the relicensing process. No response has been included in FERC's administrative record.

8. GMP is applying for a subsequent license for an existing project under Section 15 of the FPA; therefore, the requirement to provide notification by certified mail of the filing of the application does not apply.
9. GMP will not seek benefits under Section 210 of PURPA (18 CFR §4.32(c)(1) and 18 CFR §4.38(b)(2)(vi)).

10. In accordance with Section 4.61 of the Commission's regulations, the following Exhibits are attached to and made a part of this application:

Exhibit A – Project Description and Operations

Exhibit E – Environmental Report

Exhibit F – General Design Drawings (*provided under separate cover for security purposes*)

Exhibit G – Project Maps

### SUBSCRIPTION

This Application for Subsequent License for the Newbury Project, FERC Project No. 5261, is executed in the State of Vermont, County of Rutland, by Mr. John Greenan, P.E., Green Mountain Power Corporation, 2152 Post Road, Rutland, Vermont 05701, who, being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief and that he is authorized to execute this application on behalf of Green Mountain Power Corporation. The undersigned has signed this application this 26<sup>th</sup> day of August 2021.

GREEN MOUNTAIN POWER CORPORATION

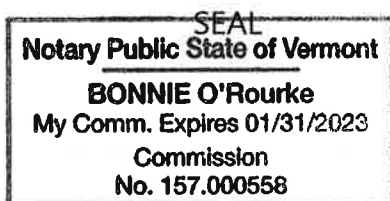
By: John C Greenan  
John Greenan, P.E.  
Green Mountain Power Corporation

### VERIFICATION

Subscribed and sworn to before me, a Notary Public of the State of Vermont this 26<sup>th</sup> day of August 2021.

Bonnie O'Rourke  
(Notary Public)

My Commission expires \_\_\_\_\_.



**NEWBURY HYDROELECTRIC PROJECT**

**FERC No. 5261**

**EXHIBIT A**

**PROJECT DESCRIPTION AND OPERATIONS**

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## DEFINITIONS OF TERMS, ACRONYMS, AND ABBREVIATIONS

CEII	Critical Energy Infrastructure Information
cfs	cubic feet per second
FLA	Final License Application
GMP or Licensee	Green Mountain Power Corporation
msl	mean sea level
MW	megawatt
MWh	megawatt hours
PME	protection, mitigation, or enhancement measures
Project or Newbury Project	Newbury Hydroelectric Project (FERC No. 5261)
SCADA	Supervisory Control and Data Acquisition
V	Volt

## 1.0 INTRODUCTION

---

The Newbury Hydroelectric Project (FERC No. 5261) (Project or Newbury Project) is an existing, licensed hydroelectric project operated by Green Mountain Power Corporation (GMP or Licensee). The 0.365-megawatt (MW) Newbury Project is located on the Wells River, in the Village of Wells River, Town of Newbury, Orange County, Vermont. The Project is located approximately 0.9 river miles from the Wells River's confluence with the Connecticut River. Figure 1.1 provides the general location of the Project and Figure 1.2 provides an overview of the Project boundary. A map of the Project boundary is provided in Exhibit G.

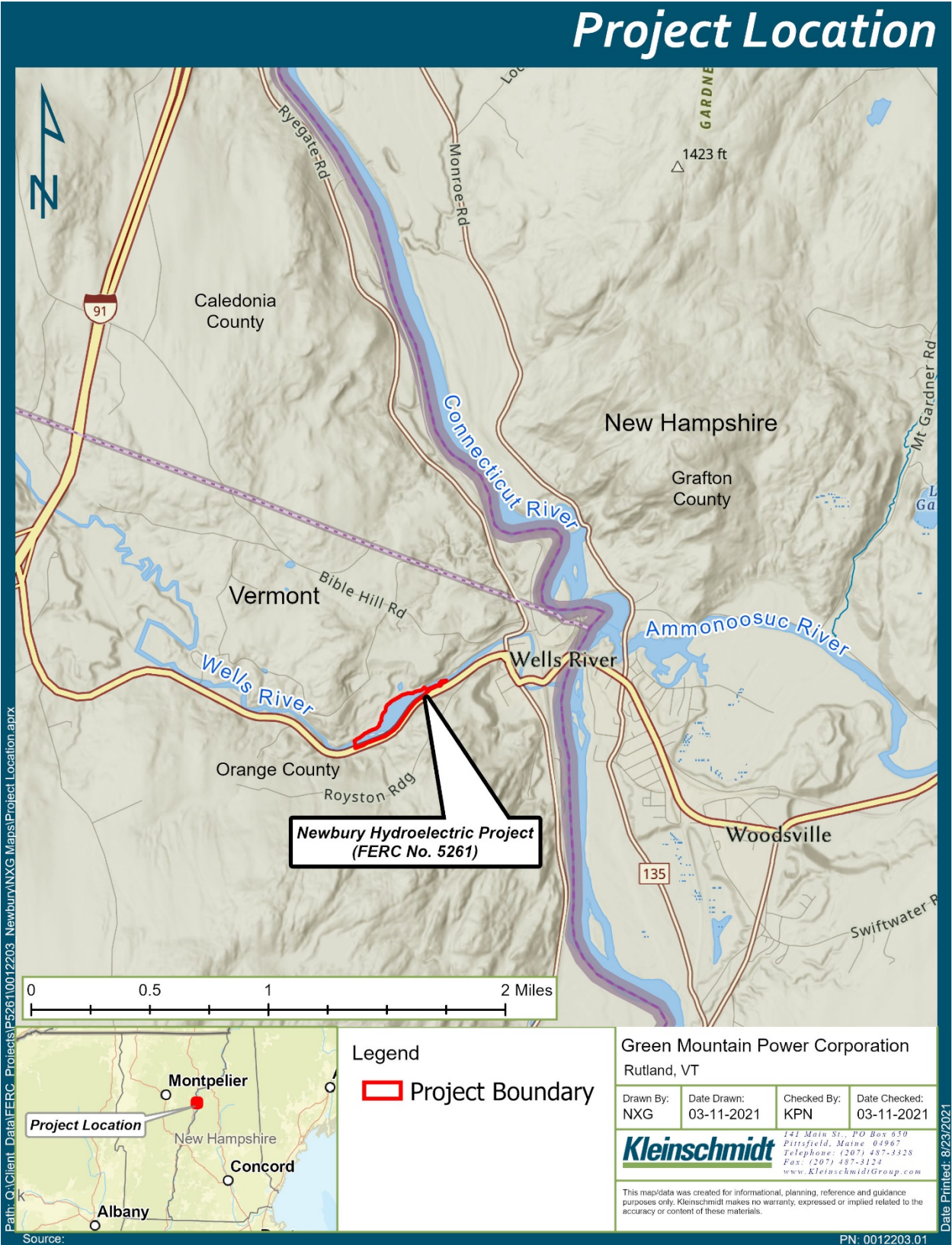
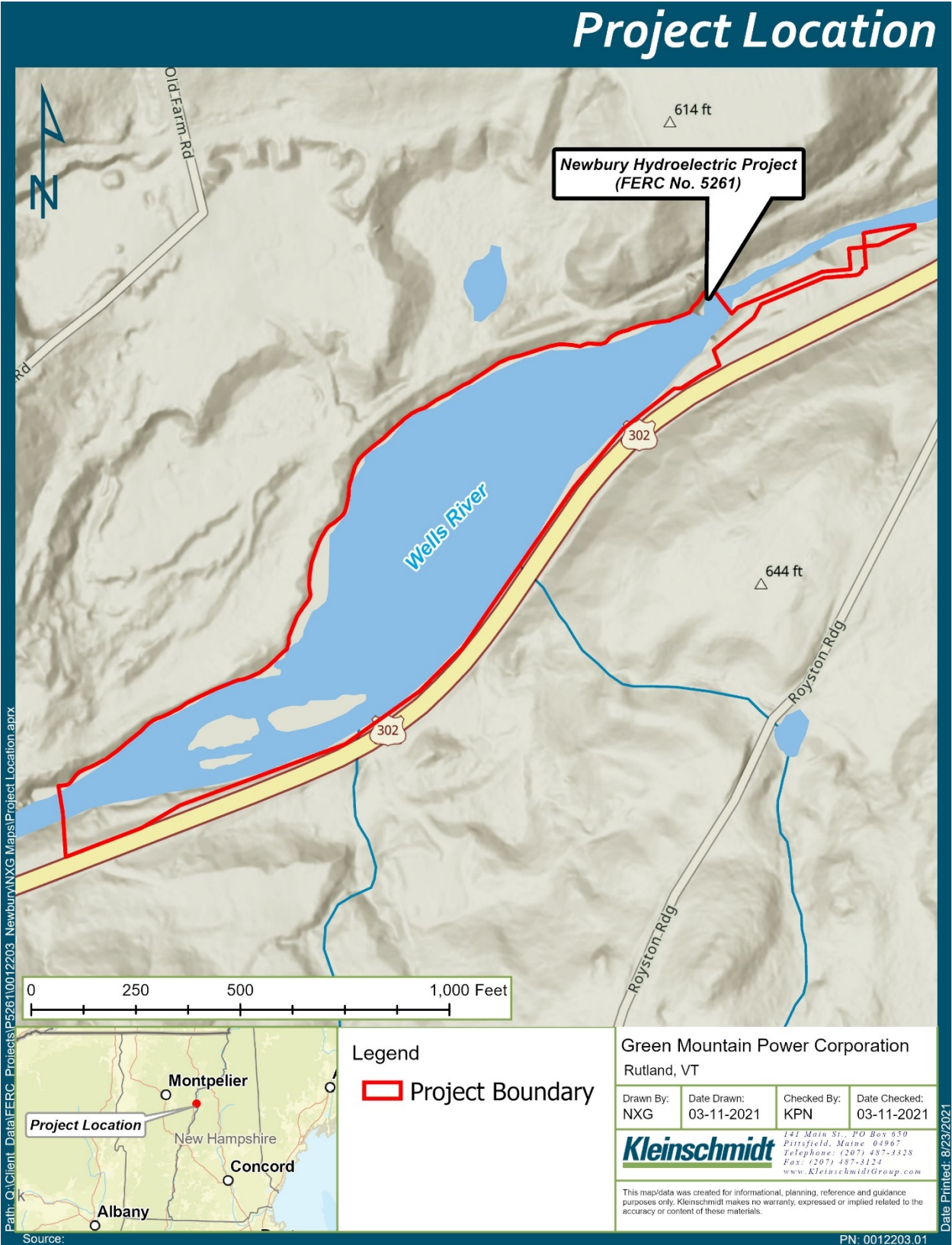


Figure 1.1 Project Location





**Figure 1.2 Project Location and Boundary**

## 2.0 PROJECT FACILITIES

---

### 2.1 Existing Project Facilities

The Newbury Project works consist of (1) a concrete gravity dam approximately 26-feet-high by 90-feet-long containing a 73.3-foot-long spillway topped with 5-foot-high pneumatic crest gates<sup>1</sup>; (2) a reservoir with a surface area of 11.4 acres at a normal water surface elevation of 463.9 feet mean sea level (msl); (3) an intake structure; (4) a 5-foot-diameter, 435-foot-long underground steel penstock; (5) a powerhouse area located within the former Adams Paper Company mill building containing a single turbine-generator unit (Unit No. 1) rated at 0.315 MW; (6) a minimum flow unit (Unit No. 2) rated at 0.05 MW, located approximately 75-feet downstream of the dam; (7) a tailrace; (8) three 150-foot-long generator leads create a 480 Volt (V), 3-phase 150-foot underground transmission line that connects to three pole mounted 167 kVA<sup>2</sup> step-up transformers; and (9) appurtenant facilities. Table 2.1 provides a summary of the existing Project facilities. Figure 2.1 denotes the location of Project facilities.

---

<sup>1</sup> Also known as an Obermeyer system.

<sup>2</sup> kVA is equal to 1,000 volt-amps.

**Table 2.1 Newbury Project Facilities**

Description	Number or Fact
<b>General Information</b>	
FERC Project Number	5261
Owner	Green Mountain Power Corporation
Current License Term	September 8, 1983 – August 31, 2023
Licensed Capacity	0.365 MW
Nearest County	Orange County
Nearest City	City of Barre
Nearest Town(s)	Town of Newbury
Nearest Village	Village of Wells River
River	Wells River
Drainage Area at the Dam	Approximately 100 square miles
River Mile	0.9
<b>Impoundment</b>	
Normal Full Pond Elevation	463.9 feet msl (top of pneumatic crest gates)
Normal Tailwater Elevation	430.0 feet msl
Average Net Head	34 feet
Impoundment Length	0.4 miles
Gross Storage	25 acre-feet
Net Storage	Negligible
Surface Area at Normal Full Pond	11.4 acres
<b>Dam</b>	
Construction Type	Concrete, gravity-type structure
Dam Construction Date	1912
Dimensions	26-feet-high by 90-feet-long
Spillway Length	73.3 feet-long by approximately 20-feet-high topped with a 5-foot-high by 73.3-foot-long pneumatic crest gate system
Crest Elevation	Spillway Crest: 458.9 feet msl Normal impoundment elevation of 463.9 feet msl (with 5-foot-high pneumatic crest gate system inflated) South Abutment Dam Crest: 464.9 feet msl North Abutment Dam Crest: 464.4 feet msl



Description	Number or Fact
<b>Water Conveyance Structures</b>	
Intake	Reinforced concrete intake 11-feet 2-inches-wide by 9-feet-long with a 6-foot by 6-foot hydraulically operated slide gate. The trashrack is 10-feet-wide by 17-feet-deep with 1-inch bar spacing and is installed at an approximate 45-degree angle to flow.
Penstock(s)	5-foot-diameter buried stainless steel penstock, 435-feet-long
Minimum Flow Unit Knife Gate	5-feet-wide by approximately 7-feet-high.
Downstream Fish Chute	8-foot-long by 4-foot-wide steel sluice box that extends to the plunge pool. Seasonally installed.
<b>Powerhouse</b>	
Construction Type	Masonry
Location	Located downstream of the Newbury dam within the lower level of the non-Project former Adams Paper Company mill building.
Dimensions	<p>GMP leases an area 32-feet by 36-feet on the lower level of the non-Project Adams Paper Company mill building where Unit No. 1 turbine and generator are located. GMP also leases an area 32-feet by 36-feet on the next floor up to accommodate for the Unit No. 1 switchgear and office area.</p> <p>GMP owns a small building that houses controls for Unit No. 2 switchgear and the inflatable crest controls. This building is 8-feet by 24-feet and is located approximately 75-feet downstream of the dam. GMP also owns an adjacent 5-feet by 4-feet gate house building used for opening the knife gate associated with Unit No. 2 (minimum flow unit).</p>
<b>Turbines</b>	
Number of Turbine/Generator Units	2
Turbine Manufacturer/Type	Unit No. 1: Horizontal Ossberger Crossflow Unit No. 2 (Minimum Flow Unit): Vertical Norcan fixed blade propeller

Description	Number or Fact
Turbine Capacities	Unit No. 1: 0.315 MW Unit No. 2 (Minimum Flow Unit): 0.05 MW
Generator Manufacturer	Unit No. 1: Synchronous Hitzinger Unit No. 2 (Minimum Flow Unit): Induction Marathon
Generator Capacities	Unit No. 1: 0.36 MW Unit No. 2 (Minimum Flow Unit): 0.05 MW
Hydraulic Capacity	Maximum Capacity: Unit No. 1: 134 cubic feet per second (cfs) Unit No. 2 (Minimum Flow Unit): 30 cfs Total: 164 cfs  Minimum Capacity: Unit No. 1: 20 cfs Unit No. 2 (Minimum Flow Unit): 30 cfs Total: 50 cfs
<b>Switchyard/Transmission Lines</b>	
	Three 150-foot-long generator leads create a 480 V, 3-phase 150-foot underground transmission line that connects to three pole mounted 167 KVA step-up transformers.





### **2.1.1 Dam**

The Newbury dam was built in 1912 and is a concrete gravity dam approximately 26-feet-high by 90-feet-long (Photo 2.1). The dam contains a south abutment, a 73.3-foot-long spillway section topped with a 5-foot-high pneumatic crest gates, and a north abutment. The south abutment has a crest elevation of 464.9-feet msl, the spillway section has a crest elevation of 458.9-feet msl (463.9-feet msl at top of the inflated pneumatic crest gates), and the north abutment has a crest elevation of 464.4-feet msl. Normal impoundment elevation is 463.9 feet msl with the inflated 5-foot-high pneumatic crest gate system.



**Photo 2.1 Newbury Dam and Spillway**

### 2.1.2 Intake Structure

The Newbury Project has one intake structure located on river right. The intake has a crest elevation of 464.9-feet msl, is 11-feet 2-inches-wide by 9-feet-long, and is composed of reinforced concrete (Photo 2.2). The intake contains one hydraulically operated slide headgate 6-feet-high by 6-feet-wide as well as a trashrack 10-feet-wide by 17-feet-deep with 1-inch clear bar spacing. The trashrack is mounted at an approximate 45-degree angle to flow. The trashrack is cleaned via a mechanical rack raker.



**Photo 2.2 Newbury Project Intake and Trashracks**



### 2.1.3 Water Conveyance

The intake connects to a 5-foot-diameter, 435-foot-long buried stainless-steel penstock that conveys water from the intake to both the powerhouse (Unit No. 1) and minimum flow unit (Unit No. 2). A 5-feet-wide by approximately 7-feet-high knife gate is used to control water through the minimum flow unit. The Newbury Project has an approximate 590-foot-long bypassed reach (Photo 2.3).



**Photo 2.3 Newbury Project Bypassed Reach and Minimum Flow Unit**

### 2.1.4 Powerhouse

The masonry powerhouse is located downstream of the Newbury dam on the river right and within the lower level of the non-Project former Adams Paper Company mill building (Photo 2.4). GMP leases an area 32-feet by 36-feet on the lower level of the mill building where the 0.315 MW Horizontal Ossberger crossflow (Unit No. 1) turbine and Synchronous Hitzinger generator (0.36 MW) are located (Photo 2.5). Unit No. 1 has a minimum hydraulic capacity of 20 cfs and a maximum hydraulic capacity of 134 cfs. GMP also leases an area the 32-feet by 36-feet on the next floor up to accommodate for Unit No. 1 switchgear and office area.

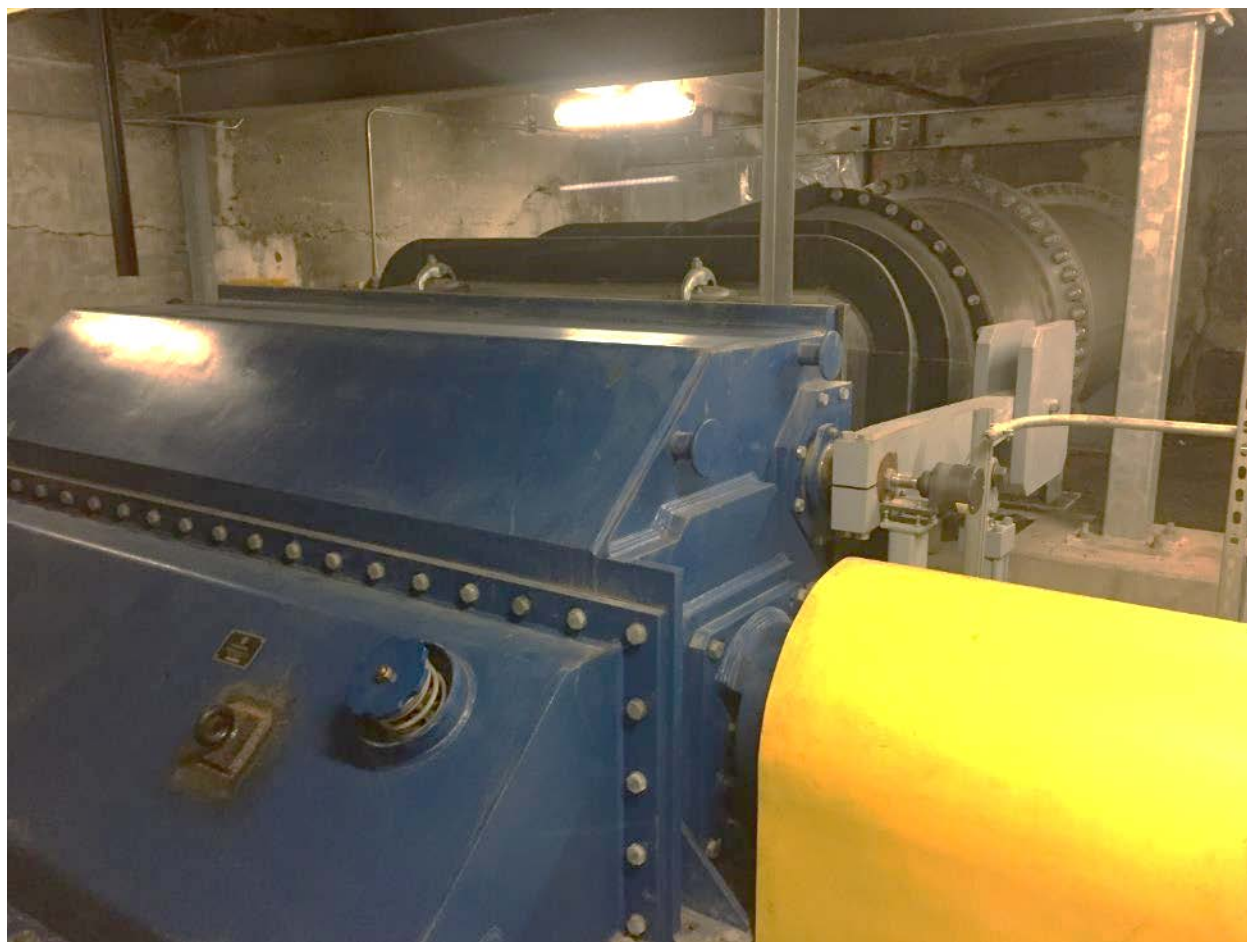
GMP owns a small building that houses controls for the 0.05 MW Vertical Norcan fixed blade propeller minimum flow unit (Unit No. 2) switchgear and the inflatable crest controls. This building is 8-feet by 24-feet and is located approximately 75-feet downstream of the dam on river right (Photo 2.6). GMP also owns an adjacent 5-feet by 4-feet gate house building used for opening the knife gate to Unit No. 2. Unit No. 2 turbine and Induction Marathon generator (0.05 MW) are otherwise located outside along the river shoreline to provide minimum flows. Unit No. 2 has a minimum and maximum hydraulic capacity of 30 cfs (Unit No. 2 is operated in either an "on" or "off" state).

The Newbury Project has a tailrace that extends approximately 125-feet from the former Adams Paper Company mill building (Photo 2.7). The normal tailwater elevation is 430.0 feet msl.





**Photo 2.4 Newbury Project Powerhouse Entrance  
(Portion of former Adams Paper Company Mill Building)**



**Photo 2.5 Newbury Project Unit No. 1**





**Photo 2.6 Newbury Project Minimum Flow Unit (Unit No. 2)  
Switchgear Building and Gate House**



**Photo 2.7 Newbury Project Tailrace**



### **2.1.5 Impoundment**

The Newbury Project impoundment extends upstream approximately 0.4 miles and has a surface area of approximately 11.4 acres at normal full pond elevation of 463.9 feet msl with the 5-foot-high pneumatic crest gates inflated (Photo 2.8). At normal full pond, the impoundment has a gross storage capacity of approximately 25-acre-feet and a negligible net storage capacity. The average net head for the Project with a full impoundment is 34 feet.



**Photo 2.8 View of the Impoundment Looking Upstream**

### **2.1.6 Downstream Fish Passage Facility**

GMP seasonally installs a downstream fish passage chute on the spillway to allow for downstream movement of resident fish species (Photo 2.9). The chute is installed by removing a 2-foot-high by 4-foot-wide section of the crest gates at the dam and attaching an 8-foot-long by 4-foot-wide steel sluice box that extends to the plunge pool. The chute

is operated in the spring from April 1<sup>st</sup> to June 1<sup>st</sup> and in the fall from September 1<sup>st</sup> to November 15<sup>th</sup> and provides a flow of 20 cfs and 10 cfs in the spring and fall, respectively.



**Photo 2.9 Downstream Fish Passage Chute**

### **2.1.7 Transmission Lines**

Three 150-foot-long generator leads create a 480 V, 3-phase 150-foot underground transmission line that connects to three pole mounted 167 KVA step-up transformers (Photo 2.10). Appendix A contains the single-line diagram for the Newbury Project, which is being filed as Critical Energy Infrastructure Information (CEII).





**Photo 2.10 Three Step-Up Transformers**

## **2.2 Proposed Project Facilities**

GMP is proposing no modifications to the existing Project facilities at this time.

## 3.0 CURRENT AND PROPOSED PROJECT OPERATIONS

---

### 3.1 Current Project Operations

GMP operates the Newbury Project as a run-of-river facility, which maintains a stable impoundment water surface elevation and returns river flow at the powerhouse that matches inflow. Approximately 590 feet of the Wells River between the dam and powerhouse tailwater is bypassed during normal operations.

GMP provides a minimum flow to the bypassed reach of at least 50 cfs from April 15<sup>th</sup> to June 10<sup>th</sup> and at least 25 cfs during the remainder of the year (or inflow to the impoundment, whichever is less). Minimum flows are provided via a combination of discharge from a minimum flow unit, spill, and the downstream fishway when it is seasonally operated. GMP also maintains a year-round aesthetic flow of 5 cfs over the dam when the minimum flow unit (Unit No. 2) is in use. When the minimum flow unit is shutdown, GMP maintains minimum flow requirements via spillage over the dam by partially lowering an approximate 10-foot-long section of the pneumatic crest gates.

The maximum hydraulic capacity of the plant is 164 cfs (Unit No. 1 rated at 134 cfs; Unit No. 2. rated at 30 cfs). When operational, the minimum flow turbine discharges a continuous river flow of 30 cfs into the reach between the dam and powerhouse. When river flow is too low to operate the minimum flow turbine (<30 cfs) or exceeds 164 cfs, water spills over the dam into the bypassed reach. Additionally, when the minimum flow unit is in use, the 5 cfs aesthetics flow is provided, therefore providing at least 35 cfs to the bypassed reach during those times.

GMP seasonally installs a downstream fish passage chute on the spillway to allow for downstream movement of resident fish species (Photo 2.9). The chute is operated in the spring from April 1<sup>st</sup> to June 1<sup>st</sup> and in the fall from September 1<sup>st</sup> to November 15<sup>th</sup> and provides a flow of 20 cfs and 10 cfs in the spring and fall, respectively.

Unit No. 1 is operated via automatic pond level control and the minimum flow unit (Unit No. 2) is operated manually with a 48-inch hydraulic gate valve (knife gate). An operator visits the site on weekdays to ensure facility compliance and overall site safety.



Though drawdowns do not occur often at the Newbury Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns.

### **3.2 Proposed Project Operations**

In accordance with instream flow and aesthetic flow study results and practicalities associated with site operations, GMP proposes modified minimum flows, aesthetic flows, and fish passage flows for continued operation of the Newbury Project under a subsequent license. GMP provides proposed measures, including those related to Project operations, in Exhibit E, Section 3.2, *Proposed Action*.

## 4.0 AVERAGE ANNUAL ENERGY AND DEPENDABLE CAPACITY

The Newbury Project generated an average annual energy output of 882 megawatt hours (MWh) for the period 2013 – 2020. Newbury Project monthly average energy generation for the period 2013 – 2020 is provided in Table 4.1. The ISO New England Seasonal Claimed Capability ratings listed in the April 2021 CELT Report are 0.00 MW for the summer period and 0.048 MW for the winter period (ISO New England 2021).

The estimated average flow of the Wells River at the Newbury dam is 170 cfs based on U.S. Geological Survey (USGS) gage No.01139000 (Wells River at Wells River, Vermont) for the period January 1, 1991, to December 31, 2020. Data from the USGS gage were pro-rated by a factor of 1.013 to account for the additional drainage area at the Newbury Project.

**Table 4.1 Newbury Project Net Generation by Month (MWh), 2013-2020**

	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
<b>2013</b>	18.404	33.051	31.974	27.572	47.293	153.767	197.323	56.960	66.272	18.424	91.726	142.266	<b>885.032</b>
<b>2014</b>	31.544	62.711	49.752	121.147	207.751	68.831	38.284	35.565	2.896	53.905	58.485	105.685	<b>836.556</b>
<b>2015</b>	107.492	43.712	56.875	157.249	99.857	174.676	116.305	62.156	20.698	97.349	103.568	180.664	<b>1220.601</b>
<b>2016</b>	135.308	99.354	143.387	159.459	139.221	38.340	43.412	38.445	0.000	26.406	108.140	148.964	<b>1080.436</b>
<b>2017</b>	131.286	90.541	154.311	154.348	192.580	137.358	141.701	41.069	17.802	0.552	35.198	86.865	<b>1183.611</b>
<b>2018</b>	92.337	115.377	147.572	138.929	134.318	35.926	23.682	13.401	0.230	5.465	62.349	21.869	<b>791.455</b>
<b>2019</b>	27.595	26.800	22.172	15.076	14.238	30.486	27.527	6.953	4.186	20.767	199.849	36.243	<b>431.892</b>
<b>2020</b>	22.841	15.277	62.070	165.107	123.496	22.877	31.379	7.432	0.131	20.692	28.000	127.614	<b>626.916</b>
<b>Average</b>	<b>70.851</b>	<b>60.853</b>	<b>83.514</b>	<b>117.361</b>	<b>119.844</b>	<b>82.783</b>	<b>77.452</b>	<b>32.748</b>	<b>14.027</b>	<b>30.445</b>	<b>85.914</b>	<b>106.271</b>	<b>882.062</b>

## 5.0 ESTIMATED COST OF THE PROJECT

---

The Newbury Project is an existing, licensed facility. GMP is not proposing any capacity related developments for the Project.

## 6.0 ESTIMATED CAPITAL AND ANNUAL COSTS OF PROPOSED ENVIRONMENTAL MEASURES

---

Table 6.1 includes an estimate of costs associated with GMP's PME measures as proposed within Exhibit E, Section 3.2.2, *Proposed Environmental Measures* for the Newbury Project. GMP's proposed flow regime, as described in Exhibit E, Section 3.2, *Proposed Action*, will have no appreciable change in Project generation when compared to the existing, licensed flow regime.

**Table 6.1 Estimated Costs for Protection, Mitigation, or Environmental Measures Proposed for Newbury Project Relicensing**

Proposed Protection, Mitigation, or Enhancement Measure	Estimated Cost (2021 Dollars)
Flow Management and Monitoring Plan (Inclusive of Agency Consultation)	\$12,000
Historic Properties Management Plan (Inclusive of Agency Consultation)	\$10,000
Hand Carry Access Area Design and Construction (Inclusive of Stakeholder Consultation and Permit Approvals)	\$20,000

## **7.0 PURPOSE OF THE PROJECT**

---

The primary purpose of the Project is for hydroelectric generation. GMP is the regional electric utility and power producer and currently delivers power generated at the Newbury Project directly into GMP's distribution system.

## **8.0 ESTIMATED COST OF RELICENSING**

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Pursuant to the Commission's regulations at 18 C.F.R. § 4.61 (c)(3), the total estimated cost of relicensing for this Project is approximately \$350,000 (2021 dollars). This includes consultation, studies, administrative and legal costs.

## **9.0 VALUE OF PROJECT POWER**

---

The Project is operated in run-of-river mode. GMP delivers all power generation directly into the GMP distribution system. The on-peak and off-peak average values of Project power for the period June 1, 2017 through July 31, 2021 are \$41.59 and \$34.75, respectively.

## **10.0 ESTIMATED CHANGE IN PROJECT GENERATION**

---

GMP's proposed flow regime, as described in Exhibit E, Section 3.2, *Proposed Action*, will have no appreciable change in Project generation when compared to the existing, licensed flow regime.

## **11.0 CURRENT NET INVESTMENT (BOOK VALUE) OF THE PROJECT**

---

The current net investment in the Project is \$4,423,222 (2021 dollars). This should not be interpreted as the fair market value of the Newbury Project.

## **12.0 ESTIMATED ANNUAL OPERATION AND MAINTENANCE EXPENSE OF THE PROJECT**

---

The average annual operations and maintenance costs between 2017 and 2021 is approximately \$89,968. Other average expenses, including insurance, taxes, and administrative costs, for the 2017 – 2021 timeframe is approximately \$2,331, annually.

Therefore, the total average annual operation and maintenance cost for the period 2017 – 2021 is approximately \$92,299.

### **13.0 SINGLE LINE DIAGRAM**

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A single-line diagram for the Project is included in Appendix A, which is filed as CEII.

### **14.0 PROJECT SAFETY PROGRAM**

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Since GMP has owned the Newbury Project, GMP has safely managed, operated, and maintained the Project. GMP's Colchester Control Center continuously monitors the Project supervisory control and data acquisition (SCADA) system. These same practices will be continued under the subsequent license, subject to any new terms and conditions contained therein. GMP maintains fences, locked gates, handrails, and signs to warn and protect the public from hazards associated with Project operations and to restrict the public from Project structures (intake area, dam, minimum flow unit, powerhouse). All buildings, gates, and instrumentation devices located on or near the dam are kept locked at all times when they are not in use by the plant operator. A boat barrier is installed seasonally on the upstream side of the dam for public safety reasons.

On February 27, 2019, GMP filed a Public Safety Plan, which details public safety measures at the Newbury Project. A component of this plan is annual monitoring and reporting, which GMP is up to date with, filing their dam safety surveillance monitoring report for the Newbury Project on March 16, 2021.

### **15.0 REFERENCES**

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ISO New England. 2021. Seasonal Claimed Capability – Monthly Report April 2021. April 5, 2021. Available online: [ISO New England - Operations Reports \(iso-ne.com\)](https://iso-ne.com). Accessed April 6, 2021.

Green Mountain Power. Public Safety Plans, Barnet FERC # 5702, Newbury FERC #5261, Woodsville FERC # 5307 dated February 27, 2019. CEII

## **APPENDIX A**

### **SINGLE-LINE DIAGRAM (CEII)**

**THIS MATERIAL IS CRITICAL ENERGY INFRASTRUCTURE INFORMATION (CEII).**

Members of the Public may Obtain Nonpublic or Privileged Information by Submitting a  
Freedom of Information Act (FOIA) Request.



**NEWBURY HYDROELECTRIC PROJECT**

**FERC No. 5261**

**EXHIBIT E**

**ENVIRONMENTAL REPORT**

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## LIST OF ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
CFR	Code of Federal Regulation
cfs	Cubic Feet per Second
CRC	Connecticut River Conservancy
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEC	Department of Environmental Conservation
DO	Dissolved Oxygen
EFH	Essential Fish Habitat
EPT	Ephemeroptera, Plecoptera, and Trichoptera
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
GMP	Green Mountain Power
HBI	Hilsenhoff Biotic Index
HPMP	Historic Properties Management Plan
KVA	Kilo-Volt-Amps
MW	Megawatts
msl	Mean Sea Level
NE ARC	North East Archaeology Research Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NTU	Turbidity
SHPO	State Historic Preservation Office
TLP	Traditional Licensing Process
USFWS	U.S Fish and Wildlife Service
V	Volt-Amps
VANR	Vermont Agency of Natural Resources
VDHP	Vermont Division of Historic Preservation
VTFWD	Vermont Fish and Wildlife Department
WQC	Water Quality Certificate

## 1.0 INTRODUCTION

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### 1.1 Project Overview

Green Mountain Power Corporation (GMP or Licensee) is the operator of the existing 0.365 megawatts (MW) Newbury Hydroelectric Project (FERC No. 5261) (Newbury Project or Project). The current license for the Project was issued by the Federal Energy Regulatory Commission (FERC or Commission) on September 8, 1983 to the Newbury Hydro Company for a term of 40-years and expires on August 31, 2023. The license was subsequently amended twice for changes in generating capacity in 1989<sup>1</sup> and in 1994<sup>2</sup> (Appendix A). An Order Approving Revised As-Built Exhibit A and L Drawings and Revising Annual Charges was issued by the FERC on November 4, 2013 to update the Project's total installed capacity after completion of generating unit upgrades (Appendix A). The Vermont Department of Water Resources and Environmental Engineering<sup>3</sup> issued a Project Water Quality Certificate (WQC) on December 14, 1982 (Appendix A). On July 21, 1988, the Vermont Agency of Natural Resources (VANR) Department of Environmental Conservation (DEC) issued a revised WQC to accommodate for installation of the Project's minimum flow unit (Appendix A ).

The license was transferred from Newbury Hydro Company to Newbury Hydro Company, LLC an indirect subsidiary of Enel Green Power North America, Inc on March 27, 2015 (150 FERC ¶ 62,210). On November 18, 2016, the license was transferred from Newbury Hydro Company, LLC to Green Mountain Power Corporation (157 FERC ¶ 62,133). GMP leases the Newbury dam and Project lands from a private landowner but owns all hydroelectric generating equipment and non-dam/spillway infrastructure (see Appendix B for property lease document).

The Newbury Project is located on the Wells River at river mile (RM) 0.9 and in the Village of Wells River, Town of Newbury, Orange County, Vermont (Figure 1.1). The Newbury Project works consist of (1) a concrete gravity dam approximately 26-feet-high by 90-feet-long containing a 73.3-foot-long spillway topped with a 5-foot-high pneumatic crest gates<sup>4</sup>; (2) a reservoir with a surface area of 11.4 acres at a normal water surface elevation

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<sup>1</sup> Order Amending License and Revising Annual Charges, January 17, 1989 (microfilm only).

<sup>2</sup> Order Amending License and Revising Annual Charges, March 3, 1994 (Appendix A).

<sup>3</sup> Now the Vermont Agency of Natural Resources

<sup>4</sup> Also known as an Obermeyer system.

of 463.9-feet mean sea level (msl); (3) an intake structure; (4) a 5-foot-diameter, 435-foot-long underground steel penstock; (5) a powerhouse area located within the former Adams Paper Company mill building containing a single turbine-generator unit (Unit No. 1) rated at 0.315 MW; (6) a minimum flow unit (Unit No. 2) rated at 0.05 MW, located approximately 75-feet downstream of the dam; (7) a tailrace; (8) three 150-foot-long generator leads create a 480 Volt (V), 3-phase 150-foot underground transmission line that connects to three pole mounted 167 kVA transformers<sup>5</sup>; and (9) appurtenant facilities (Figure 1.3). The Project boundary extends approximately 0.4-miles upstream of the dam, and approximately 600-feet downstream of the dam (Figure 1.2).

GMP operates the Newbury Project as a run-of-river facility, which maintains a stable impoundment surface elevation and returns river flow at the powerhouse that matches inflow. Approximately 590 feet of the Wells River between the dam and tailwater is bypassed during normal operations.

GMP provides a minimum flow to the bypassed reach of at least 50 cfs from April 15<sup>th</sup> to June 10<sup>th</sup> and at least 25 cfs during the remainder of the year (or inflow to the impoundment, whichever is less). Minimum flows are provided via a combination of discharge from a minimum flow unit, spill over the dam, and the downstream fishway when it is seasonally installed. GMP also maintains a year-round aesthetic flow of 5 cfs over the dam when the minimum flow unit (Unit No. 2) is in use. When the minimum flow unit is shut down, GMP maintains minimum flow and aesthetic flow requirements via spillage over the dam by partially lowering an approximate 10-foot-long section of the pneumatic crest gates.

The maximum hydraulic capacity of the Project is 164 cfs (Unit No. 1 rated at 134 cfs; Unit No. 2. rated at 30 cfs) and minimum hydraulic capacity of the Project is 50 cfs (Unit No. 1 rated at 20 cfs; Unit No. 2 rated at 30 cfs). When operational, the minimum flow turbine discharges a continuous river flow of 30 cfs<sup>6</sup> into the reach between the dam and powerhouse. When river flow is too low to operate the minimum flow turbine (<30 cfs) or exceeds 164 cfs, water spills over the dam into the bypassed reach. Additionally, when the minimum flow unit is in use, the 5 cfs aesthetics flow is provided, therefore providing at least 35 cfs to the bypassed reach during those times.

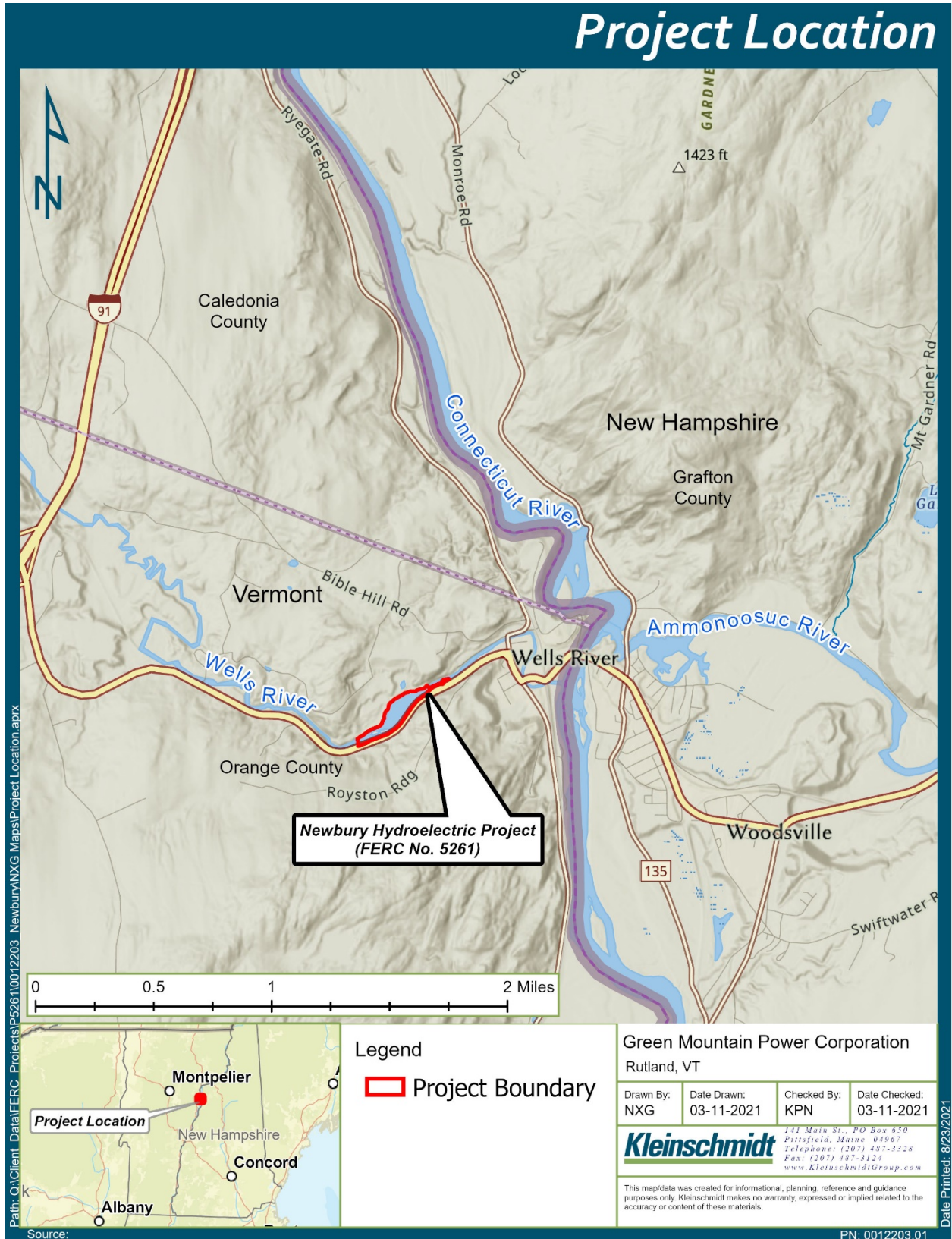
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<sup>5</sup> kVA is equal to 1,000 volt-amperes.

<sup>6</sup> The minimum flow unit does not operate over a range of flow and is either fully "on" or "off".

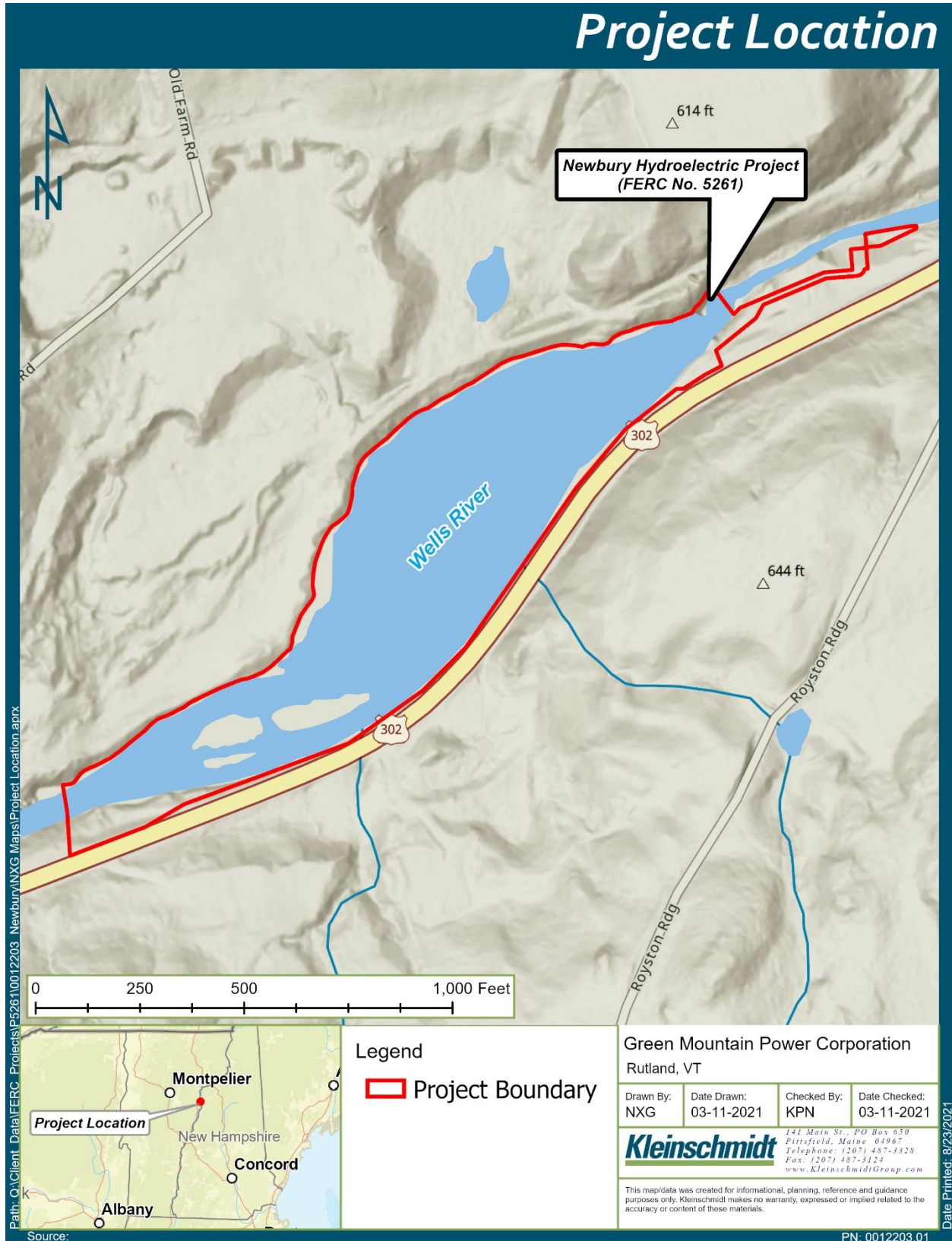
GMP seasonally installs a downstream fish passage chute on the spillway to allow for downstream movement of resident fish species. The downstream fish passage is operated in the spring from April 1<sup>st</sup> to June 1<sup>st</sup> and in the fall from September 1<sup>st</sup> to November 15<sup>th</sup> and provides a flow of 20 cfs and 10 cfs in the spring and fall, respectively.

Unit No. 1 is operated via automatic pond level control and the minimum flow unit (Unit No. 2) is operated manually with a 48-inch hydraulic gate valve (knife gate). An operator visits the site on weekdays to ensure facility compliance and overall site safety.



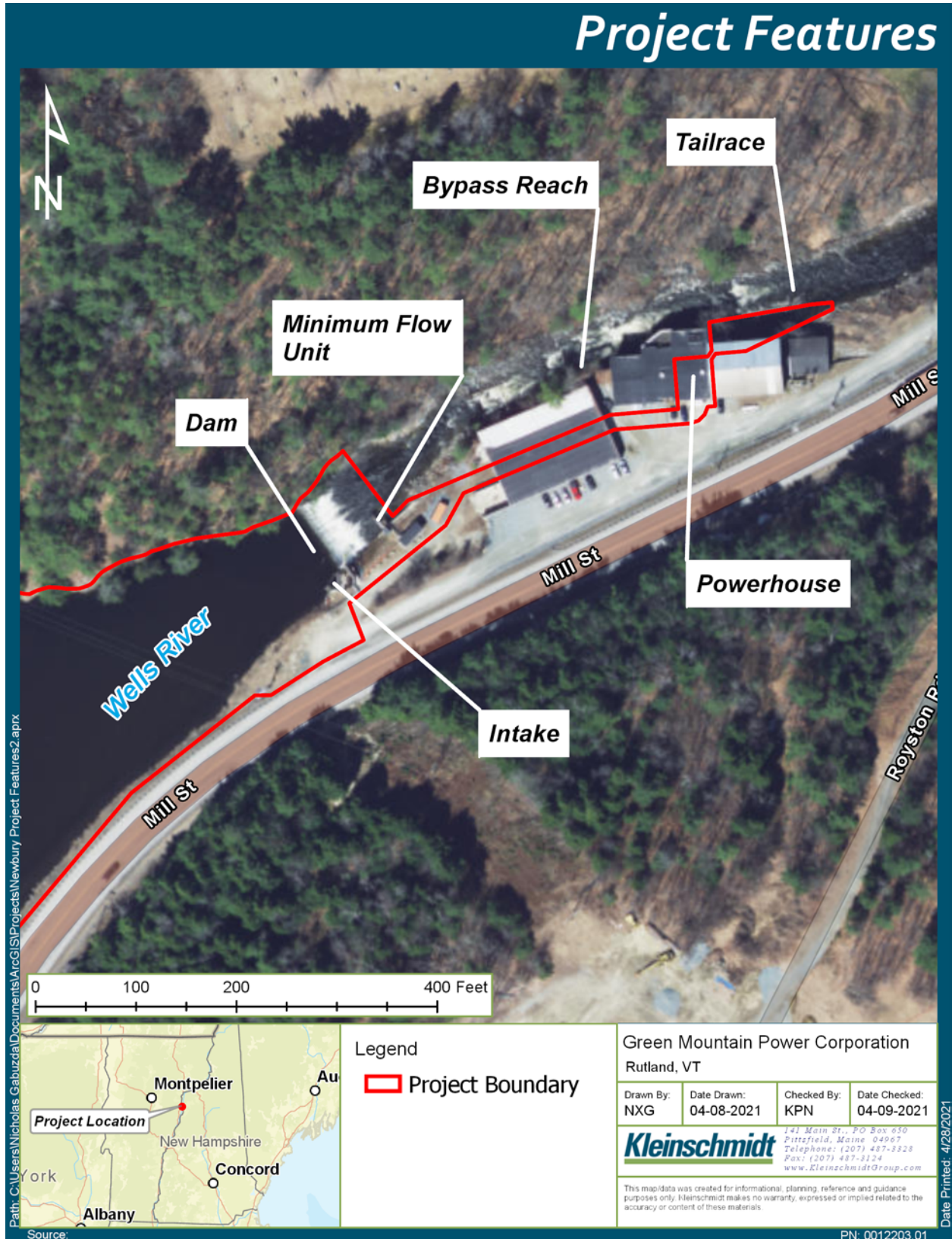
**Figure 1.1 Project Location Map**





**Figure 1.2 Newbury Project Boundary**





**Figure 1.3 Newbury Project Facilities Overview**

## **1.2 Pre-Filing Consultation Summary**

In accordance with FERC approval dated October 26, 2018, GMP is using the Traditional Licensing Process (TLP) for relicensing the Newbury Project. The TLP is split into three stages of pre-filing consultation. Stage I consultation involves the applicant's request to use the TLP and filing of a Notice of Intent (NOI) and Pre-Application Document (PAD), FERC's approval to use the TLP, holding a joint agency/public meeting and site visit, and provision of written comments and study requests from resource agencies, tribes, and interested stakeholders. Stage II consultation involves the applicant's completion of necessary and reasonable studies, the applicant's provision of a Draft License Application (DLA) and study results to resource agencies, tribes, and interested stakeholders, and the provision of comments from resource agencies, tribes, and interested stakeholders on the DLA. Stage III then includes the applicant's filing of a Final License Application (FLA) with the Commission and provision of copies of the FLA to agencies, tribes, and interested stakeholders.

### **1.2.1 Stage 1 Consultation**

GMP filed a Notice of Intent to File a License Application (NOI) and Pre-Application Document (PAD) and requested to use the Traditional Licensing Process (TLP) for the Newbury Project with FERC on August 29, 2018. On October 26, 2018, FERC granted approval for GMP to use the TLP for the Newbury Project and Notice of GMP's Intent to File License Application (Appendix C).

On November 19, 2018, pursuant to 18 Code of Federal Regulation (CFR) § 16.8(b)(3)(i)(B), GMP provided written notice to FERC and the stakeholders (Distribution List) of the Joint Agency and Public Meeting (Joint Meeting) and site visit for the Newbury Project. In addition, in accordance with 18 CFR § 16.8(i), GMP published notice of the Joint Meeting and site visit in the Caledonian Record and the Times Argus on November 17, 2018, newspapers having distribution in Orange County, where the Newbury Project is located. GMP filed proof of newspaper publications with FERC on November 21, 2018 (Appendix C).

GMP held a Joint Meeting and site visit for the Newbury Project on Tuesday, December 4, 2018. The purpose of the meeting was to: 1) provide information about the Newbury Project and licensing process; 2) solicit information regarding the existing environmental resources associated with the Newbury Project and data that may need to

be obtained; and 3) obtain agency and stakeholder opinions regarding the Newbury Project and its potential effect on existing resources. GMP filed a summary and audio recording of the Joint Meeting with FERC on April 5, 2019 (Appendix C).

During this timeframe, GMP received feedback from Chief Don Stevens of the Nulhegan Band of the Coosuk – Abenaki Nation dated November 16, 2018 ( Appendix C ). Chief Stevens put GMP in contact with Chief Colin Wood and Chief Shirly Hook for the Newbury Project relicensing and asked that sensitive areas in the Project be protected, and if anything new is found, that the Abenaki Nation be contacted immediately. Chief Colin Wood and Chief Shirly Hook have since been included on the relicensing distribution list.

### **1.2.2 Stage 2 Consultation**

Following is a summary of the Stage 2 Consultation conducted to date.

#### Studies

The DEC, Vermont Division for Historic Preservation (VDHP), U.S. Fish and Wildlife Service (USFWS), and Connecticut River Conservancy (CRC) filed comment letters and study requests on February 4, 2019, February 4, 2019, February 6, 2019, and February 1, 2019, respectfully (Appendix C). The DEC and CRC requested a Bypass Flow Study, Water Quality Study, Mussel Survey, Recreation Resources Inventory, Use, and Needs Assessment, and Aesthetic Flow Study. The CRC additionally requested macroinvertebrate sampling and GMP consultation with VANR regarding configuration of the downstream fish passage facility. The USFWS fully supported the study requests submitted by the DEC for the Project and did not request any additional information.

The VDHP requested that GMP engage 36 CFR 800 qualified consultants to complete cultural resource studies within the entire Project Area of Potential Effect (APE), including the impoundment margins inclusive of an Archaeological Resource Assessment and a Historic Resource Assessment for above ground structures. VDHP requested the preparation of a Vermont Historic Sites and Structures Survey Form and Determination of Eligibility form for the dam and mill building to determine the National Register of Historic Places eligibility of the site.

GMP reviewed study requests and provided a Proposed Study Plan to the Project Distribution List on May 15, 2019 (Appendix C). GMP proposed four studies for the Newbury Project relicensing to address resources for which insufficient information was

previously available for the PAD, or for which specific issues were identified through scoping and stakeholder comments. Because of the overlap between DEC's and CRC's bypass flow study request and aesthetic flow study request, GMP proposed to combine both studies into a single comprehensive study. Proposed studies included:

1. Bypass Reach Habitat Evaluation and Aesthetic Flow Study
2. Water Quality Study
3. Freshwater Mussel Study
4. Cultural Resources Assessment

Regarding DEC and CRC requests that GMP conduct a Recreation Resources Inventory, Use, and Needs Assessment, GMP's Proposed Study Plan explained that GMP understands the reasoning behind the DEC and CRC's request for a recreation needs assessment to better assess use and potential needs for the Project property, but GMP does not own Project lands and public access is limited due to safety and liability considerations. Therefore, GMP does not have the authority to place new recreational features on the Project property without consent from the property owner. GMP leases space within the former mill and the property owner runs multiple businesses from the Project property. The general powerhouse area lands are utilized by multiple businesses where vehicle traffic creates safety and liability issues.

GMP alternatively proposed to enhance public recreational opportunity at the upstream Wells River Wildlife Area owned by the Vermont Fish and Wildlife Department (VTFWD). The Wildlife Area is a hand carry boat access and fishing site and is located approximately 1 RM upstream of the Newbury dam (just off U.S. Route 302). GMP proposed to meet VTFWD, DEC, and CRC at the Wildlife Area for a site visit during the 2019 field season. Upon consensus of recreation needs, GMP committed to developing a Recreation Management Plan that defines recreation enhancements scope, enhancements schedule, and future maintenance protocols.

In response to CRC's request for macroinvertebrate sampling, GMP noted that it developed a study plan in accordance with DEC recommendations. Provided that DEC is the water quality certifying agency in Vermont and that DEC did not request the need for a macroinvertebrate study, GMP did not propose to conduct a macroinvertebrate study during the 2019 study period. GMP conducted water quality monitoring pursuant to DEC's

study request, including parameters of dissolved oxygen and water temperature at locations within the impoundment, bypassed reach, and tailrace of the Newbury Project.

The DEC and CRC provided comments on the Draft Study Plan on June 14, 2019 (Appendix C). The DEC's comment letter noted that the DEC recognizes the challenge of recreation improvements adjacent to the GMP powerhouse because of the ownership issues and safety concerns described by GMP. The DEC noted that it is open to the idea of increasing recreational opportunities in another location, but it is uncertain whether enhancing access at the nearby Fish and Wildlife Access Area will adequately address recreational needs for Wells River near the Project. For example, the whitewater boating community informed the Agency of the annual whitewater Wells River Rumble, and specifically identified the challenges with the boat takeout at the head of the Project impoundment. Therefore, the DEC suggested that GMP identify and discuss alternative recreation enhancement opportunities, including boat access within the impoundment, with a broader group of relevant stakeholders.

The DEC agreed with GMP's proposal to modify CRC's request and collect temperature and dissolved oxygen at various locations within the Project area. Depending on the results of the water quality study, DEC recommended further consultation to determine if a macroinvertebrate study is warranted. The DEC additionally provided specific commentary on the Bypass Reach Habitat Evaluation and Aesthetic Flow Study, Water Quality Study, and Freshwater Mussel Study.

On June 7, 2019 GMP additionally received comments (after the formal comment period deadline) from American Whitewater (Appendix C). American Whitewater commented on its interest in discussing a takeout area for whitewater boaters that utilize the Wells River upstream of the Project impoundment. American Whitewater described an informal takeout area located just above the head of the Newbury impoundment that consists of an overgrown, old road that may be a feasible improvement area.

During the 2019 field season, GMP completed the Water Quality Study and Freshwater Mussel Study. The Water Quality Study measured temperature and DO at six sites in the Newbury Project area from July 8 to September 30, 2019. The Mussel Survey was conducted on August 3-4, 2019 and did not identify any mussels or shell fragments, either in the water or along the streambanks. On May 22, 2020, GMP distributed 2019 Study Season Reports to commenting stakeholders for review and commentary (Appendix C). GMP noted that over the course of the upcoming 2020 field season, GMP planned to

complete its Bypass Reach Habitat Evaluation and Aesthetic Flow Study, Cultural Resources Assessment, and schedule a site meeting to discuss potential enhancements to the Wells River Wildlife Area located upstream of the Newbury Dam. Work was planned pending progression of the Coronavirus Disease 2019 (COVID-19) and associated safety measures.

On May 22, 2020 the USFWS provided an informal email noting that the USFWS defers to the DEC regarding comments on the Water Quality Study Report and that it did not have any comments to provide on the Mussel Survey Report (Appendix C). On May 26, 2020 American Whitewater expressed continued interest in seeing improvements made to access at the head of the impoundment to support whitewater boating opportunities. On June 22, 2020, the DEC and the CRC both provided comments on GMP's 2019 study season reports (Appendix C). The DEC commented that the Water Quality Study captured the low flow and high temperature conditions critical for evaluating impacts to water quality. The DEC additionally provided specific comments on the Water Quality Study that are addressed within Appendix E, of this Environmental Report. The DEC noted that no mussels were found within the areas of the Wells River influenced by the Newbury Project and did not have any comments on the completed Mussel Survey.

The CRC did not provide comments on the Water Quality Study Report or the Freshwater Mussel Survey and supported DEC's comments on both reports.

During the 2020 field season, GMP completed field work for the Bypass Reach Habitat Evaluation and Aesthetic Flow Study, completed consultation with the VDHP regarding the Project APE, completed an Archaeological Resource Assessment, and completed field efforts for the Archaeological Phase I Survey and the Historic Resource Assessment. GMP additionally met with a landscape architect consultant during July 2020 to conduct a reconnaissance exercise to better understand the existing informal upstream whitewater access areas located above the Project impoundment and to begin developing conceptual access improvements to share with interested stakeholders. Due to safety precautions surrounding the COVID-19 pandemic in summer 2020, GMP did not move forward with holding a group site meeting to discuss potential recreation enhancement ideas.

GMP submitted a proposed APE to VDHP on September 14, 2020 and received VDHP concurrence with the proposed APE on September 24, 2020. GMP submitted an Archaeological Resource Assessment Report to the VDHP on September 25, 2020 and received VDHP concurrence on October 28, 2020. An Archaeological Phase I Survey



Report was submitted to VDHP on January 5, 2021 and VDHP review and approval was received on March 3, 2021. GMP additionally submitted a Vermont Architectural Resource Inventory Form and recommended Determination of Eligibility to VDHP on February 17, 2021 and received VDHP's concurrence of ineligible determination for the Newbury complex on March 4, 2021.

On February 23, 2021 GMP provided DEC and CRC with a draft Instream Habitat Flow Study Report for review (Appendix C). An in-person aesthetics flow demonstration study with stakeholders was not feasible in 2020 due to drought conditions in the northeast and concerns with safety surrounding the COVID-19 pandemic. GMP hosted a virtual meeting with stakeholders on March 4, 2021, to evaluate the aesthetic flow release videos and photos. Representatives from the DEC, CRC, Kleinschmidt, and GMP took part in the evaluation via Microsoft Teams meeting platform. The Final Instream Habitat and Aesthetic Flow Study Report that captures results from this meeting is included within this Environmental Exhibit (Appendix F).

GMP completed Phase II investigation field work in June 2021 after receiving verbal concurrence from VDHP on the scope of survey work. An End of Field Letter for Archaeological Phase II work was submitted to VDHP on August 26, 2021 (Appendix C). NE ARC will provide a full technical report for VDHP review that details the results of the Phase II investigation in the coming months. The End of Field Letter includes an overview of the Phase II investigation work inclusive of field work and archival research. The End of Field Letter recommends the identified Wells River Electric Light Plant and Pumping Station (VT-OR-0122), located in the upstream most section of the Project Area of Potential Effect as eligible for inclusion in the National Register of Historic Places.

GMP will provide a Section 106 report to VDHP to conclude Cultural Resource Study efforts upon completion of the full technical Archaeological Phase II Evaluation Report.

On June 30, 2021, GMP hosted a recreation site meeting with interested resource agencies and stakeholders. The purpose of this meeting was to better understand recreational uses occurring around the Newbury Project and to evaluate potential needs and improvement options for access. Representatives from VTFWD, DEC, Town of Newbury, American Whitewater, the Connecticut River Conservancy, and Chief Logging and Construction Inc. (local landowner) participated in the meeting. The site meeting predominantly reviewed stakeholder interest in establishing improved access to the river in areas located towards the head of the impoundment and further upstream of the impoundment for whitewater

use. No interest was expressed in developing recreation access around the immediate area of the Newbury dam or tailrace, but interest for improved access to support informal access occurring upstream of the impoundment was expressed. Stakeholders agreed that an improved access area for hand carry boat access would also improve access for recreational fishing. Stakeholder interests were reviewed on site at the Newbury dam and then the meeting group toured three sites where boating access is presently occurring upstream of the dam: 1) upper impoundment edge access area; 2) VTFWD Wells River Fishing Access Area; and 3) the Chief Excavating defunct access bridge (to be rehabilitated at a date yet to be determined). A summary of the June 30, 2021 recreation site meeting is included in Appendix C.

Appendix C provides a consultation summary table as well as documentation of consultation.

#### Draft License Application

On May 5, 2021, GMP provided FERC, resource agencies, tribes, and interested stakeholders with the Newbury Project Draft License Application (DLA) for review and commentary (Appendix C). The DLA included descriptions of (1) the existing and proposed Project facilities, Project lands, and waters; (2) existing and proposed Project operations and maintenance, including protection, mitigation, and enhancement (PME) measures for each resource area potentially affected by the relicensing; and (3) a draft analysis of the effects of the proposed relicensing on each environmental resource.

In accordance with 18 CFR§16.8 (c)(4)(5), stakeholders interested in providing comments on the DLA had 90 days to submit their comments (or by August 3, 2021). American Whitewater and Connecticut River Conservancy, FERC, DEC, and VDHP provided DLA comment letters on July 19, 2021, July 27, 2021, August 3, 2021, and August 3, 2021, respectively. Appendix C provides a consultation summary table as well as documentation of consultation.

GMP has reviewed provided DLA comments and has incorporated responses to comments, as appropriate, within this FLA document. Responses to comments are included throughout the document text as well as specifically addressed within Table 1.1.

**Table 1.1 DLA Comments and Responses**

<b>Commenting Entity</b>	<b>DLA Document Section</b>	<b>Comment</b>	<b>Response</b>
American Whitewater/ CRC	Exhibit E - General	The current whitewater boating takeout area is within the project boundary, not outside of it as the DLA describes.	See updates made within Section 4.9. A proposed hand carry access area located at the head of the impoundment has been fully incorporated within the proposed Exhibit G map (see Exhibit G).
American Whitewater/ CRC	Exhibit E - Section 3.2 and Section 4.9	GMP proposes to develop and finalize designs for improved whitewater recreation access upstream of the Newbury Project impoundment (pending private landowner approval and consultation surrounding cultural resources) and construct recreation access improvements within 3 years of receipt of subsequent license (pending landowner approval and permit approvals)	Yes. See updated and final language included within Section 3.2 and Section 4.9.
FERC	Initial Statement	Revise the initial statement to include a brief project description conforming to section 4.16(b).	Revisions included in Initial Statement.

Commenting Entity	DLA Document Section	Comment	Response
FERC	Exhibit G	Revise Exhibit G to clearly identify and label all project features, and if available, file any GIS files that were used to develop the map.	Revisions included in Exhibit G.
FERC	Exhibit G	Section 1.0 Project Maps indicates that Exhibit G project boundary elevation is set at 466 feet North American Vertical Datum of 1988 (NAVD 99) while the normal impoundment surface elevation is maintained at 463.9 feet mean sea level (msl). For consistency and direct comparability, provide all elevations in the same datum.	Revisions included in Exhibit G.
VANR	Exhibit E - Section 4.5	Stakeholders are requesting upstream and downstream fish passage for American eel in the next license term of the Great River Hydro's relicensing on the Ct River (P-1892, P-1855, P-1904), increasing the number of eel in the upper reaches, so over the term of the next license, passage measures to protect this species may be needed.	Noted. See Section 4.5.

Commenting Entity	DLA Document Section	Comment	Response
FERC	Exhibit E - Section 4.5.1.3.1	Fish Passage and Protection: describe the impingement and entrainment potential and associated mortality, if any, at the project. If available, please provide a quantitative, <i>monthly</i> , estimate of the numbers and species of fish impinged, entrained, or killed by project operations.	Impingement and entrainment is of low risk at the Project site. See Section 4.5 for further information.
VANR	Exhibit E - Section 4.5	Include an estimate of velocity of flow at the trashrack.	Impingement and entrainment is of low risk at the Project site. See Section 4.5 for further information.
FERC	Exhibit E - Section 4.5.1.3.1	Provide the angle of the trashracks and describe any cleaning or maintenance procedures, including the frequency of cleaning and maintenance, used to keep the trashracks free of debris	Information included in Section 4.5.
VANR	Exhibit E - Section 4.5	Dwarf wedgemussels have been observed in the upper portion of the Ct River, including upstream of the Dodge Falls Hydroelectric Facility located in Gilman, VT.	Noted. See Section 4.5.

Commenting Entity	DLA Document Section	Comment	Response
VANR	Exhibit E - Section 3.2	Include a table that illustrates flow proposal and the total flow in the bypass during different times of year when river flows are within operational capacity.	Table developed. See Section 3.2.
VANR	Exhibit E - Section 3.2	In response to providing aesthetic flows during daytime only, please indicate how GMP will determine "daytime" hours	Definition provided in Section 3.2.
VANR	Exhibit E - Section 4.5	Please comment on whether or not GMP is still considering a different fish passage design, as it was brought up on the onset of relicensing.	GMP is not considering an alternate fish passage system. Please see Section 4.5.
VANR	Exhibit E - Section 4.5	The efficacy of the downstream fish passage should be considered as resident trout species would need to utilize it to seek refuge from warm waters in the impoundment, and it is thought that they could not move back upstream from the impoundment.	The downstream fish passage system presently meets USFWS standards for downstream fish passage. See Section 4.5.
VANR	Exhibit E - Section 4.5	Indicate whether GMP implements and/or plans to implement a screening device	GMP's intake trashracks are permanently installed at the site. See Section 4.5.



Commenting Entity	DLA Document Section	Comment	Response
		during times when the fish chute is installed, which is a provision under the Water Quality Certification issued 7/21/1988.	
VANR	Exhibit E - Section 4.5	Include information on how GMP determined 10 cfs would provide safe and effective downstream fish passage for resident species.	Downstream fishway flows of 10 cfs equals 6 percent of the Newbury Project's maximum hydraulic generating capacity (164 cfs), which is more than the USFWS' standard recommendation of 5 percent (USFWS 2019). See Section 4.5.
American Whitewater/ CRC	Exhibit E - Section 4.5	CRC is concerned about the proposed reduction from 20 cfs to 10 cfs in downstream fish chute, but defers to VT Fish and Wildlife.	Downstream fishway flows of 10 cfs equals 6 percent of the Newbury Project's maximum hydraulic generating capacity (164 cfs), which is more than the USFWS' standard recommendation of 5 percent (USFWS 2019). See Section 4.5.
FERC	Exhibit E - Section 4.5.1.3.1	Describe what fish species use or are expected to use the downstream fish chute so that FERC can evaluate the effectiveness of downstream fish passage	Information included in Section 4.5.

Commenting Entity	DLA Document Section	Comment	Response
FERC	Exhibit E - Section 4.5.1.3.1	Describe any cleaning or maintenance measures, including the frequency of cleaning and maintenance, used to ensure chute remains unobstructed	Information included in Section 4.5.
VANR	Exhibit E - Section 4.5	The Agency is still evaluating the 2020 instream habitat flow study, and the Agency requires 80% of the maximum available habitat within the bypassed reach be provided to meet Class B(2) waters.	Noted. See further information in Section 4.5.
VANR	Exhibit E - Section 3.2	"Consult with DEC prior to conduct of Project maintenance and repair work." Should any maintenance and repair work have the potential to have an adverse effect on water quality, authorization from the Agency should be requested for those activities.	Noted. See amendment to proposal language included in Section 3.2.
VANR	Exhibit A and Exhibit E general	Please describe the best practices that are followed for drawdown and refill regimes, specifically the rate of drawdown and refill, turbidity surveillance, and any other applicable measures. Agency recommends a	Noted. See amendment to proposal language included in Section 3.2, and additional explanation of operating protocols included in Exhibit A.

Commenting Entity	DLA Document Section	Comment	Response
		refill regime that passes 90% of instantaneous inflow and uses 10% for storage, and encourages this to be included in the FLA.	
VANR	Exhibit E - Section 3.2	Appreciates the inclusion of mitigation measures for Northern long eared bat and development of a Flow Management and Monitoring Plan.	Noted.
FERC	Exhibit E - Section 4.6.1.4	Temporal and Spatial Distribution of Wildlife Resources; describe the effects of any project features (e.g. exposed transformers, transmission lines) and operations on avian resources and describe any avian protection measures that are in place with diagrams, maps, and/or photos of protection devices.	Additional information included in Section 4.6.
FERC	Exhibit E - Section 4.6	Wildlife and Terrestrial Resources; describe any current and proposed vegetation management activities at the project including (1) the methods of vegetation management (2) the frequency and timing of	Additional information included in Section 4.6 and Section 4.7.

Commenting Entity	DLA Document Section	Comment	Response
		management activities and (3) the location (including maps and photos) of each type of vegetation management so that the potential interaction between management efforts and the vegetation can be analyzed.	
FERC	Exhibit E - Section 4.6 and Section 4.7	Describe the anticipated effects of vegetation management on terrestrial resources (e.g. the effects of tree removal and trimming on bats), wetlands, native vegetation, and wildlife resources, non-native invasive vegetation, and special status species	Additional information included in Section 4.6 and Section 4.7.
VANR	Exhibit E - Section 4.9	Appreciates the recreational site visit and is looking forward to enhancements mentioned in FLA.	Noted. Site visit summary included in Section 1.2, Section 4.9, and within Appendix C.
VANR	Exhibit E - Section 5.0	Some of the comprehensive plans have been recently updated, but the updates should not impact conclusions made about the Project. Vermont Agency of Natural Resources. 2019. Passumpsic Tactical Basin Plan. Montpelier, Vermont. October 2019.	Updates have been incorporated into Section 5.0.

Commenting Entity	DLA Document Section	Comment	Response
		<p><a href="https://dec.vermont.gov/sites/dec/files/documents/TacticalBasinPlan_B15_PassumpsicRiver_Final_2019-10-04.pdf">https://dec.vermont.gov/sites/dec/files/documents/TacticalBasinPlan_B15_PassumpsicRiver_Final_2019-10-04.pdf</a> ; Vermont Agency of Natural Resources. 2020. Stevens, Wells, Waits, Ompompanoosuc &amp; Connecticut River Direct Tributaries. Montpelier, Vermont. December 2020.</p> <p><a href="https://dec.vermont.gov/sites/dec/files/documents/2020%20Basin%2014%20Tactical%20Basin%20PlanSigned.pdf">https://dec.vermont.gov/sites/dec/files/documents/2020%20Basin%2014%20Tactical%20Basin%20PlanSigned.pdf</a></p>	
VDHP	Exhibit E - Section 1.2	VT SHPO agrees that the cultural resource study schedule and status is accurately summarized in the DLA up to date of submission. Subsequent to the submission, on 4/26/2020 SHPO received the 3/18/21 proposed Archaeological Phase II Scope of Work and provided verbal concurrence.	Noted. Cultural Resource work summary updates have been included in Section 1.2 and Section 4.12.
VDHP	Exhibit E - Section 1.2	7/20/21 phone conference indicated that a post-contact historic site containing the remains of the Wells River Electric Light Plant and Pumping Station has been	Cultural Resource work summary updates have been included in Section 1.2 and Section 4.12.

Commenting Entity	DLA Document Section	Comment	Response
		recommended as eligible for inclusion in the National Register of Historic Places.	
VDHP	Exhibit E - Section 3.2	Look forward to further consultation on the development of a Historic Properties Management Plan.	Noted.



## **2.0 STATUTORY AND REGULATORY REQUIREMENTS**

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### **2.1 Federal Power Act**

Issuance of a subsequent license for the Newbury Project is subject to requirements under the Federal Power Act (FPA) and other federal statutes. Requirements applicable to this FLA are summarized below.

### **2.2 Section 18 Fishway Prescriptions**

Under Section 18 of the FPA, the USFWS and the National Marine Fisheries Service (NMFS) have the authority to prescribe fishways at federally regulated hydropower projects. Currently there is a downstream fish passage facility at the Newbury Project. Following the filing of the FLA, fishway prescriptions, if any, will be filed within 60 days after FERC's Notice for Acceptance and Ready for Environmental Analysis (REA Notice) per FERC's TLP regulations, 18 CFR §4.34(b).

### **2.3 Section 4(e) Conditions**

Section 4(e) of the FPA provides that any license issued by FERC for a project within a federal reservation shall be subject to and contain such conditions as the Secretary of the responsible federal land management agency deems necessary for the adequate protection and use of the reservation. This Newbury Project does not encompass any federal lands; therefore, these conditions do not apply.

### **2.4 Section 10(j) Recommendations**

Under Section 10(j) of the FPA, FERC must consider recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the Newbury Project prior to issuing the new license. FERC will include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. No preliminary Section 10(j) recommendations have been provided for inclusion in this application.

### **2.5 Section 401 of the Clean Water Act**

Section 401 of the Clean Water Act (CWA) requires GMP to obtain certification from the appropriate state pollution control agency verifying compliance with the CWA or to obtain a waiver of certification. The DEC is the state agency responsible for water quality

certifications for the Newbury Project. GMP will request WQC from the DEC in accordance with 18 CFR §4.34(b)(5)(i) within 60 days of FERC's issuance of notice of acceptance of the FLA and REA notice (or sooner, pending consultation with DEC).

## **2.6 Endangered Species Act**

The Endangered Species Act (ESA) (19 United States Code [U.S.C.] § 1536(c), as amended), provides a program for the conservation of threatened and endangered plants and animals and their habitats in which they are found. The lead federal agencies for implementing ESA are the USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. Section 7 of the ESA requires federal agencies, in consultation with the USFWS and/or NOAA, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. On October 26, 2018, FERC granted GMP designation as the FERC's non-federal representative for carrying out information consultation pursuant to Section 7 of the ESA. The Northern long-eared bat (*Myotis septentrionalis*) is the only federally listed species known to transiently occur within the Newbury Project area. See additional discussion in *Section 4.8, Threatened, Endangered, and Special Status Species*.

## **2.7 Magnuson-Stevens Fishery Conservation and Management Act**

The Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with NOAA Fisheries on actions that may adversely affect Essential Fish Habitat (EFH). EFH is only applicable to federally managed commercial fish species that live at least one component of their lifecycle in marine waters. All fish in the Wells River are freshwater species that are not managed commercially; therefore, there is no designated EFH in the Newbury Project area.

## **2.8 Coastal Zone Management Act**

Under Section 307 (c)(3)(A) of the Coastal Zone Management Act (CZMA), FERC cannot issue a license for a project within or affecting a states' coastal zone unless the state's CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

The State of Vermont has not yet developed and implemented a Coastal Zone Management Program under CZMA (NOAA 2021). As such, the Newbury Project is not located within a Coastal Zone and therefore is not subject to the CZMA review by the State.

## **2.9 National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires FERC to consider the effect of its undertakings on historic properties. Historic properties are any prehistoric or historic districts, sites, buildings, structures, Traditional Cultural Properties (TCPs), and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 of the NHPA is implemented through the Advisory Council on Historic Preservation (Council regulations "Protection of Historic Properties" 36 CFR Part 800). FERC initiated consultation under Section 106 with federally recognized Indian tribes, specifically the St. Regis Mohawk Tribe, by letter dated September 1, 2017.

On October 26, 2018, FERC granted GMP designation as the FERC's non-federal representative for executing informal consultation pursuant to Section 106 of the NHPA. GMP consulted with the Vermont State Historic Preservation Office (SHPO) and the tribes that may have an interest in the Newbury Project regarding the relicensing via distribution of the NOI, PAD, and this FLA. FERC (letter dated September 1, 2017) and GMP (via distribution of the NOI and PAD) consulted the St. Regis Mohawk Tribe. Additional information is provided in 4.12, *Cultural and Tribal Resources* and Appendix C provides correspondence documentation.

## **2.10 Wild and Scenic Rivers and Wilderness Acts**

Section 7(a) of the Wild and Scenic Rivers Act requires federal agencies to make a determination as to whether the operation of a project under a new license would unreasonably diminish the scenic, recreational, and fish and wildlife values present in the designated area. The Wilderness Act of 1964 established a National Wilderness Preservation System. No nationally designated wild and scenic rivers or wilderness areas are located within the Newbury Project boundary or within the Wells River watershed (NWSRS 2021).

## **3.0 PROPOSED ACTION AND ALTERNATIVES**

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### **3.1 No Action Alternative**

#### **3.1.1 Existing Project Facilities**

The Newbury Project works consist of (1) a concrete gravity dam approximately 26-feet-high by 90-feet-long containing a 73.3-foot-long spillway topped with a 5-foot-high pneumatic crest gates; (2) a reservoir with a surface area of 11.4 acres at a normal water surface elevation of 463.9-feet msl; (3) an intake structure; (4) a 5-foot-diameter, 435-foot-long underground steel penstock; (5) a powerhouse area located within the former Adams Paper Company mill building containing a single turbine-generator unit (Unit No. 1) rated at 0.315 MW; (6) a minimum flow unit (Unit No. 2) rated at 0.05 MW, located approximately 75-feet downstream of the dam; (7) a tailrace; (8) three 150-foot-long generator leads create a 480 V, 3-phase 150-foot underground transmission line that connects to three pole mounted 167 kVA<sup>7</sup> step-up transformers (9) appurtenant facilities (Figure 1.3). Additional description of existing Newbury Project facilities is provided in Exhibit A.

#### **3.1.2 Existing Project Operations**

GMP operates the Newbury Project as a run-of-river facility, which maintains a stable impoundment water surface elevation and returns river flow at the powerhouse that matches inflow.

GMP provides a minimum flow to the bypassed reach of at least 50 cfs from April 15<sup>th</sup> to June 10<sup>th</sup> and at least 25 cfs during the remainder of the year (or inflow to the impoundment, whichever is less). Minimum flows are provided via a combination of discharge from a minimum flow unit, spill, and the downstream fishway when it is seasonally installed. GMP also maintains a year-round aesthetic flow of 5 cfs over the dam when the minimum flow unit is in use. When the minimum flow unit is shutdown, GMP maintains minimum flow and aesthetic flow requirements via spillage over the dam by partially lowering an approximate 10-foot-long section of the pneumatic crest gates.

The maximum hydraulic capacity of the plant is 164 cfs (Unit No. 1 rated at 134 cfs; Unit No. 2. rated at 30 cfs) and minimum hydraulic capacity of the Project is 50 cfs (Unit No. 1

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<sup>7</sup> kVA is equal to 1,000 volt-amps.

rated at 20 cfs; Unit No. 2 rated at 30 cfs). When operational, the minimum flow turbine discharges a continuous river flow of 30 cfs into the reach between the dam and powerhouse<sup>8</sup>. When river flow is too low to operate the minimum flow turbine (<30 cfs) or exceeds 164 cfs, water spills over the dam into the bypassed reach. Additionally, when the minimum flow unit is in use, the 5 cfs aesthetics flow is provided, therefore providing at least 35 cfs to the bypassed reach during those times.

GMP seasonally installs a downstream fish passage chute on the spillway to allow for downstream movement of resident fish species. The downstream fish passage chute is operated in the spring from April 1<sup>st</sup> to June 1<sup>st</sup> and in the fall from September 1<sup>st</sup> to November 15<sup>th</sup> and provides a flow of 20 cfs and 10 cfs in the spring and fall, respectively. Under the No Action Alternative, GMP would continue operating as licensed until the existing license expires on August 31, 2023.

GMP's existing flow regime is summarized within Table 3.1.

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<sup>8</sup> The minimum flow unit does not operate over a range of flow and is either fully "on" or "off" at 30 cfs which is provided to the bypass reach.

**Table 3.1 Newbury Project Existing Flow Regime**

Existing Flow Regime					
Timeframe	Minimum Bypass Flow Requirement (cfs)	D/S Fish Passage Flow Requirement (cfs)	Aesthetic Flow Requirement (cfs)	TOTAL Bypass Reach Flow (cfs)**	Flow Provision Method
<b>November 16 - March 31</b> <i>Minimum Flow Unit On</i>	25^	0	5	30 (Realistically 35 cfs with minimum flow unit on)	-25 cfs through minimum flow unit* -5 cfs over dam
<b>November 16 - March 31</b> <i>Minimum Flow Unit Off</i>	25^	0	0	25	-25 cfs over dam
<b>April 1 - April 14</b> <i>Minimum Flow Unit On</i>	25^	20	5	50 (Realistically 55 cfs with minimum flow unit on)	-25 cfs through minimum flow unit* -20 cfs through fish chute -5 cfs over dam
<b>April 1 - April 14</b> <i>Minimum Flow Unit Off</i>	25^	20	0	45	-25 cfs over dam -20 cfs through fish chute
<b>April 15 - June 1</b> <i>Minimum Flow Unit On</i>	50^	20	5	55	-30 cfs through minimum flow unit* -20 cfs through fish chute -5 cfs over dam
<b>April 15 - June 1</b> <i>Minimum Flow Unit Off</i>	50^	20	0	50	-30 cfs over dam -20 cfs through fish chute
<b>June 2- June 10</b> <i>Minimum Flow Unit On</i>	50^	0	5	55	-30 cfs through minimum flow unit* -25 cfs over dam
<b>June 2 - June 10</b> <i>Minimum Flow Unit Off</i>	50^	0	0	50	-50 cfs over dam
<b>June 11- August 31</b> <i>Minimum Flow Unit On</i>	25^	0	5	30	-25 cfs through minimum flow unit*

Existing Flow Regime					
Timeframe	Minimum Bypass Flow Requirement (cfs)	D/S Fish Passage Flow Requirement (cfs)	Aesthetic Flow Requirement (cfs)	TOTAL Bypass Reach Flow (cfs)**	Flow Provision Method
				(Realistically 35 cfs with minimum flow unit on)	-5 cfs over dam
<b>June 11- August 31</b> <b>Minimum Flow Unit Off</b>	25^	0	0	25	-25 cfs over dam
<b>September 1 - November 15</b> <b>Minimum Flow Unit On</b>	25^	10	5	40 (Realistically 45 cfs with minimum flow unit on)	-25 cfs through minimum flow unit* -10 cfs through fish chute -5 cfs over dam
<b>September 1 – November 15 Minimum Flow Unit Off</b>	25^	10	0	25	-15 cfs over dam -10 cfs through fish chute

^ Or inflow whichever is less.

\*The minimum flow unit only operates with 30 cfs of water. The minimum flow provided via the minimum flow unit is realistically 30 cfs.

\*\* This column is the combination of the "D/S Fish Passage Flow" column, spillage over the dam, and 30 cfs when the minimum flow unit is "On".



## 3.2 Proposed Action

### 3.2.1 Proposed Project Facilities and Operations

GMP proposes to continue to operate the Newbury Project as a run-of-river facility. GMP proposes no modifications to the existing Newbury Project facilities. The existing dam, powerhouse area, and appurtenant features are all well maintained and in good working order. No changes to these facilities outside of normal maintenance practices or the FERC's safety requirement are required or proposed.

As the recent owner of the Newbury Project, GMP has identified issues with providing the 5 cfs year-round aesthetic flow. The aesthetic flow is problematic in winter months as it turns to ice and prevents deflation of the pneumatic crest. This presents an operational and safety hazard for GMP. In consideration of icing issues and results from the 2020 Final Instream Habitat and Aesthetic Flow Study (Appendix F), GMP proposes the following operational modifications for inclusion within a subsequent Project license:

- Provide a minimum flow of 35 cfs to the bypassed reach (or inflow, whichever is less) from May 15<sup>th</sup> – October 15<sup>th</sup> and a minimum flow of 30 cfs from October 16<sup>th</sup> – May 14<sup>th</sup> (or inflow, whichever is less). Based on the results of the instream flow study completed in 2020, this flow is expected to be protective of aquatic resources in the reach at all times of the year, especially during the low flow season. Water will be provided through the minimum flow turbine when operational and/or over the dam, and via downstream fish passage system during fish passage seasons. GMP's proposed flow regime is summarized within Table 3.2.
- GMP proposes to provide a 10 cfs aesthetics flow (or inflow, whichever is less) over the dam from May 15<sup>th</sup>– October 15<sup>th</sup><sup>9</sup> during daytime hours<sup>10</sup>. Based on the results of the aesthetics flow study completed in 2021, 10 cfs is expected to be protective of aesthetic resources at the dam. This will result in a total release of 40 cfs to the bypass reach during the daytime at times when the minimum flow turbine is operational (30 cfs through the minimum flow turbine plus 10 cfs for aesthetics). If there is not enough water in the river to generate with the minimum flow turbine (i.e., less than 30 cfs), GMP will pass all flows over the dam. GMP's proposed flow regime is summarized within Table 3.2.

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<sup>9</sup> The time period spanning May 15<sup>th</sup> – October 15<sup>th</sup> is proposed as this time period is inclusive of the typical recreation season as well as major recreation holidays (Memorial Day – Columbus Day).

<sup>10</sup> Daytime hours are defined as one half hour before sunrise and extend to one half hour after sunset.

- Fish passage at the Newbury Project was initially developed as part of the Connecticut River Atlantic Salmon Restoration Program to pass Atlantic salmon smolts in the spring and fall (see VANR's 1988 amended Water Quality Certification in Appendix A). However, the Connecticut River Atlantic Salmon Restoration Program was terminated after Tropical Storm Irene destroyed much of the infrastructure in Vermont (i.e., federal fish hatcheries) in 2011 and due to low annual salmon returns. Provided that the Connecticut River Atlantic Salmon Restoration Program has ended and that resident Wells River fish species are not migratory fish species, GMP proposes to still provide seasonal downstream fish passage as a mitigation measure, but proposes to provide 10 cfs through the downstream fishway from April 1<sup>st</sup> - June 1<sup>st</sup> (rather than the current provision of 20 cfs during this time period) and 10 cfs through the downstream fishway from September 1<sup>st</sup> – November 15<sup>th</sup>. GMP's proposed flow regime is summarized within Table 3.2.

**Table 3.2 Proposed Flow Regime Table**

Proposed Flow Regime						
Timeframe	Minimum Bypass Flow (cfs)	D/S Fish Passage Flow (cfs)	Aesthetic Flow Daytime * (cfs)	Total Bypass Reach Flow Daytime** (cfs)	Total Bypass Reach Flow Nighttime (cfs)	Flow Provision
<b>November 16 – March 31 <i>Minimum Flow Unit On</i></b>	30^	0	0	30	30	-30 cfs through minimum flow unit
<b>November 16 – March 31 <i>Minimum Flow Unit Off</i></b>	30^	0	0	30	30	-30 cfs over dam day or night
<b>April 1 - May 14 <i>Minimum Flow Unit On</i></b>	30^	10	0	40	40	-30 cfs through minimum flow unit -10 cfs through downstream fishway
<b>April 1 – May 14 <i>Minimum Flow Unit Off</i></b>	30^	10	0	30	30	-20 cfs over dam day or night -10 cfs downstream fishway
<b>May 15 – June 1 <i>Minimum Flow Unit On</i></b>	35^	10	10	50	40	-30 cfs minimum flow unit -10 cfs downstream fishway -10 cfs over the dam during the day -0 cfs over dam at night
<b>May 15 – June 1 <i>Minimum Flow Unit Off</i></b>	35^	10	10	35	35	-10 cfs through downstream fishway -25 cfs over the dam day or night

Proposed Flow Regime						
Timeframe	Minimum Bypass Flow (cfs)	D/S Fish Passage Flow (cfs)	Aesthetic Flow Daytime *	Total Bypass Reach Flow Daytime**	Total Bypass Reach Flow Nighttime	Flow Provision
<b>June 2 - August 31</b> <b>Minimum Flow Unit On</b>	35^	0	10	40	35	-30 cfs through minimum flow unit -10 cfs over the dam during the day -5 cfs over the dam at night
<b>June 2 - August 31</b> <b>Minimum Flow Unit Off</b>	35^	0	10	35	35	-35 cfs over the dam day or night
<b>September 1 -October 15</b> <b>Minimum Flow Unit On</b>	35^	10	10	50	40	-30 cfs through minimum flow unit -10 cfs through downstream fishway -10 cfs over the dam during the day -0 cfs over the dam at night
<b>September 1 -October 15</b> <b>Minimum Flow Unit Off</b>	35^	10	10	35	35	-10 cfs through downstream fishway -25 cfs over the dam day or night
<b>October 16 - November 15</b> <b>Minimum Flow Unit On</b>	30^	10	0	40	40	-30 cfs through minimum flow unit -10 cfs through downstream fishway
<b>October 16 - November 15</b> <b>Minimum Flow Unit Off</b>	30^	10	0	30	30	-20 cfs over the dam -10 cfs through downstream fishway

^ or inflow, whichever is less

\*Daytime is defined as one half hour before sunrise to one half hour before sunset.

\*\* This column is the combination of the "D/S Fish Passage Flow" column, spillage over the dam and 30 cfs when the minimum flow unit is "On".

### 3.2.2 Proposed Environmental Measures

GMP proposes to continue to operate the Newbury Project as a run-of-river development. This mode of operation will provide a number of positive effects including minimizing the potential for erosion along the Project impoundment, minimizing water fluctuation effects on existing wetland and riparian areas and their functions, and enhance the river habitat for aquatic species. The Project has operated for more than 30-years under the current conditions and no significant effects are anticipated from relicensing the continued run-of-river operation of the Newbury Project.

GMP proposes the following additional PME measures under a subsequent license:

- Provide a minimum flow of 35 cfs to the bypassed reach (or inflow, whichever is less) from May 15<sup>th</sup> – October 15<sup>th</sup> and a minimum flow of 30 cfs from October 16<sup>th</sup> – May 14<sup>th</sup> (or inflow, whichever is less).
- Provide an aesthetic flow of 10 cfs (or inflow, whichever is less) over the dam from May 15<sup>th</sup> – October 15<sup>th</sup> during daytime hours.
- Provide 10 cfs through the downstream fish passage facility from April 1<sup>st</sup> - June 1<sup>st</sup> and from September 1<sup>st</sup> – November 15<sup>th</sup>.
- Develop a Flow Management and Monitoring Plan in consultation with DEC and filed with the Commission within 6-months of receipt of subsequent license.
- For any activities requiring clearing of trees 4-inches diameter base height or greater, GMP will abide by seasonal tree clearing restrictions and only clear trees between November 1<sup>st</sup> – April 14<sup>th</sup>. Should tree clearing be required during the restricted time period (April 15<sup>th</sup> – October 31<sup>st</sup>), GMP will consult with the USFWS and VTFWD regarding removal needs.
- Develop a Historic Properties Management Plan (HPMP) in consultation with VDHP. The HPMP will be filed with the Commission within 1 year of receipt of subsequent license.
- Develop and finalize designs for a hand carry access area located at the upper edge of the Newbury Project impoundment and just within the Newbury Project boundary (pending private landowner approval and consultation surrounding cultural resources). Construct recreation access improvements within 3 years of receipt of subsequent license (pending landowner approval and permit approvals).
- Consult with DEC prior to the conduct of Project maintenance and repair work should work have the potential to have an adverse effect on water quality.

- GMP will consult with ANR regarding the timing and duration of periodic maintenance drawdowns.

### **3.3 Project Lands and Waters**

There are no federal lands within or adjacent to the Project boundary. The Project boundary extends approximately 0.4-miles upstream of the dam, and approximately 600-feet downstream of the dam. Above the dam, the boundary generally follows the impoundment shoreline. The boundary generally includes the impoundment, dam, GMP's generating equipment within structures leased from the private landowner, and ends shortly downstream of the Project powerhouse, incorporating the project tailrace. Limited lands aside from the impoundment margins and lands associated with the powerhouse are included within the boundary.

GMP is proposing to alter the existing Project boundary to remove a majority of the non-Project buildings from the boundary. GMP does not own the property and leases the property and dam from a private landowner for use of the site for hydroelectric generation. GMP proposes to modify the Project boundary slightly to remove the portions of non-Project structures from the boundary. GMP also proposes to adjust the Project boundary to accommodate for the proposed hand carry access area. GMP will consult with FERC upon completion of the hand carry access area construction to finalize the Project boundary as required. GMP's revised Project boundary is provided in Exhibit G and encompasses 13.63 acres. All maps included within this Environmental Exhibit include revised Project boundary lines as depicted in Exhibit G.

## **4.0 ENVIRONMENTAL ANALYSIS**

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### **4.1 Analysis of Proposed Action**

Exhibit E includes a review of existing resource information as well as an analysis of anticipated effects of Project operations relative to current conditions (status quo/No Action Alternative) and GMP's proposed action. This analysis considers geographic, temporal, and cumulative scopes, as appropriate.

#### **4.1.1 Geographic Scope**

The geographic scope of the analysis defines the physical limits or boundaries of the proposed action's effect on the resources. Because the proposed action has the potential to affect the resources differently, the geographic scope for each resource varies. Generally, for upland based resources such as wildlife and land use, the geographic scope is limited to those lands within the Project boundary. For aquatic resources and those affected by flow discharges and water levels, the geographic scope generally includes the impoundment, bypassed reaches, and tailwaters for a distance downstream to a point where flow effects are attenuated.

#### **4.1.2 Temporal Scope**

Based on the potential term of a new license, the temporal scope analyzed is up to 40 years into the future, with focus on how reasonably foreseeable future actions affect resources. The discussion of historical information is limited to available information for the resource areas.

#### **4.1.3 Cumulative Effects**

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) (Section 1508.7), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. GMP has not identified any resource which has the potential to be cumulatively affected by the operations and maintenance of the Newbury Project.



## **4.2 General Description of the River Basin**

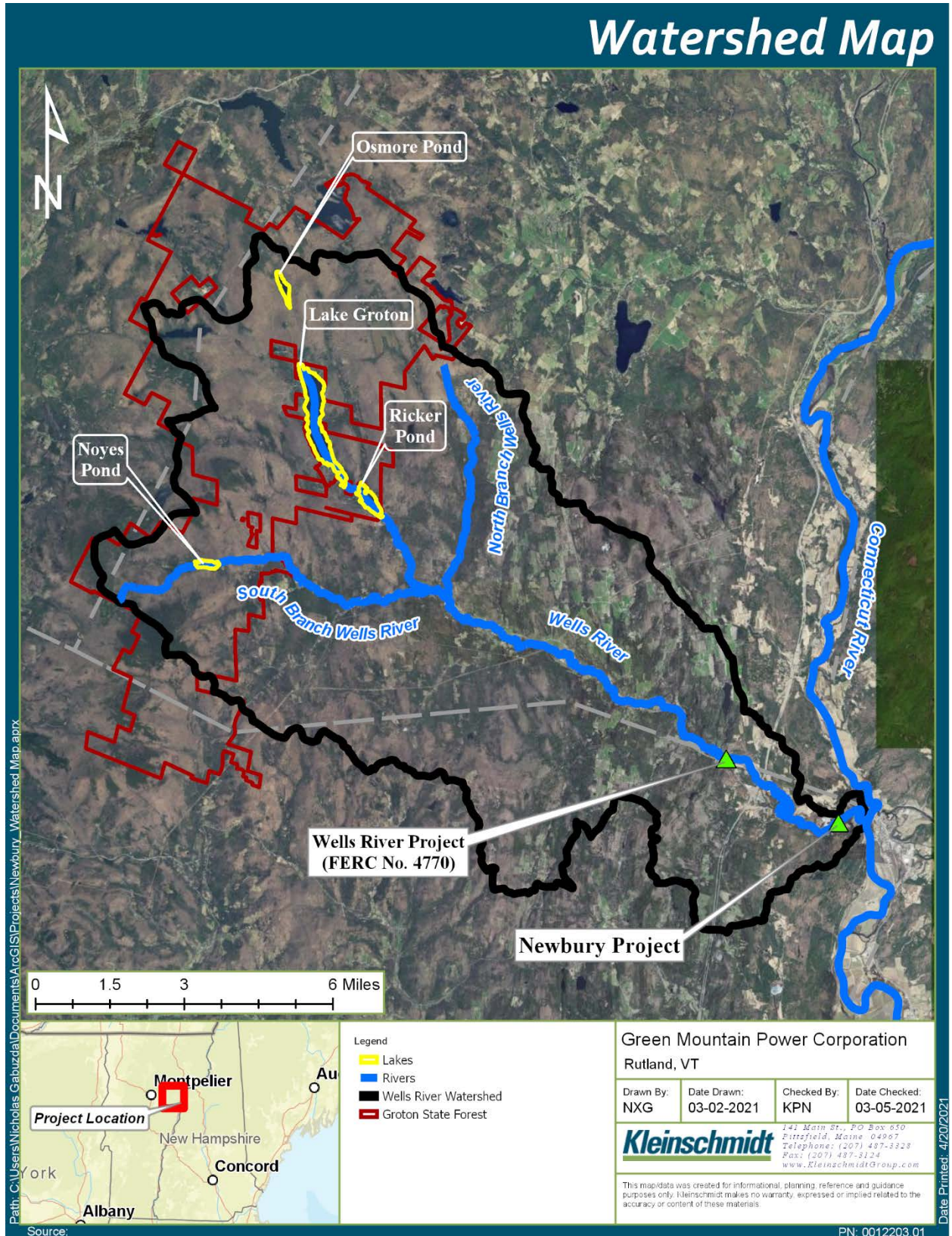
### **4.2.1 Overview**

The Wells River is a 22-mile-long tributary of the Connecticut River<sup>11</sup> in northern Vermont that drains an area of approximately 102 square miles (Figure 4.1) (Redstart 2009). The Newbury Project is approximately 0.9 RMs upstream of the confluence of the Wells River with the Connecticut River; the drainage area at Newbury dam is approximately 100-square-miles (USGS 2018). The Wells River originates at Osmore Pond in Peacham, Vermont, in the Groton State Forest then flows southeast to Lake Groton and through Ricker Pond, and continues flowing south-southeast (Figure 4.1) (Redstart 2016). The North Branch of the Wells River begins in Groton, Vermont and flows south. The headwaters of the South Branch of the Wells River occur near Spruce Mountain and Signal Mountain in Groton State Forest (Buzzell 1994); the South Branch flows through Noyes Pond and then continues flowing east. The North and South Branches of the Wells River converge with the mainstem Wells River in Groton, Vermont, approximately 12 RMs upstream of the Newbury dam; the Wells River then continues flowing south-southeast through the towns of Ryegate, Boltonville, and Newbury until it joins the Connecticut River in the Village of Wells River, Vermont.

Overall, the topography of the Wells River basin is hilly with steep slopes (Redstart 2009). Elevations in the Wells River watershed range from approximately 3,300 feet in the northwestern portion of the watershed to 400 feet at the mouth of the Connecticut River (Redstart 2016). From the confluence of the North Branch Wells River and continuing for the next 7.8 miles to Boltonville, the topography is uniform with a slope of 0.4 percent. The Wells River then drops 100 feet in less than one mile before leveling off for another 2.5 miles. Over the final two miles, including the Newbury Project Area, the Wells River drops 140 feet to reach the Connecticut River (Buzzell 1994).

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<sup>11</sup> The Connecticut River is the largest river in New England with its headwaters near the Canadian border; the Connecticut River discharges into Long Island Sound near Old Saybrook, Connecticut.



**Figure 4.1 Wells River Watershed**

#### **4.2.2 Major Land Uses**

The Wells River watershed is within the Northern and Southern Vermont Piedmont physiological regions (Redstart 2016). The northwestern portion of the Wells River drainage basin is heavily forested with numerous hills and mountains. Between the Groton State Forest and the Connecticut River, the Wells River primarily flows through forest and agricultural land in addition to small towns, including Groton, Ryegate, Boltonville, and Newbury. Approximately 81 percent and six percent of the watershed is forested and agricultural, respectively; four percent of the watershed is developed (see *Section 4.9 Recreation and Land Use for additional information*). The remainder of the watershed is composed of open water, barren land, and wetlands (i.e., shrub/scrub, grassland/herbaceous, woody, and emergent) (VCGI 2014).

#### **4.2.3 Tributary Streams**

The Wells River drainage basin contains 18 tributaries which have a drainage area of one or more acres (Buzzell 1994). The three largest tributaries are the North Branch Wells River, South Branch Wells River, and Red Brook. Smaller tributaries in the drainage basin include East Brook, Scott Brook, Scotch Burn Brook, Tannery Brook, Clark Hatch Brook, and Darius James Brook. Lakes in the Wells River watershed include Lake Groton (422 acres), Ricker Pond (95 acres), Noyes Pond (39 acres), Kettle Pond (109 acres), Ticklenaked Pond (54 acres), Levi Pond (20 acres), and Osmore Pond (48 acres) (Figure 4.1) (VANR 2015; Redstart 2009).

#### **4.2.4 Major Water Uses**

Historically, the Wells River was used for recreation, log drives, and hydroelectric power generation for mills (i.e., paper mills, sawmills, fulling mills, grist mills) in late 1800s and early 1900s (Redstart 2009). At least 13 dams were once located throughout the watershed (Redstart 2009).

Current water uses of the Wells River include recreation and hydroelectric generation. In addition to the Newbury Project, the Wells River Project (FERC Exemption No. 4770) (also known as the Boltonville dam), owned by Wells River Hydro Associates, is located approximately 4.2 river miles upstream of Newbury dam in Newbury, Vermont (Figure 4.1). The Wells River Project is operated as a run-of-river facility and is used for hydroelectric power generation only. There are no other dams or diversion structures located on the Wells River.

GMP previously owned an abandoned dam in Groton, Vermont, located approximately 11 RM upstream of the Newbury dam. GMP and the Connecticut River Watershed Council partnered together, in part with funds provided by the VTFWD, to remove the Groton dam in 2015. The removal opened up 34-miles of the Wells River.

#### 4.2.5 Climate

Mean monthly temperature, total precipitation, and snowfall data from 1981-2010 and mean monthly total precipitation and temperature data from 2011-2020 from the National Weather Service monitoring station in St. Johnsbury, Vermont, are shown in Table 4.1 (NRCC 2021). Total precipitation ranged from a minimum of 2.17 inches in February to a maximum of 4.22 inches in August from 1980-2010 (Table 4.1). From 2011-2020, the minimum total precipitation was 2.29 inches in March with a maximum of 4.97 inches in May. The monthly mean minimum temperature occurred in January (16.7°F 1980 to 2010 and 19.4°F 2011 to 2020), and the monthly mean maximum temperature occurred in July (70.0°F in 1980 to 2010 and 70.8°F 2011 to 2020). Total monthly snowfall was highest in December (22.8 inches) and January (21.2 inches) from 1980 to 2010 (Table 4.1).

**Table 4.1 Precipitation, Temperature, and Snowfall Data  
from the NWS station in St. Johnsbury, Vt.**

Month	1980 to 2010 Normal			2011 to 2020	
	Total Precipitation (Inches)	Mean Temperature (°F)	Total Snowfall (Inches)	Mean Total Precipitation (Inches)	Mean Temperature (°F)
January	2.51	16.7	21.2	2.48	19.4
February	2.17	19.4	17.6	2.46	21.9
March	2.51	30.3	14.3	2.29	30.6
April	2.86	44.4	5.0	3.40	43.7
May	3.36	56.3	0.0	4.97	58.0
June	4.01	65.6	0.0	4.52	64.7
July	4.12	70.0	0.0	4.48	70.8
August	4.22	67.8	0.0	3.86	68.4
September	3.39	60.0	0.0	3.32	62.0
October	3.87	47.2	0.5	3.70	50.2
November	3.40	36.1	5.4	2.59	36.0
December	3.08	23.2	22.8	3.27	26.4

Source: NRCC 2021

## **4.3 Geology and Soils**

### **4.3.1 Affected Environment**

#### **4.3.1.1 Overview**

The Town of Newbury exists entirely within the Vermont Piedmont biophysical region (Saint Michael's College No Date). The Vermont Piedmont is an area east of the Green Mountains that runs the entire length of Vermont, extending from Canada to Massachusetts and includes most of Vermont's Connecticut River Valley. The Vermont Piedmont is the largest physiographic region in the state and consists of rolling hills and valleys located at the foot of the Green Mountains. The region consists of a number of isolated granite mountains that rise above the surrounding landscape and contains many lakes originally formed by glaciers (Saint Michael's College No Date).

#### **4.3.1.2 Bedrock Geology**

The Wells River watershed lies between two bedrock formations - the Silurian-Devonian and Ordovician bedrock units found to the west and east, respectively (Redstart 2009). Gile and Waits River formations dominate these bedrock units, consisting primarily of metamorphic schists and phyllites, with lesser amounts of slate, limestone, quartzite, greenstone, amphibolite, and other minerals. These metamorphic formations were deposited approximately 400 million years ago as sediments in a warm tropical ocean. Heat and pressure later changed these sediments into metamorphic rocks (approximately 350 million years ago) (Redstart 2009).

#### **4.3.1.3 Surficial Geology**

The Project occurs within the Albee Formation (Ordovician and Cambrian) (Ratcliffe 2011). The surficial materials within the area are derived either directly or indirectly, from the Laurentide ice sheet. The Laurentide ice sheet was the last continental-scale glacier that covered all of New England sometime between 80,000 to 100,000 years ago (Redstart 2009). As the glacier retreated, a large moraine formed and created a large glacial lake called Lake Hitchcock. Lake Hitchcock stretched from Connecticut to northern Vermont and persisted until approximately 2,500 years ago. Much of the Wells River area lies within the areas flooded by Lake Hitchcock (Redstart 2009).

Since the retreat of the glacier and draining of the glacial lake, the Wells River and its tributaries have reworked the glacial, glaciofluvial, and glaciolacustrine deposits that were



left behind after the glacier melted. Many areas within the Wells River watershed and the Project Area are now overlain by younger alluvium. Further evidence of past glaciation confirmed by the presence of kame and moraine deposits (Redstart 2009).

#### **4.3.1.4 Soils**

The majority of the Newbury Project area is dominated by open water (11.4 acres), the remaining portion of the Newbury Project area is dominated by soils derived primarily from glacio-fluvial deposits and some eolian (wind) or till deposits. Terrestrial landscapes account for approximately 3.4 acres of the Newbury Project area. Table 4.2 lists the soil series identified within the Newbury Project area and Figure 4.2 provides the location of mapped soil series within the Newbury Project area.

The most common soil mapped within the Newbury Project area is the Turnbridge-Woodstock complex. The Tunbridge series consists of moderately deep, well drained soils on glaciated uplands. The series is formed in loamy supraglacial till. The Woodstock series consists of somewhat excessively drained soils that formed in loamy till on bedrock controlled, glaciated uplands. They are shallow to schist, granite, or gneiss bedrock (NRCS 2021).

The second most common soil series within the Newbury Project area is the Merrimac series which consists of very deep, somewhat excessively drained soils formed in outwash. They are nearly level through very steep soils on outwash terraces and plains and other glaciofluvial landforms (NRCS 2021).

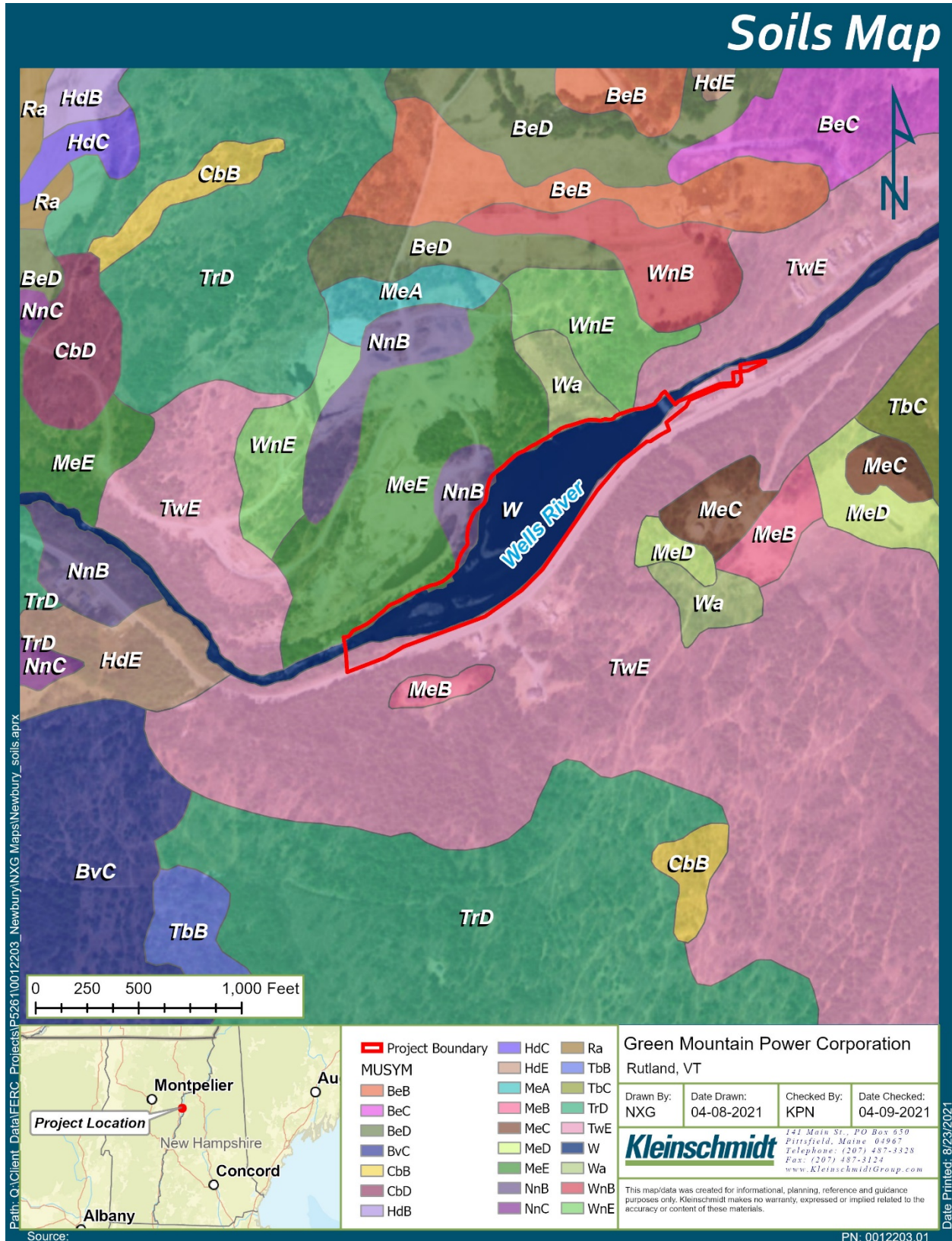
Less commonly occurring soil series within the Newbury Project area include the Ninigret series which consists of very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to strongly sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainage ways. The Walpole series consists of very deep, poorly drained sandy soils formed in outwash and stratified drift. They are nearly level to gently sloping soils in low-lying positions on terraces and plains. The least common soil within the Newbury Project area is the Windsor series which consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. They are nearly level through very steep soils on glaciofluvial landforms (NRCS 2021).

**Table 4.2 Summary of Soils Occurring within the Newbury Project Area**

<b>Soils Symbol</b>	<b>Soil Series</b>	<b>Parent Material</b>	<b>Drainage Class</b>	<b>K-Factor (Ksat)</b>
WnE	Windsor loamy sand, 25 to 60% slopes	Loose sandy glaciofluvial deposits derived from gneiss, granite, and/or schist	Excessively Drained	0.15
Wa	Walpole fine sandy loam, 0 to 8% slopes	Sandy and gravelly glaciofluvial deposits	Poorly Drained	0.28
NnB	Ninigret fine sandy loam, 0 to 8% slopes	Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite	Moderately Well Drained	0.32
MeE	Merrimac fine sandy loam, 25 to 50% slopes	Sandy and gravelly glaciofluvial deposits	Somewhat Excessively Drained	0.28
TwE	Tunbridge-Woodstock complex, 25 to 50% slopes	Coarse-loamy till	Well Drained	0.32
W	Water			

Source: NRCS 2021





**Figure 4.2 Soils Occurring within the Newbury Project Area**

The Project impoundment extends upstream approximately 0.4 miles and has a surface area of approximately 11.4 acres at normal pool elevation. The total shoreline length of the impoundment above the Project dam is approximately 1 mile, encompassing both shores of the Wells River. The shorelines upstream of the Project dam are a mix of steep rock outcrops and vegetated banks with soils ranging from 0 to 60 percent slopes (refer to map sections Wa; WnE; MeE; NnB; TwE [Figure 4.2]) (NRCS 2021). The majority of the northern shoreline is forested, and the southern shoreline is dominated by a vegetated and rip-rap bank associated with the U.S. Route 302 right-of-way.

Table 4.2 includes a summary of the K-Factor for each soil identified within the Newbury Project area. The erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat) (NRCS 2021). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Based on the soils mapped in the Newbury Project area, the soils range from a slight susceptibility to moderate susceptibility to sheet and rill erosion. The most commonly identified soil mapped within the Newbury Project area is the Turnbridge-Woodstock complex which has a moderate (0.32) susceptibility to sheet and rill erosion (NRCS 2021).

### **4.3.2 Environmental Effects**

#### **4.3.2.1 Effects of Existing Project Operations on Bank Stability and Erosion**

Run-of-river operations generally provide a stable impoundment level, limiting potential for erosion in the Project impoundment.

Maintenance required drawdowns (which do not occur often) have the potential to affect bank stability and erosion within the Newbury Project area. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns.

#### **4.3.2.2 Proposed Action**

GMP proposes to continue to operate the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except during brief periods required for maintenance or emergency operations). The proposed changes to the aesthetic flow and minimum bypass flow regime are not expected to affect shoreline erosion as no shoreline erosion issues have been identified.

To avoid negative effects to bank stability and erosion, GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment has the potential to temporarily impact soils and cause erosion along the shoreline during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the proposed access area designs will require only short-term temporary construction related effects on terrestrial resources. The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. The presently utilized informal access area largely consists of the old U.S. Route 302 roadbed with grown up grasses, shrubbery, and small trees. GMP will additionally work to gain necessary federal, state, and local permit approvals and ensure that proper erosion and sediment control measures are in place for construction of the access area per permit approvals.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on erosion or bank stability within the Newbury Project area.

#### **4.3.3 Unavoidable Adverse Impacts**

Continued operation of the Newbury Project in a run-of-river mode is not expected to increase shoreline erosion upstream or downstream of the Newbury Project area because

the timing and quantity of flows in the river channel are governed not by operation of the Newbury Project, but by inflows to the Project.

## **4.4 Water Resources**

### **4.4.1 Affected Environment**

#### **4.4.1.1 Water Quantity**

##### **4.4.1.1.1 Overview**

The Wells River is a 22-mile-long tributary of the Connecticut River<sup>12</sup> in northern Vermont that drains an area of approximately 102 square miles (Redstart 2009) (Figure 4.1). The Newbury Project is approximately 0.9 RMs upstream from the confluence of the Wells River with the Connecticut River; the drainage area at Newbury dam is approximately 100 square miles (USGS 2018). The Wells River originates at Osmore Pond in Peacham, Vermont, in the Groton State Forest, then flows southeast to Lake Groton and through Ricker Pond and continues flowing south-southeast (Figure 4.1) (Redstart 2016). The North and South Branches of the Wells River converge with the mainstem Wells River in Groton, Vermont, approximately 12 RMs upstream of the Newbury dam. The Wells River continues flowing south-southeast through the towns of Ryegate, Boltonville, and Newbury until it joins the Connecticut River in the Village of Wells River, Vermont.

The Newbury Project impoundment has a surface area of 11.4 acres at a normal water surface elevation of 463.9-feet msl with crest gates inflated. The impoundment extends upstream approximately 0.4 miles. The impoundment volume is approximately 25 acre-feet with an average depth of approximately 4-feet; the water depth just upstream of the intake is approximately 18-feet. The impoundment has negligible storage capacity.

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<sup>12</sup> The Connecticut River is the largest river in New England with its headwaters near the Canadian border; the Connecticut River discharges into Long Island Sound near Old Saybrook, Connecticut.

#### 4.4.1.1.2 Streamflow, Gage Data and Flow Statistics

River flow data for the Newbury Project was generated from U.S. Geological Survey (USGS) gage No. 01139000 (Wells River at Wells River, Vermont) for the period January 1, 1991, to December 31, 2020; the USGS gage is approximately 0.7 RMs upstream of the Newbury Project. Data from the USGS gage were pro-rated by a factor of 1.013 to account for the additional drainage area at the Newbury Project.

The mean, median, minimum, and maximum annual river flows of the Wells River at the Newbury Project are estimated to be 170 cfs, 109 cfs, 8 cfs, and 2,441 cfs, respectively (Table 4.3). The maximum monthly mean flow typically occurs in April (464 cfs), and the minimum monthly mean flow (68 cfs) is typically in September. The maximum daily average flow (2,441 cfs) occurred on August 29, 2011, and the minimum daily average flow (8 cfs) occurred September 20, 2001. Annual and monthly flow duration curves for the Newbury Project are presented in Appendix D.

**Table 4.3 Mean, Median, Minimum, and Maximum River Flows by Month for the Newbury Project from January 1, 1991 to December 31, 2020**

Month	Mean flow (cfs)	Median flow (cfs)	Minimum flow (cfs)	Maximum flow (cfs)
January	142	111	30	2087
February	107	81	24	1357
March	201	150	26	1489
April	464	353	70	2320
May	244	201	60	2239
June	155	112	14	1054
July	121	66	15	2249
August	86	49	9	2441
September	68	45	8	1884
October	134	83	18	1975
November	155	118	29	1155
December	165	129	32	1560
Annual	<b>170</b>	<b>109</b>	<b>8</b>	<b>2,441</b>

Source: USGS gage No. 01139000 (Wells River at Wells River, Vermont). Data from the USGS gage were pro-rated by a factor of 1.013 to account for the additional drainage area at the Newbury Project.

#### **4.4.1.2 Existing and Proposed Uses of Water**

Existing uses of the Wells River in the Newbury Project area include hydropower generation and non-Project related recreation. There are no current or proposed water withdrawals near the Newbury Project.

The primary instream flow use of the Wells River in the Project area is hydroelectric power generation. There are two hydroelectric stations on the Wells River, the run-of-river Newbury Project and the run-of-river Wells River Project (FERC Exemption No. 4770) (also known as the Boltonville dam), which is located approximately 4.2 RMs upstream of Newbury dam.

#### **4.4.1.3 Existing Water Rights**

GMP holds all of the flowage easements necessary to operate the Newbury Project. Furthermore, there are no streams within the vicinity of the Newbury Project that are affected by operations (i.e., impoundment fluctuations).

#### **4.4.1.4 Water Quality**

##### **4.4.1.4.1 Water Quality Standards**

The Wells River is classified as cold water fish habitat and as Class B(2) water for all designated uses (VANR 2017). Class B(2) waters are managed to support the designated uses of aquatic biota, wildlife, and aquatic habitat; aesthetics; public water supply; irrigation of crops and other agricultural uses; swimming and other primary contact recreation; and boating, fishing and other recreational uses (VANR 2017). In cold water fish habitat, the total increase in water temperature due to all discharges and activities shall not exceed 1°F. Additional water quality criteria for Class B(2) cold water fish habitat waters are listed in Table 4.4:



**Table 4.4 Water Quality Criteria for Class B(2) Cold Water Fish Habitat Waters**

Parameter	Criteria
Turbidity	≤ 10 NTU as an annual average under dry weather baseflow conditions
Dissolved Oxygen	≥ 6 mg/L or 70 % saturation ≥ 7 mg/L and 75% saturation at all times (instantaneous minimum) in designated salmonid spawning or nursery areas
pH	Not to exceed 8.5 standard units
NO <sub>3</sub> -N	≤ 5.0 mg/L at flows exceeding low median monthly flows
Phosphorus	<12-27 µg/L ppm at low median monthly flow depending on stream type

Source: VANR 2017

Notes: NTU Turbidity Measurement  
mg/L milligrams per liter

#### 4.4.1.5 Existing Water Quality Data

The Wells River is not listed on the Vermont 303(d) List of Impaired Waters requiring a Total Maximum Daily Limit and is not included on the Vermont 2020 Stressed Rivers List (VANR 2020a; VANR 2020b). The Wells River was previously included on the Vermont 2016 Stressed Rivers List for the designated use of aesthetics because of leachate<sup>13</sup>, specifically iron and manganese, leaking into the Wells River via groundwater at the Newbury landfill site (VANR 2015; 2016). The Newbury landfill, approximately 3.5 RMs upstream of the Newbury Project, was closed in the 1990s.

The DEC periodically conducts water quality and benthic macroinvertebrate sampling at several sites within the Wells River. Dissolved oxygen (DO), pH, total nitrogen (NO<sub>3</sub>-N), total phosphorus, and turbidity samples were collected at five stations in the river between 1992 and 2017 demonstrated that the Wells River attained the standards for Class B(2) waters (Table 4.4 and Table 4.5) (VANR 2021a). DEC evaluates the biological integrity of the macroinvertebrate community by comparing specific metrics to the values expected for a naturally occurring macroinvertebrate population. Assessments completed between 1992 and 2017 in the Wells River found the macroinvertebrate community to be Very Good to Excellent, to meet Class B(2) water quality standards, and to fully support aquatic life standards; an assessment of Excellent indicates the community is near natural

<sup>13</sup> Leachate is water (i.e., from rainfall, moisture from the waste, groundwater) that has been in contact with and percolated through waste in the landfill. As the water passes through the waste, it extracts soluble materials and chemicals.

conditions (Table 4.6) (VANR 2021a). None of the DEC monitoring sites are within the Newbury Project boundary; however, the results indicate that overall water quality in the Wells River meets Class B(2) standards.

**Table 4.5 Water Quality Measurements Completed by DEC in the Wells River**

Town	River Mile	Date	Temperature (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (% Saturation)	pH	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Turbidity (NTU)
Newbury	0.6	9/1/1992	16.5	170	-	-	8.2	-	-	-
		8/6/2014	-	-	-	-	--	0.3	10.7-11.9	-
		9/10/2015	-	-	-	-		0.5	24.3	-
		9/5/2017	16.3	143	8.85	92	7.7	0.3	14.5	1.44
	2.1	10/1/2014	15.2	189-194	9.13	91.7	7.83	0.24	9.65	0.57
	4.0	9/5/2017	15.3	135	8.72	89.4	7.47	0.27	14.8	1.4
	4.4	9/22/1993	14	154	-	-	7.74	-	-	-
		10/1/2014	14.97	182	9.22	92	7.9	0.21	8.84	0.56
Groton	10.5	9/10/1997	14.5	105	-	-	7.95	-	-	-
		7/14/2004	18.3	95	8.59	94.7	7.9	0.11	9	0.57
		9/19/2007	15.6	85-92	9.42	-	7.94	0.21	6.6	0.25

Source: VANR 2021a

Note: Newbury dam is at RM 0.9.

**Table 4.6 Macroinvertebrate Community Assessments Conducted by DEC in the Wells River**

Town	River Mile	Date	Macroinvertebrate Assessment	Density	Richness	EPT <sup>a</sup> Richness	HBI <sup>b,c</sup>
Newbury	0.6	9/1/1992	Very Good	1,536	37	20	3.53
Newbury	0.6	9/5/2017	Excellent	1,416	53	33	3.76
Newbury	2.1	10/1/2014	Excellent	3,484	60	33	3.22
Newbury	4.4	9/22/1993	Very Good-Good	1,607	47.5	22.5	4.25
Newbury	4.4	10/1/2014	Very Good-Good	4,036	64.0	35.0	3.98
Groton	10.5	9/10/1997	Excellent-Very Good	1,508	41	23	3.64
Groton	10.5	9/19/2007	Excellent	2,876	48	28	3.58
Guidelines for Class B(2) water in full support of the community				≥300	≥30	≥16	≤5.4

Source: VANR 2021a

Note: Newbury dam is at river mile 0.9.

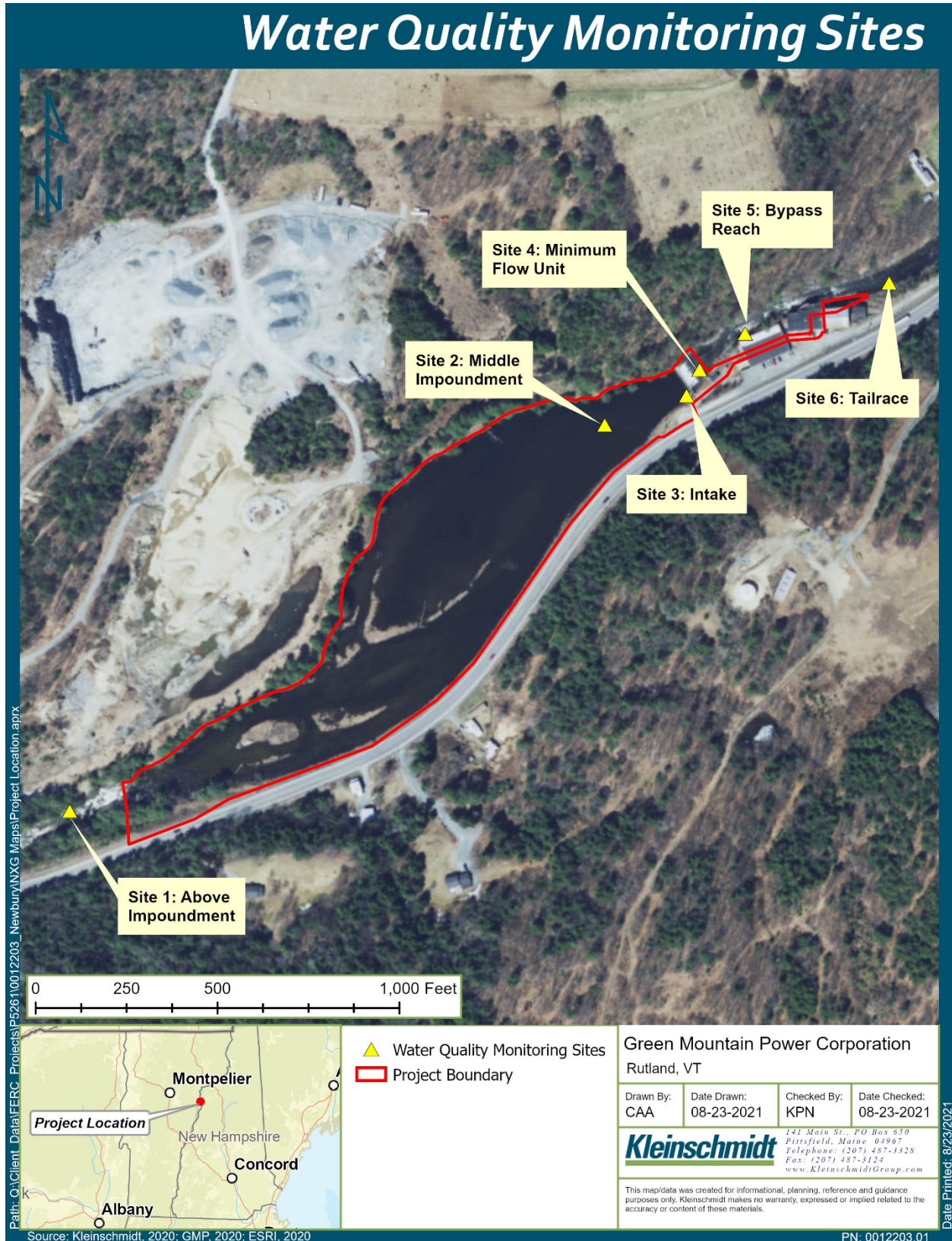
<sup>a</sup>Ephemeroptera, Plecoptera, and Trichoptera

<sup>b</sup>Hilsenhoff Biotic Index

<sup>c</sup>Class A(1) waters range from 3.50-3.80 for HBI

#### 4.4.1.5.1 2019 Water Quality Study

In accordance with study requests from DEC and CRC, GMP completed a water quality study during 2019. The objectives of the study were to collect DO and water temperature data to evaluate current water quality conditions within the Newbury Project area and to assess whether Project operations affect water quality. Water temperature and DO were measured continuously at six sites in the Newbury Project area from July 8 to September 30, 2019. These sites were in the riverine reach upstream of the impoundment, within the impoundment, at the intake, adjacent to the minimum flow unit, in the bypass reach between the minimum flow unit and powerhouse, and in the tailrace (Figure 4.3).



**Figure 4.3 2019 Water Quality Study Monitoring Sites**

Unit 1 was not operational throughout the 2019 study period because of a programming error in the Programmable Logic Controller (PLC) that controls the unit. The Unit 2 minimum flow unit, which is the preferred generator during low flow summer months, was operational throughout the study period when flows were sufficient<sup>14</sup>. The minimum flow unit typically operates when the river flow is approximately 50 cfs or more and does not typically run when flows are less than the three times the 7Q10 flow<sup>15</sup> (45 cfs).

The main findings of the 2019 water quality study were:

- Water temperature throughout the study area ranged from 11.9° Celsius (C) on September 19 to 26.4°C on July 20.
- Monthly average water temperatures at the six monitoring sites ranged from 21.8°C to 22.4°C in July, 20.7°C to 21.1°C in August, and 16.0°C to 16.7°C in September.
- Monthly average DO concentration (percent saturation) ranged from 8.3 mg/L to 8.6 mg/L (95.7 percent to 100.2 percent) in July; 8.5 mg/L to 8.7 mg/L (96.0 percent to 99.5 percent) in August; and 9.3 mg/L to 9.7 mg/L (96.0 percent to 100.8 percent) in September.
- DO was above the Class B(2) standard 99.3 percent and 99.9 percent of the time at the intake and tailwater, respectively.
- The DO concentration was above the Class B(2) standard (6 mg/L or 70 percent saturation) throughout the entire monitoring period upstream of the impoundment, within the impoundment, at the minimum flow unit, and in the bypassed reach.

The tabular and graphical results of the water quality study are provided in Table 4.7 and Figure 4.4, Figure 4.5 and Figure 4.6. A copy of the study report is provided in Appendix C.

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<sup>14</sup> Unit 1 is typically not run at its low range of 20 cfs as it is difficult to balance the water level, minimum flow requirements, and keep the unit online during low flow periods.

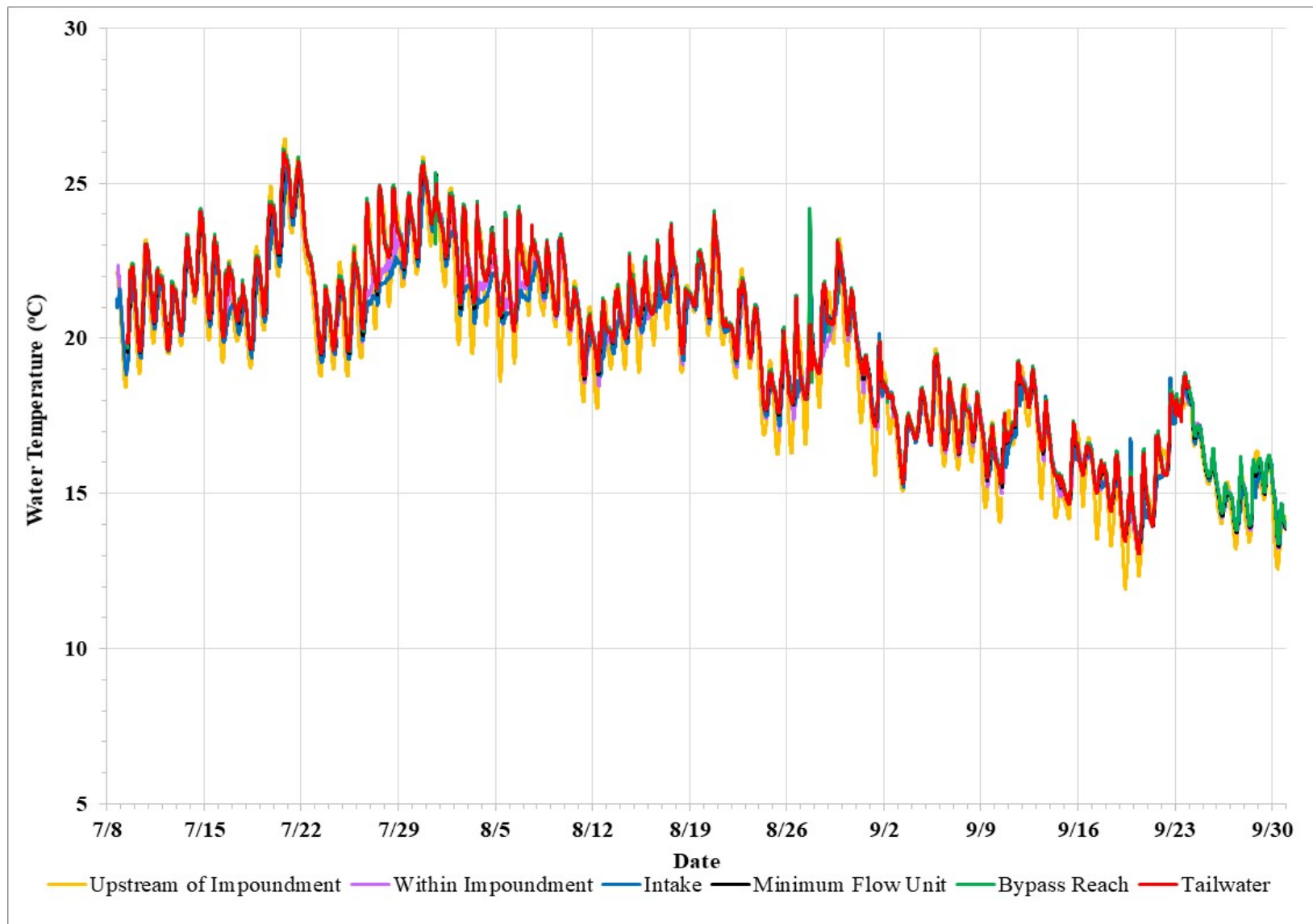
<sup>15</sup> 7Q10 flow is the lowest seven-day average flow that occurs on average once every 10 years.



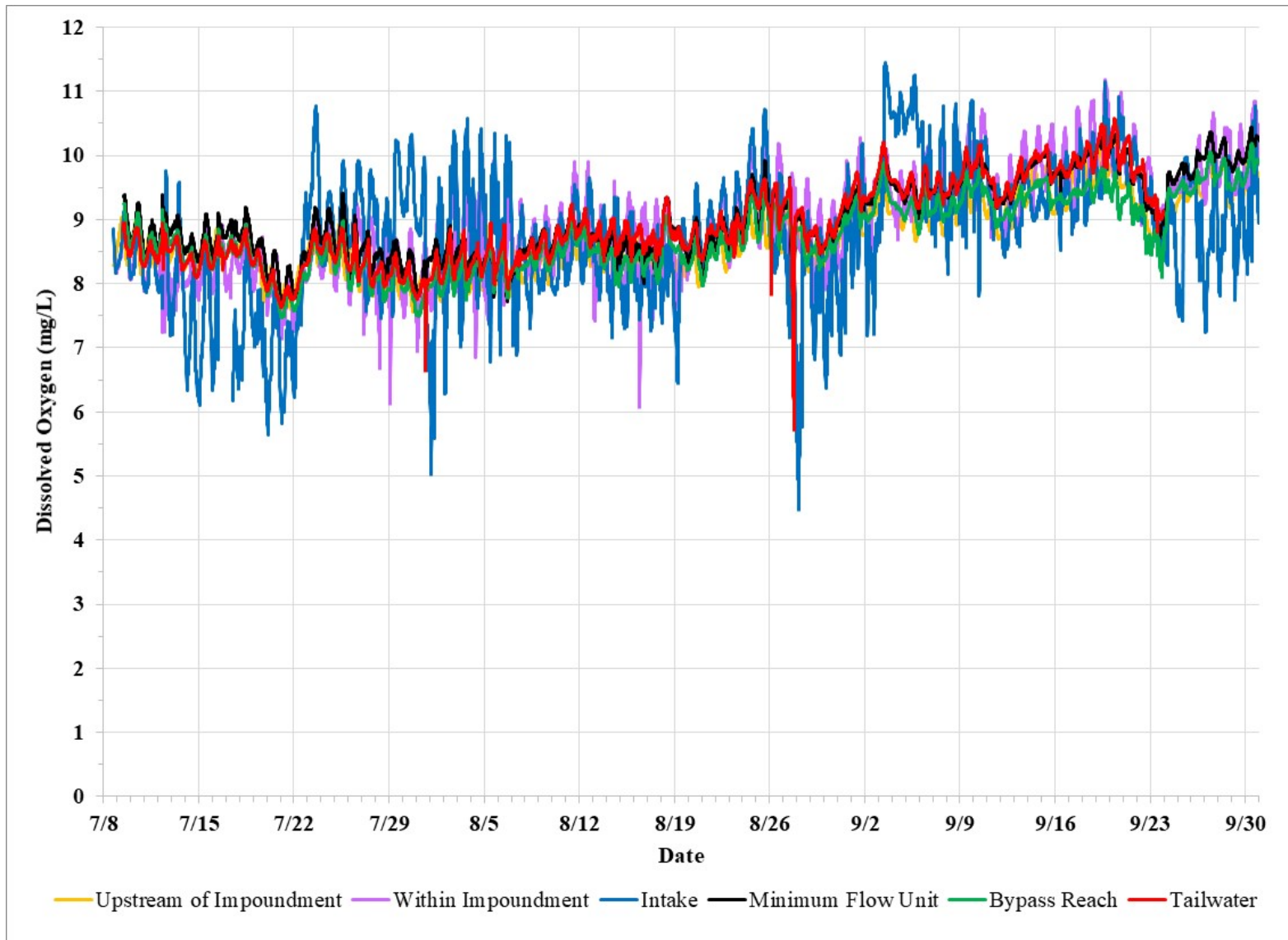
**Table 4.7 Monthly Minimum, Maximum, and Average Water Temperature (°C), Dissolved Oxygen Concentration (mg/L) and Percent Saturation at the Newbury Project**

	Water Temperature (°C)			DO (mg/L)			DO percent saturation (%)		
	July	August	Sept.	July	August	Sept.	July	August	Sept.
<i>Site 1: Upstream of Impoundment</i>									
Minimum	18.4	16.3	11.9	7.5	7.7	8.7	94.0	93.1	94.2
Maximum	26.4	24.9	19.6	9.0	9.5	10.5	98.4	98.3	97.6
Average	21.9	20.7	16.0	8.3	8.5	9.4	96.4	96.0	96.0
<i>Site 2: Within Impoundment</i>									
Minimum	18.9	17.0	13.2	6.1	6.1	8.5	72.9	69.1	89.8
Maximum	25.8	24.3	19.4	9.3	10.3	11.2	106.8	113.1	110.2
Average	21.9	20.7	16.2	8.3	8.7	9.7	96.0	98.8	99.5
<i>Site 3: Intake</i>									
Minimum	18.8	17.2	13.2	5.6	4.5	7.2	67.9	49.4	72.9
Maximum	25.6	23.9	20.2	10.8	10.7	11.5	125.5	121.6	121.6
Average	21.8	20.7	16.3	8.3	8.5	9.4	95.7	96.3	97.2
<i>Site 4: Minimum Flow Unit</i>									
Minimum	19.5	17.5	13.1	7.7	6.3	8.7	92.1	69.4	96.1
Maximum	25.8	24.7	19.8	9.4	9.9	10.4	106.6	107.2	104.3
Average	22.3	21.1	16.4	8.6	8.7	9.7	100.2	99.0	100.2
<i>Site 5: Bypassed Reach</i>									
Minimum	19.5	17.6	13.1	7.5	7.8	8.1	90.1	85.9	88.9
Maximum	26.1	24.7	19.9	9.3	9.6	10.2	104.1	103.8	100.6
Average	22.4	21.1	16.5	8.3	8.5	9.3	97.2	97.0	96.7
<i>Site 6: Tailwater</i>									
Minimum	19.5	17.6	13.1	6.7	5.7	8.8	80.9	63.2	95.4
Maximum	26.0	24.6	19.9	9.0	9.6	10.6	101.2	104.1	103.2
Average	22.3	21.1	16.7	8.3	8.7	9.7	97.4	99.5	100.8

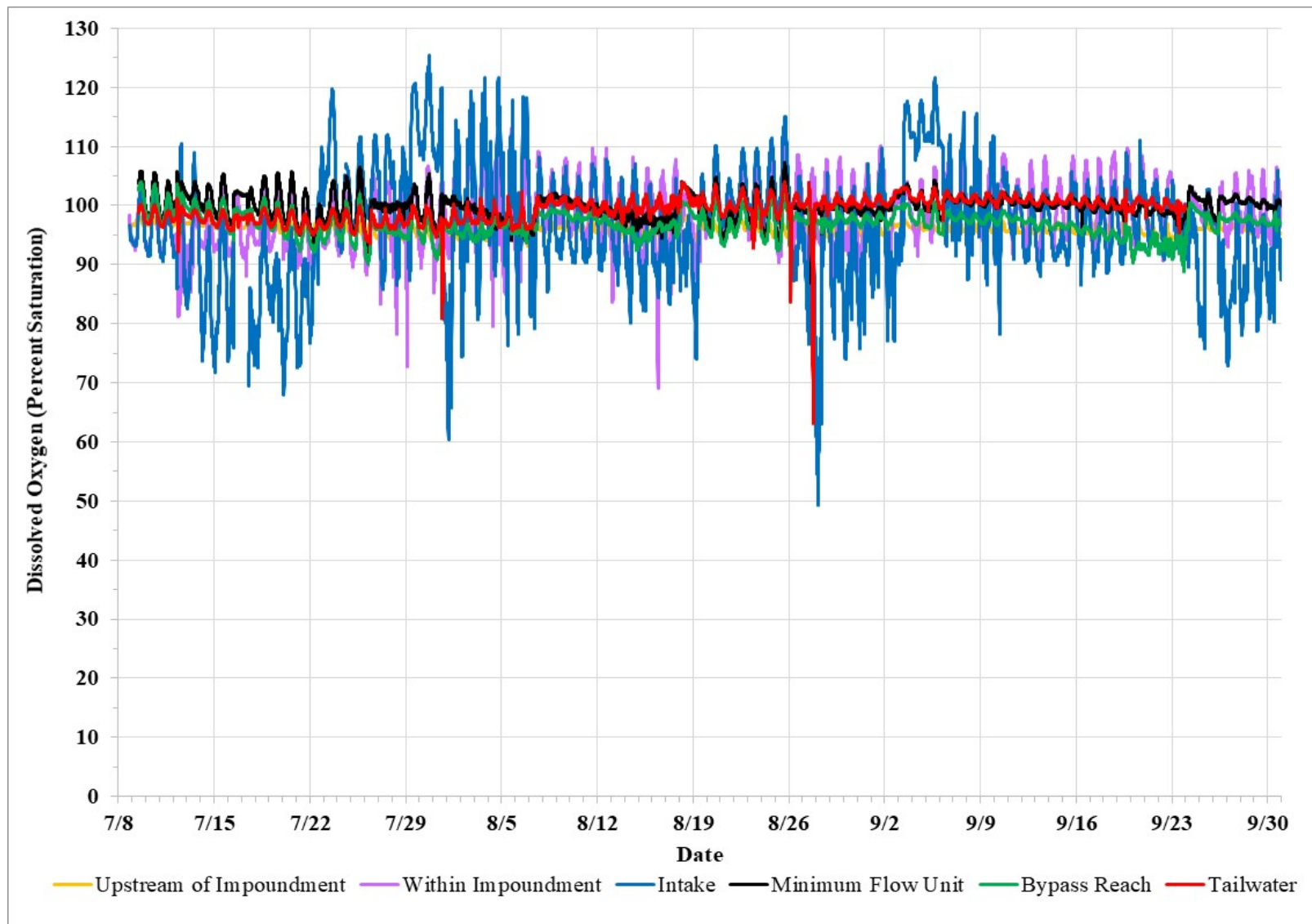




**Figure 4.4 Water Temperature (°C) at the Six Monitoring Sites at the Newbury Project**



**Figure 4.5 Dissolved Oxygen Concentration (mg/L) at the Six Monitoring Sites at the Newbury Project**



**Figure 4.6 Dissolved Oxygen Percent Saturation at the Six Monitoring Sites at the Newbury Project**

The DEC reviewed GMP's 2019 Water Quality Study Report and provided specific comments on the report in their June 23, 2020 comment letter (Appendix C). DEC's specific comments and GMP's responses to those comments are included within Appendix E.

#### **4.4.2 Environmental Effects**

##### **4.4.2.1 Effects of Existing Project Operations on Flows and Water Quality**

Water quality monitoring throughout the Wells River completed by DEC from the 1990s to 2017 and by GMP in 2019 demonstrated that water quality upstream and downstream of the Newbury dam attains Class B(2) standards. The results from water quality monitoring completed at and near the Newbury Project suggests that under the current operating regime, the Wells River meets the designated uses for Class B(2) waters.

The Newbury Project as currently operated has limited effects on water quality. Stable run-of-river impoundment elevations upstream and downstream of the Newbury dam allow for consistent river flows.

Potential required maintenance activities and associated drawdowns do have the potential to affect water quality conditions. GMP follows best practices for drawdown and refill regimes when maintenance drawdowns are required. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns.

##### **4.4.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river facility with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations).

GMP proposes to alter the minimum flow regime to 35 cfs May 15<sup>th</sup> – October 15<sup>th</sup> (or inflow, whichever is less) and 30 cfs (or inflow, whichever is less) during the remainder of the year. GMP proposes to eliminate the aesthetic flow requirement during the winter months and increase the aesthetic flow to 10 cfs from May 15<sup>th</sup> – October 15<sup>th</sup> during daytime hours. GMP proposes to eliminate the aesthetic flow during winter months due to freezing issues on the inflatable dam crest, which limits GMP's ability to operate and control water levels, creating dam safety concerns in the winter months.

Based on the results of the instream flow study completed in 2020, this proposed minimum flow regime is expected to be protective of aquatic resources in the reach at all times of the year, especially during the low flow season. Water will be provided through the minimum flow turbine when operational and/or over the dam. Provision of the aesthetic flow from May 15<sup>th</sup> – October 15<sup>th</sup> will additionally result in a total release of 40 cfs during daytime hours to the bypass reach at times when the minimum flow turbine is operational (30 cfs through the minimum flow turbine plus 10 cfs for aesthetics). It is not expected that these changes will affect water quality at the Project. Eliminating the aesthetic flow during winter months is unlikely to affect aquatic habitat in the bypass reach due to limited to no use of habitat by aquatic organisms during winter conditions.

To avoid negative effects to water quantity or quality, GMP proposes to develop a Flow Management and Monitoring Plan in consultation with DEC and to file this plan with the Commission within 6-months of receipt of subsequent license.

GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment has the potential to temporarily impact water quality due to potential soil erosion along the shoreline during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the proposed access area designs will require only short-term temporary construction related effects on terrestrial or aquatic resources. The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. GMP will additionally work to gain necessary federal, state, and local permit approvals and ensure that proper erosion and sediment control measures are in place for construction of the access area per permit approvals.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not

expected to have any effect on water quantity or water quality within the Newbury Project area.

#### **4.4.3 Unavoidable Adverse Effects**

None anticipated. Continued operation and relicensing of the Newbury Project as proposed is not expected to have unavoidable adverse effects on water quantity and water quality resources.

## **4.5 Fish and Aquatic Resources**

### **4.5.1 Affected Environment**

#### **4.5.1.1 Overview**

Aquatic and fisheries habitat in the Newbury Project area includes the short, narrow pond upstream of the dam, the 590-foot-long reach of the Wells River between the dam and the tailwaters, and the tailwater area. As noted above, the Wells River is classified as cold water fish habitat and as Class B(2) water for all designated uses (VANR 2017). Class B(2) waters are managed to support the designated uses of aquatic biota, wildlife, and aquatic habitat; aesthetics; public water supply; irrigation of crops and other agricultural uses; swimming and other primary contact recreation; and boating, fishing and other recreational uses (VANR 2017). The Wells River supports warm and coldwater resident fish species, including wild and stocked brook trout and stocked brown trout and rainbow trout. The variety of fish species creates ample angling opportunities throughout the Wells River. VANR classified the benthic macroinvertebrate community at RM 0.6 (just below the Newbury dam) as Very Good in 1992 and as Excellent at RM 2.1 (above the Newbury dam) in 2014 (VANR 2021a). These classifications indicate that there is a reliable forage base for resident fish and stocked game species.

No diadromous fish species (e.g., Atlantic salmon, American shad) occur in the Wells River, although Atlantic salmon smolts were stocked until 2011. The USFWS stopped Atlantic salmon stocking efforts in 2012 because the Connecticut River Salmon Restoration Program was terminated (VDEC 2014). American eel were once abundant in the Connecticut River drainage; however, American eel were not found in the Connecticut River upstream of RM 89 during large river fish assemblage surveys (Yoder et al. 2009). The Wells River enters the Connecticut River at approximately RM 213. Upstream and downstream passage for American eel at mainstem dams on the Connecticut River may be developed in the coming years, which may increase the number of American eel in the upper reaches of the watershed, including tributaries such as the Wells River.

#### **4.5.1.2 Existing Fisheries Assemblage**

The Wells River Watershed Corridor Management Plan reports information about fish species collected from the Wells River approximately 5.2 RM upstream of the Newbury Project, which is approximately 1 RM upstream of the Boltonville Dam (also known as the Wells River Hydroelectric Project [FERC Exemption No. 4770]) (Redstart 2009). Fish



observed included dace species, slimy sculpin, common shiner, lake chub, largemouth bass, yellow perch, brook trout, brown trout, white sucker, pumpkinseed, longnose sucker, bluntnose minnow, and creek chub, which are common freshwater game and non-game species in Vermont waters (Redstart 2009).

The VTFWD conducted an electrofishing survey approximately 1,000-feet downstream of the Newbury dam in August 2018 (Peter McHugh, VTFWD, personal communication with Katie Sellers, Kleinschmidt, August 27, 2018). Species found within the survey included brown trout, rainbow trout, smallmouth bass, longnose sucker, white sucker, creek chub, longnose dace, fallfish, and burbot.

The VTFWD stocks the Wells River with brook, brown, and rainbow trout annually between Ricker Pond (approximately 22 RM upstream of the Newbury Project) and the confluence of the Connecticut River to support a put-and-take fishery (VTFWD 2021). These stockings provide for angling opportunities and fishery diversity. The VTFWD stocked mostly rainbow trout and brown trout over the last five years (Table 4.8). Over the last two years, VTFWD stocked 1,140 rainbow trout and no brown or brook trout; brook trout have not been stocked in this portion of the river since 2013 (VTFWD 2021).

**Table 4.8 Fish Stocked in the Wells River in the Past Eight Years**

Year	Species	# Stocked	Length (inches)
2020	Rainbow Trout	600	11.1
2019	Rainbow Trout	540	9.5
2018	Rainbow Trout	1600	10.0
2017	Rainbow Trout	1600	10.4
2016	Rainbow Trout	1600	10.0
2015	Brown Trout	925	9.7
2014	Brown Trout	1100	9.8
2013	Rainbow Trout	800	10.5
	Brook Trout	500	9.6

Source: VTFWD 2021

Once stocked, rainbow trout likely inhabit fast water habitats (i.e., riffles and runs) and pool habitats and seek cold water tributaries during the summer. Like rainbow trout, brown trout likely inhabit the riverine portions of Wells River but prefer quieter less turbulent flows such as pools and gentle runs with physical cover. Wild brook trout populations are found in tributaries of the Wells River above the Newbury Project, such as Beaver Brook, Coldwater Brook, Depot Brook, Hosmer Brook, and the South Branch of

the Wells River (VDEC 2014). These tributaries are considered high-quality waters for recreational fishing because of the abundant wild trout populations with multiple age classes (VDEC 2014). Angling for rainbow, brown, and brook trout on the Wells River occurs from the second Saturday in April to October 31<sup>st</sup>.

Fish passage design at hydroelectric facilities is typically based on the known behavioral characteristics of the target species. The target species for most upstream fish passage projects are highly motivated to move upstream, driven by their migratory instinct. It is recognized that the trout species existing at the Project are resident populations that are not obligatory migrants. Although individuals of populations such as these often move upstream and downstream as adults and juveniles, these movements are not necessarily required to perpetuate the population. This is particularly true of populations that are managed on a "Put and Take" basis by stocking, such as those in the Wells River. As earlier noted, the waters upstream and downstream of the Newbury Project are managed by the VTFWD as a coldwater fishery for brook trout, brown trout, and rainbow trout. The fishery is supported by natural reproduction and annual stocking efforts.

Warm and cool water fish known to occur in the Wells River (i.e., smallmouth bass, largemouth bass, yellow perch) and other non-game, resident species may occur in the impoundment or riverine habitats year-round. Warmwater species may use the shallow impoundment for spawning throughout the year; spawning habitats in the impoundment are maintained by run-of-river operations of the Newbury Project.

In 2016 and 2017 the VTFWD conducted rapid creel surveys to estimate angler effort on Joes Brook, Stevens River, and Wells River (Kratzer 2018). The surveys were conducted every weekend day and holiday from May 27<sup>th</sup> to the end of July in 2016 and 2017. The full extent of the Wells River was included in the survey route, starting at Ricker Pond and ending at the confluence with the Connecticut River. Over the course of 21 surveys, a total of 26 anglers were observed in the Upper Wells River (upstream of South Ryegate Village) and 56 anglers were observed in the Lower Wells River (downstream of South Ryegate Village). The mean angler count per hour in the Upper Wells River was 0.55 anglers and 1.19 anglers in the Lower Wells River (Kratzer 2018).

#### **4.5.1.3 Aquatic Habitat**

The Newbury Project impoundment is small and shallow with an average depth of approximately 4-feet. Aquatic habitat in and surrounding the impoundment is mostly

shoreline, aquatic vegetation, and littoral pond habitat (Photo 4.1). The impoundment extends upstream approximately 0.4 RM from the dam with a surface area of approximately 11.4 acres. The northern shoreline is characterized by steep, wooded banks while the south side is covered in riprap and vegetation sloping up to the edge of U.S. Route 302. Small islands covered in vegetation occur within the impoundment, creating additional shoreline habitat and refuge for juvenile fish (Photo 4.2).

Aquatic habitat in the 590-foot-long reach between the dam and the tailwaters includes a large, deep plunge pool immediately downstream of the dam and a steep, rocky riffle-run complex (Photo 4.3). GMP provides minimum flows in the reach of 50 cfs from April 15<sup>th</sup> through June 10<sup>th</sup> to promote spawning habitat and 25 cfs for the remainder of the year; these flow thresholds were established to protect aquatic resources (FERC 1983; VDEC 1982).

The steep gradient and rocky substrates of the Wells River above the impoundment and in the bypass reach create run, riffle, and pool habitats for a variety of non-migratory, resident fish species and life stages (Photo 4.4). Downstream of the bypass reach and tailwater, the Wells River is low gradient deep run and pool habitat with rocky substrate (Photo 4.5).



**Photo 4.1 Newbury Project Impoundment  
(View Looking Upstream from Intake Area)**





**Photo 4.2 Newbury Project Impoundment Vegetated Islands (View From Mid-Impoundment Looking upstream and Towards U.S. Route 302)**



**Photo 4.3 Newbury Bypassed Reach (View from Powerhouse Area Looking Upstream at the Newbury Dam)**





**Photo 4.4 View Looking at Upper End of Bypass Reach**



**Photo 4.5 View Looking Downstream from Tailrace Area**

#### **4.5.1.3.1 Fish Passage and Protection**

Although there are no migratory fish species within the Wells River (resident species only), GMP installs a downstream fish passage chute on the spillway seasonally to allow for downstream movement of resident fish species (Photo 4.6). The fish passage chute is installed seasonally using a crane and by removing a 2-foot-high by 4-foot-wide section of the crest gates at the dam and attaching an 8-foot-long by 4-foot-wide steel sluice box that extends to the plunge pool. The chute is currently operated in the spring from April 1<sup>st</sup> to June 1<sup>st</sup> and in the fall from September 1<sup>st</sup> to November 15<sup>th</sup> and provides a flow of 20 cfs and 10 cfs in the spring and fall, respectively. The chute spills into a plunge pool below that is approximately 6 to 10-feet-deep (Photo 4.7). The fishway is cleaned as needed when GMP's operators are on site to ensure flows are properly passing through the chute. An operator visits the site on weekdays to ensure facility compliance and overall site safety. GMP additionally checks the condition of the chute at least four times a year when installing and removing the chute for spring and fall passage seasons.

Fish passage at the site was initially developed as part of the Connecticut River Atlantic Salmon Restoration Program to pass Atlantic salmon smolts in the spring and fall (see VANR's 1988 amended Water Quality Certification in Appendix A). The Connecticut River Atlantic Salmon Restoration Program terminated after Tropical Storm Irene destroyed much of the program's infrastructure in Vermont (i.e., federal fish hatcheries) in 2011 and due to low annual salmon returns.

The Newbury Project intake has full depth trash racks that are angled at approximately 45 degrees to flow with 1-inch clear spacing, which protect fish from becoming entrained. GMP calculated the approach velocity at the intake as less than 1 foot per second (fps) during full generation,<sup>16</sup> which substantially reduces the risk of impingement and entrainment because fish can swim away from the intake. Fishway flows of 20 cfs and 10 cfs are equal to 12 percent and 6 percent of the Newbury Project's maximum hydraulic generating capacity (164 cfs), which is more than the USFWS' standard recommendation of 5 percent (USFWS 2019). The downstream fishway as constructed meets the specifications and guidelines of the USFWS' 2019 Fish Passage Engineering Design Criteria (USFWS 2019). GMP does not propose to alter the downstream fishway structure.

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<sup>16</sup> Approach velocity calculated as 164 cfs / 170 square feet (gross trash rack area).



The Newbury Project trash racks are cleaned by a mechanical rack raker (new rack raker was installed in 2020). The trash racks are cleaned a minimum of once per week during nice weather conditions. During adverse weather or high-water events, the trash racks could be cleaned as many as two times a day to keep a generating unit running. The mechanical rack raker is cleaned of debris immediately after the trash racks are cleaned.



**Photo 4.6 Downstream Fish Passage Chute**



**Photo 4.7 Downstream Fish Passage Plunge Pool**

#### **4.5.1.4 2020 Instream Habitat Flow Study**

GMP conducted an instream habitat flow study within the Newbury Project bypassed reach in May 2020. Biologists mapped riverine habitat in the bypassed reach by wading the river or walking along the shoreline from the tailwater to the dam to classify each mesohabitat (i.e., run, riffle, pool). Biologists took photographs; measured length, width, and water depth; and classified the dominant substrates and instream cover for fish and aquatic organisms in each habitat unit.

Biologists established three representative habitat transects in the reach based on consultation with the VANR. GMP adjusted generation and impoundment elevation to provide 15 cfs, 25 cfs, 35 cfs, and 50 cfs over the dam and to the bypassed reach. During each flow release, biologists measured water depth and water velocity at approximately 10 to 15 stations across each transect, measured wetted stream width, and photo-documented the flow releases. Substrates were classified during the low flow release using standard substrate classification guidance (Table 4.9). River discharge was verified using

velocity and depth data collected at Transect 1 (closest to the dam) because there was uniform, non-turbulent flow.

**Table 4.9 Substrate Classification Used for Newbury Instream Flow Study**

Code	Description
1	Roots, Snags, Undercut Banks, Overhead Cover
2	Clay
3	Silt
4	Sand
5	Small Gravel (< 2" or 5 cm)
6	Gravel (2"-4" or 5-10 cm)
7	Cobble (4"-10" or 10-25 cm)
8	Small Boulder (10"-24" or 25-61 cm)
9	Large Boulder (>24" or 61cm)
10	Ledge
11	Detritus, Vegetation

Data were compared to habitat suitability curves that describe water depth, water velocity, and substrate preferences of the following species of management interest or typical game and non-game aquatic species in Vermont river systems:

- Juvenile and adult brook trout,
- Adult rainbow trout,
- Adult longnose dace,
- Spawning white sucker,
- Juvenile white sucker and adult white sucker, and
- Benthic macroinvertebrates.

Habitat suitability values ranging from 0.0 (unsuitable) to 1.0 (optimal) were assigned to each water depth, water velocity, and substrate measurement at each transect for each species/lifestage using a look-up equation in Microsoft (MS) Excel based on the slope of the HSC. The product of the depth, velocity, and substrate suitability was used to determine an overall composite suitability value at each position along each transect for each species/lifestages. Composite values were summed for each transect to compare habitat suitability at the four flow releases for all species/lifestages. Table 4.10 provides an example of the calculated composite suitability value for adult trout at Transect 1 with a river flow of 25 cfs.

**Table 4.10 Example Habitat Suitability Analysis for Adult Trout, Newbury Project Bypassed Reach Instream Flow Study, Transect 1 (25 cfs)**

Field Data				Brook trout (adult)				Rainbow trout (adult)			
Distance	Substrate	Depth (ft)	Velocity (fps)	Depth SI	Velocity SI	Substrate SI	Composite SI*	Depth SI	Velocity SI	Substrate SI	Composite SI*
21.5	Large Boulder	1.4	1	0.73	1.00	1.00	0.73	0.90	1.00	1.00	0.90
23.5	Small Boulder	1.45	2	0.77	0.78	1.00	0.60	0.95	1.00	1.00	0.95
25.5	Small Boulder	1.5	2.26	0.80	0.67	1.00	0.53	1.00	1.00	1.00	1.00
27.5	Large Boulder	0.8	2.15	0.32	0.72	1.00	0.23	0.30	1.00	1.00	0.30
29.6	Large Boulder	0.9	2.15	0.39	0.72	1.00	0.28	0.40	1.00	1.00	0.40
31.5	Large Boulder	0.6	1.95	0.18	0.80	1.00	0.15	0.10	1.00	1.00	0.10
33.5	Small Boulder	0.35	1.35	0.01	1.00	1.00	0.01	0.00	1.00	1.00	0.00
35.3	Small Boulder	0.4	0.05	0.05	0.46	1.00	0.02	0.00	0.28	1.00	0.00
36.9	Cobble	0.2	0.25	0.00	0.81	1.00	0.00	0.00	0.60	1.00	0.00
39.5	Small Boulder	0	0	0.00	0.210	1.00	0.00	0.00	0.20	1.00	0.00
Composite Suitability							2.56				3.65

\* Product of depth suitability, velocity suitability, and substrate suitability; abundant velocity refugia HSC used for trout species.

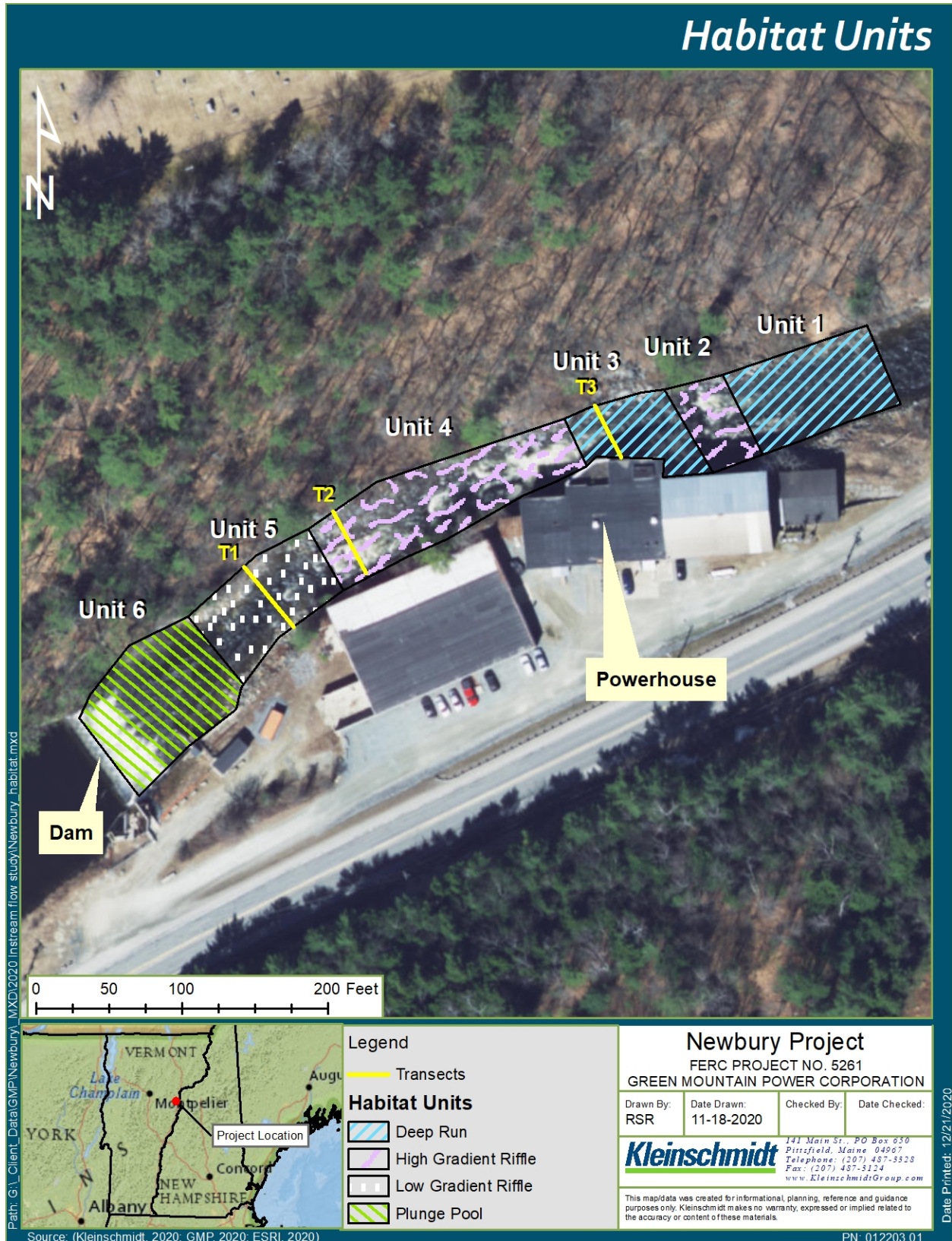
The percent of maximum habitat suitability was calculated by dividing the composite suitability of a given flow by the maximum suitability observed during the study. Percent increase or decrease in habitat suitability was calculated for each flow release for each species/lifestages.

The reach of the Wells River between the Newbury dam and tailwater is 592-feet-long with high and low gradient riffle habitat (54 percent), deep runs (30 percent), and deep pool habitat (16 percent) (Table 4.11; Figure 4.7). Downstream of the large plunge pool at the base of the dam, the channel is steep and narrow, with swift, deep water or slower, deep runs. Much of the stream bank is composed of vertical ledge and large boulders (see Photo 4.3). Substrate is mostly large boulder and instream cover for fish is available from water depth, turbulence, and large boulders.

**Table 4.11 Habitat Mapping Data from the Newbury Project Bypassed Reach**

Habitat Unit #	Habitat Type	Length (ft)	Percent of Reach (%)	Average Width (ft)	Average Depth (ft)	Dominant Substrate
1	Deep Run	106	17.9	24	3.0	Large Boulder
2	High Gradient	40.5	6.8	18	2.5	Large Boulder
3	Deep Run	69	11.7	30	4.0	Large Boulder
4	High Gradient	180	30.4	18	1.5	Large Boulder
5	Low Gradient Riffle	99	16.7	17	1.0	Large Boulder
6	Plunge Pool at	97.5	16.5	50	> 10 feet	Large Boulder
	<b>Total</b>	<b>592</b>	<b>100.0</b>	-	-	-





**Figure 4.7 Mesohabitat Units and Transect Locations**

As higher flows were released into the channel, the river became deeper and swifter, but remained essentially confined to its channel given the steep banks. All flow releases provided suitable habitat and the river channel remained connected. In summary:

- The largest increase in habitat suitability for juvenile brook trout (12 percent), adult brook trout (20 percent), rainbow trout (26 percent), longnose dace (11 percent), and spawning white sucker (14 percent) occurred between 15 cfs and 25 cfs as more of the channel became wetted, deeper, and faster (Table 4.12 and Figure 4.8).
- Habitat suitability continued to increase moderately for adult brook trout (13 percent), adult rainbow trout (20 percent), and juvenile and adult white sucker (14 percent) between 25 cfs and 35 cfs (Table 4.12 and Figure 4.8); lesser increases in suitability occurred for juvenile brook trout (5 percent), longnose dace (7 percent), and benthic macroinvertebrates (6 percent) between 25 cfs and 35 cfs; white sucker spawning suitability decreased by 33 percent (Table 4.12 and Figure 4.8).
- A limited increase in habitat suitability for juvenile brook trout (5 percent), adult brook trout (7 percent), adult rainbow trout (2 percent), and spawning white sucker (8 percent) occurred between 35 cfs to 50 cfs; habitat suitability decreased for juvenile white sucker and adult white sucker (-3 percent) and remained unchanged for longnose dace (Table 4.12 and Figure 4.8).
- Habitat suitability for benthic macroinvertebrates continued to increase (25 percent) at a release of 50 cfs because of their high tolerance for deep, fast water, and as more substrates became wetted (Table 4.12 and Figure 4.8).

**Table 4.12 Percent Increase or Decrease in Habitat Suitability Across Range of Flows Released from Newbury Dam**

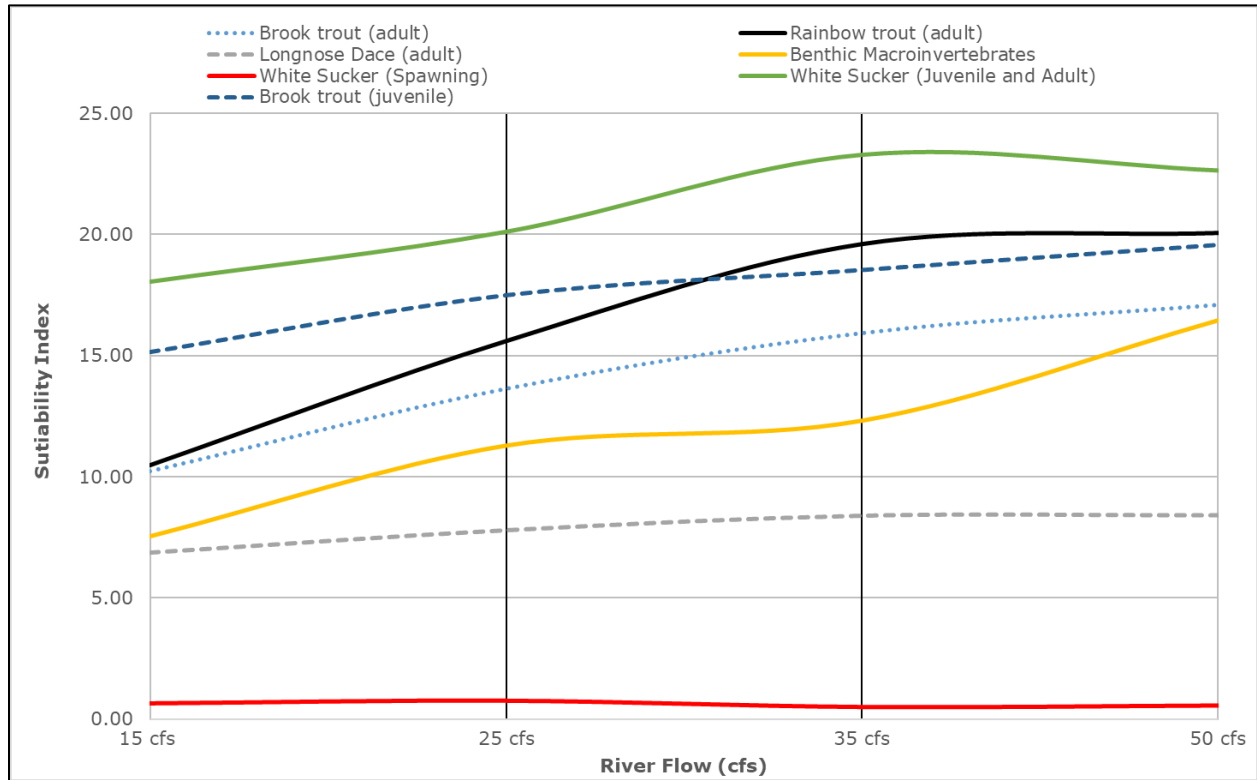
Incremental Percent Increase/Decrease in Suitability				
Species/Lifestage	15 cfs	25 cfs	35 cfs	50 cfs
Brook trout (adult)	-	20%	13%	7%
Brook trout (juvenile)	-	12%	5%	5%
Rainbow trout (adult)	-	26%	20%	2%
Longnose Dace (adult)	-	11%	7%	0%
Benthic Macroinvertebrates	-	23%	6%	25%
White Sucker (Spawning)	-	14%	-33%	8%
White Sucker (Juvenile and Adult)	-	9%	14%	-3%



- A release of 15 cfs provided 46 to 60 percent of the suitable habitat in the reach for benthic macroinvertebrates, adult rainbow trout, and adult brook trout, and 77 to 86 percent for juvenile/adult/spawning white sucker, juvenile brook trout, and longnose dace (Table 4.13 and Figure 4.8).
- A release of 25 cfs provided 78 to 86 percent of the suitable habitat for adult rainbow trout and juvenile/adult white sucker habitat, 80 to 93 percent for adult brook trout, juvenile brook trout, and longnose dace, 70 percent for benthic macroinvertebrate habitat, and maximized the suitability of spawning sucker habitat (Table 4.13 and Figure 4.8).
- A release of 35 cfs decreased white sucker spawning habitat suitability to 67 percent, provided 75 percent for benthic macroinvertebrates, 100 percent for longnose dace, juvenile white sucker, and adult white sucker, and 93 to 98 percent for adult rainbow and brook trout (Table 4.13 and Figure 4.8).
- A release of 50 cfs provided 75 percent habitat suitability for spawning white sucker, reduced the suitability of juvenile/adult white sucker habitat by 3 percent, and maximized habitat suitability for trout and benthic macroinvertebrates (Table 4.13 and Figure 4.8).
- Habitat suitability for spawning white suckers peaked at 25 cfs, although in general the habitat is not suitable for spawning because of the boulder substrates; white suckers use smaller substrates like sand and small gravel to spawn (Table 4.13 and Figure 4.8).
- The largest increase in stream wetted width occurred at Transect 1 between a release of 25 and 35 cfs as channel width increased from 15.8 to 23.2 feet (Table 4.14); all other changes in wetted width were limited (i.e., less than 5 percent) because the channel is confined in the bedrock and large boulder substrate.

**Table 4.13 Percent of Maximum Habitat Suitability Across Range of Flows Released from the Newbury Dam**

Percent of Maximum Suitability				
Species/Lifestage	15 cfs	25 cfs	35 cfs	50 cfs
Brook trout (adult)	60%	80%	93%	100%
Brook trout (juvenile)	78%	89%	95%	100%
Rainbow trout (adult)	52%	78%	98%	100%
Longnose Dace (adult)	82%	93%	100%	100%
Benthic Macroinvertebrates	46%	69%	75%	100%
White Sucker (Spawning)	86%	100%	67%	75%
White Sucker (Juvenile and Adult)	77%	86%	100%	97%



**Figure 4.8 Change in Habitat Suitability for Target Freshwater Fish Species and Benthic Macroinvertebrates at Four Flow Releases from Newbury Dam**

**Table 4.14 Change in Wetted Stream Width Across Range of Flows Released from the Newbury Dam**

Transect #	Release (cfs)	Wetted Width (ft)	Change in Wetted Width (ft)	Percent Change in Wetted Width
Transect 1	15	15.8	0.0	-
	25	15.8	0.0	0.0%
	35	23.2	7.4	46.8%
	50	24.2	1.0	4.3%
Transect 2	15	18.5	0.0	-
	25	18.5	0.0	0.0%
	35	19.3	0.8	4.3%
	50	19.7	0.4	2.1%
Transect 3	15	28.7	0.0	-
	25	29.6	0.9	3.0%
	35	31	1.4	4.7%
	50	32	1.0	3.2%

The aquatic habitat study demonstrated that the existing minimum flow regime and flows between 25 and 50 cfs maintain high levels of suitable aquatic habitat for game and non-game fish species. When the minimum flow turbine is operational, GMP provides at least 35 cfs to the bypassed reach (i.e., the minimum flow turbine discharge of 30 cfs plus the required aesthetic flow of 5 cfs over the dam), which improves habitat suitability for all species and lifestages, except spawning white sucker. Between 35 and 50 cfs, although habitat suitability improves for some species and lifestages, the gains are generally minor, except for benthic macroinvertebrates, which can tolerate deep, fast water. At 50 cfs, there are pockets of very fast water that are unsuitable for fish as well as anglers (i.e., too fast for safe wading).

Like most New England rivers, flows in the Wells River peaks in the spring, followed by lower flows in the summer and fall and increased discharge in the winter. In April and May, the capacity of the Newbury Project (164 cfs) is typically exceeded, which results in the spill of water over the dam and into the bypassed reach. During much of the summer, there is only enough water to generate with the minimum flow unit or the project is shut down, which results in the provision of river inflow over the dam and into the bypassed reach.

As described in *Section 4.4, Water Resources*, GMP monitored DO in the reach between the dam and powerhouse from July 8 to September 30, 2019, to assess the effects of Project operation on water quality. The DO concentration in the bypassed reach was above the Class B(2) standard (6 mg/L or 70 percent saturation) throughout the entire monitoring period, demonstrating that the existing minimum flow schedule adequately maintains suitable conditions for aquatic organisms in the reach.

Aquatic habitat in the reach is of high quality, characterized by complex physical habitat structure, instream cover, stream processes, high DO levels, shading from tree canopy, and typical flow characteristics of rivers and streams. The minimum flow regime provides deep water throughout the main portion of the channel to provide for volitional movements of fish through the reach. There are no intermittent sub-reaches; the entire channel is connected hydrologically from the dam to the powerhouse tailrace.

The Final Instream Habitat and Aesthetic Flow Study Report is included in Appendix F for stakeholder review and comment. A summary of the aesthetic flow portion of the study is included in *Section 4.10, Aesthetic Resources*.

#### **4.5.1.5 Freshwater Mussels**

There are 17 native freshwater mussel species known to inhabit Vermont waters, five of which are abundant in many Vermont streams (triangle floater, eastern eliptio, eastern lampmussel, eastern floater, squawfoot) (Fichtel and Smith 1995). Three species are known to occur only within the Connecticut River drainage: alewife floater, brook floater, and dwarf wedgemussel; however, alewife floater and brook floater are not known to occur in the upper part of the Connecticut River watershed (Fichtel and Smith 1995). Dwarf wedgemussels have been observed in the upper portion of the Connecticut River, including upstream of the Dodge Falls Hydroelectric Facility (FERC No. 2392), but have not been observed in the Newbury Project vicinity (VANR 2021c). The dwarf wedgemussel is listed as endangered by both state and federal agencies and the brook floater is listed as threatened in Vermont (Fichtel and Smith 1995; VTFWD 2015a).

GMP conducted a freshwater mussel survey August 3-4, 2019, at the request of DEC and CRC. Five sites were surveyed in the impoundment and two sites were surveyed downstream from the Newbury dam, including the bypass reach, tailrace channel, and an area downstream from the tailrace (Figure 4.9). Qualitative mussel surveys were conducted by snorkeling. The duration of timed surveys ranged from 1.0 to 2.0 hours per site. The intent of the study was to count all mussel species encountered, record shell lengths, shell conditions, and photographs for individuals of state-listed and uncommon species. Biologists noted habitat at each site; depth; flow conditions; substrate; instream cover; and general habitat types (Table 4.15).

No live mussels, shells, or other evidence of mussels were observed within the Newbury Project area; a full report is provided as Appendix C.



**Figure 4.9 Freshwater Mussel Survey Sites**

**Table 4.15 Summary of Habitat Conditions at Mussel Survey Sites**

Site	Water Depth <sup>1</sup>	Substrate	Flow Velocity	Cover	Habitat Type(s)
1	1.5 / 3.5	Coarse gravel, cobble, and boulder. Sand in the tailrace channel.	Moderate to fast	No aquatic vegetation, sparse coarse wood	Riffle, rapid, run
2	2.0 / 8.0	Coarse gravel, cobble, boulder, bedrock	Moderate to fast	No aquatic vegetation, sparse coarse wood	Pool, riffle, rapid
3	10.0 / 15.0	Silt, detritus, and sand; rock near edges	Slow	Moderate amounts of aquatic vegetation, coarse wood near banks	Impoundment (deep)
4	2.5 / 6.0	Mostly silt and detritus; rock near edge	Slow	Moderate amounts of aquatic vegetation and coarse wood	Impoundment (shallow)
5	4.0 / 9.0	Mostly silt, sand, and detritus. Riprap along edge, occasional cobble.	Slow	Moderate amounts of aquatic vegetation and coarse wood	Impoundment (shallow)
6	3.0 / 5.0	Sand, gravel, cobble, boulder, bedrock	Slow	Sparse aquatic vegetation, moderate amounts of coarse wood	Impoundment (shallow)
7	4.0 / 12.0	Mostly cobble, boulder, bedrock	Variable	No aquatic vegetation, sparse coarse wood	Cascade, rapid, pool, run

## **4.5.2 Environmental Effects**

### **4.5.2.1 Effects of Project Operations on Fish and Aquatic Resources**

The Newbury Project as currently operated (i.e., run-of-river with minimum flow requirements) has very little effect on fish and aquatic resources. The current flow regime adequately protects and maintains fish and aquatic habitat in the bypass reach. Stable impoundment elevations upstream of the dam and river flows downstream of the Project maintain quality habitat for aquatic species.

Potential required maintenance activities and associated drawdowns do have the potential to affect aquatic resources upstream of the dam. GMP follows best practices for drawdown and refill regimes when maintenance drawdowns are required. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns. In the case of a drawdown, GMP would continue to pass required minimum flows to protect downstream reaches.

The 2020 Instream Habitat Flow Study demonstrated that as higher flows were released into the bypassed reach, the river became deeper and swifter but remained essentially confined to its channel. All four of the flow releases provided suitable habitat and the river channel remained connected with riffle, run, and pool habitats. The aquatic habitat study demonstrated that the existing minimum flow regime (25 cfs and 50 cfs) maintains high levels of suitable aquatic habitat for game and non-game fish species in the reach of the Wells River between the dam and the tailwater (see Appendix F for the full study report).

Additionally, per results of the freshwater mussel survey, no live mussels, shells, or other evidence of mussels were observed. Ongoing Project operations are therefore not anticipated to negatively affect freshwater mussels within the Newbury Project area.

### **4.5.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations).

As previously noted, downstream fish passage at the Newbury Project was initially developed as part of the Connecticut River Atlantic Salmon Restoration Program to pass



Atlantic salmon smolts in the spring and fall (see VANR's 1988 amended Water Quality Certification in Appendix A). However, the Connecticut River Atlantic Salmon Restoration Program terminated after Tropical Storm Irene destroyed much of the infrastructure in Vermont (i.e., federal fish hatcheries) in 2011 and due to low annual salmon returns. Although the Connecticut River Atlantic Salmon Restoration Program has ended and resident Wells River fish species are not obligatory migrants, GMP proposes to still provide seasonal downstream fish passage as a mitigation measure, but proposes to provide 10 cfs through the downstream fishway from April 1<sup>st</sup> - June 1<sup>st</sup> (rather than the current provision of 20 cfs during this time period) and 10 cfs through the downstream fishway from September 1<sup>st</sup> – November 15.<sup>th</sup>

The fishway as built, and GMP's proposed fishway operations, meet the recommendations put forward by the USFWS in their 2019 Fish Passage Engineering Design Criteria (USFWS 2019). The USFWS's 2019 guidance document recommends providing an attraction flow to a downstream fishway that is 5 percent of the total station capacity (164 cfs) – the proposed 10 cfs is 6 percent of the total capacity of the Newbury Project. In addition, the fishway has a full depth trash rack that is angled approximately 45 degrees to river flow, vertical bar racks that have 1-inch clear spacing, a fishway chute that leads to a deep plunge pool, and an approach velocity that is less than 1 foot per second. All of these fishway design characteristics meet the USFWS' specifications for a downstream fishway. GMP does not propose to alter the downstream fishway structure.

In addition, given the characteristics of the fishway design, the low approach velocities, and because fish species in the project area non-migratory, GMP anticipates that the risk of entrainment and impingement is very low. Fish species (e.g., stocked trout, bass, sucker) that reside in the impoundment all have burst or prolonged swim speeds that are higher than the expected approach velocities (< than 1 fps) during full generation.

Because the fish assemblage is made up of resident fish that are not obligatory migrants, the design characteristics of the fishway meet contemporary criteria, and the risk of impingement and entrainment is low, GMP anticipates that the proposed action, including proposed modifications to fishway operations (i.e., reduction from 20 cfs to 10 cfs attraction flow) will not negatively affect fish species in the impoundment, and that the fishway will effectively pass any resident fish (e.g., stocked trout) that volitionally elect to move downstream.

GMP does not expect the operation of the Newbury Project to affect American eels because they are not known to migrate into the Wells River presently. GMP recognizes that upstream and downstream eel passage measures may be implemented at main stem dams on the Connecticut River, which may expand the range of American eels.

GMP is also proposing to modify the minimum bypass flow based on the results of the 2020 Instream Habitat Flow Study. GMP is proposing to provide a minimum flow of 35 cfs (or inflow, whichever is less) from May 15<sup>th</sup> to October 15<sup>th</sup> and 30 cfs (or inflow, whichever is less) for the remainder of the year. The 2020 study demonstrated that 35 cfs will provide a high level of suitable habitat for game and non-game resident fish species. Although not specifically evaluated as a study flow, the results demonstrate that 30 cfs (i.e., in between the target flow releases of 25 and 35 cfs) also provides a high level of suitable aquatic habitat to support aquatic organisms in the winter and spring months while removing the dam safety issue of icing that currently occurs. Both of these flow releases are expected to provide approximately 80 percent (or more) of the available suitable habitat for the target species evaluated in the study, except for benthic macroinvertebrates given their tolerance for deep, fast water (see Table 4-13). Although the proposed flow regime may not optimize habitat for benthic macroinvertebrates, there are abundant substrates (boulders) in the reach that provide surfaces for invertebrates to colonize at the proposed flow condition.

GMP is also proposing to increase the existing aesthetic flow over the dam from 5 cfs to 10 cfs (or inflow, whichever is less). The aesthetic flow would be provided from May 15<sup>th</sup> to October 15<sup>th</sup> during daytime hours. During times when the minimum flow unit is operational and the aesthetic flow is being provided, GMP would be providing 40 cfs to the reach, which would increase habitat suitability for trout species, resident fish, and benthic macroinvertebrates, although to a limited extent because suitability curves generally leveled off above 35 cfs, except for benthic macroinvertebrates. GMP is not proposing an aesthetic flow over the dam during the rest of the year to avoid ice build-up at the dam resulting from a year-round aesthetic flow. This will have no effect on run-of-river operations or the minimum flow regime, but will maintain suitable aquatic habitat.

To avoid any negative effect to fish and aquatic resources, GMP proposes to develop a Flow Management and Monitoring Plan in consultation with DEC and to file this plan with the Commission within 6-months of receipt of subsequent license.

GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment may have the potential to temporarily impact fish and aquatic resources along the shoreline during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the access area will either require minimal or no in-water work (likely no in water work). The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. GMP will additionally work to gain necessary federal, state, and local permit approvals and ensure that proper protective measures (e.g., silt curtain if in water work occurs) are in place for construction of the access area per permit approvals.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on fish or aquatic resources within the Newbury Project area.

#### **4.5.3 Unavoidable Adverse Effect**

None anticipated. Continued operation of the Newbury Project and proposed PME measures are not expected to cause unavoidable adverse effects on fish and aquatic resources.

## **4.6 Wildlife and Terrestrial Resources**

### **4.6.1 Affected Environment**

#### **4.6.1.1 Overview**

The Newbury Project area occurs within the Northeastern Highlands region which extends from northwestern Maine to northwestern New Jersey (CEC 2011). Topographically the region includes hills, mountains, and narrow valleys, the entire region has been glaciated. The climate in this region is marked by severe, mid-latitude, humid continental climate, with warm summers and snowy, cold winters.

Habitat is variable and is dominated by mostly mixed hardwood and spruce-fir forests. Forest vegetation is transitional between the boreal regions to the north and the broadleaf deciduous forests to the south. Typical forests are mixed hardwoods that include sugar maple, beech, and yellow birch; mixed forests with hardwoods include, eastern hemlock, and white pine; and spruce-fir forests include balsam fir, red spruce, and birches. In swampy areas, black spruce, white spruce, red maple, black ash, and tamarack dominate (CEC 2011).

Characteristic wildlife are moose, black bear, white-tailed deer, red fox, bobcat, snowshoe hare, porcupine, fisher, raccoon, beaver, rabbit, flying squirrel osprey, red-tailed hawk, wild turkey, ruffed grouse, pileated woodpecker, blue jay, common loon, and red-back salamander (CEC 2011).

#### **4.6.1.2 Terrestrial Habitat and Wildlife Resources in the Newbury Project Area**

##### **4.6.1.2.1 Terrestrial Habitat**

The Newbury Project area has limited terrestrial habitat. The Project is entirely bordered by U.S. Route 302 to the south (Photo 4.8). The Project boundary itself has small margins and generally follows the shoreline of the river. There are some naturalized areas to the north of the impoundment, however these are fragmented due to a gravel pit that is just north of the area. The areas around the dam and powerhouse are occupied by buildings and parking areas for the business that inhabit them. The bypass reach has fairly steep ledges creating a channel environment. The downstream portion is a naturalized river channel buffered by vegetation on either side that is again fragmented due to U.S. Route 302 to the south and private residences to the north.



**Photo 4.8 Limited Roadside Vegetation Along Newbury Impoundment**

Much of the dam and powerhouse area is composed of a parking lot where the landowner conducts commercial business. GMP occasionally weed whacks the minimal vegetation surrounding the dam, intake, and powerhouse area (Photo 4.9; Photo 4.10; Photo 4.11). GMP maintains the area to ensure dam safety and makes a point to trim vegetation growth back from Project structures one to two times per year to ensure there is no growth within 15-feet of structures.





**Photo 4.9 Minimal Vegetation Area Maintained Immediately Upstream of Dam and Intake Area**



**Photo 4.10 Minimal Vegetation Area Maintained Around Dam and Intake Area**





**Photo 4.11 Minimal Vegetation Area Maintained Downstream of Minimum Flow Unit**

According to the VTFWD analysis of habitat blocks in Vermont, the Newbury Project area, which is a riparian corridor, is classified as the highest priority for both significance of wildlife habitat and/or wildlife corridor due to the location along the Wells River (VTFWD 2015b, VANR 2021b). While not a regulatory designation, this marks the importance of maintaining forested corridors along Vermont's waterways. Within the Wells River Watershed are both the Groton State Forest, located approximately 12 miles upstream of the Newbury Project, and Pine Mountain Wildlife Management Area located approximately 6 miles upstream of the Newbury Project (VCGI 2017).

#### **4.6.1.2.2 Wildlife Resources**

Approximately 58 mammal species are recorded as present in Vermont and 47 species are likely to occur within the Newbury Project vicinity (see list Appendix G, Table G-1 for a complete list of species likely to occur within the Project vicinity) (VTFWD 2017a). Common mammals that are characteristic of habitats likely occurring in the Newbury



Project area include white-tailed deer, black bear, bobcat, coyote, grey fox, red fox, fisher, raccoon, and a number of small mammals.

The Newbury Project area provides habitat for reptiles and amphibians. Turtles are often seen within the impoundment during the summer months. G-2 in Appendix G lists the 24 known species of reptiles and amphibians that occur in Vermont (VTFWD 2017b). The Breeding Bird Atlas of Vermont cites 146 bird species present within Orange County, Vermont all of which are included in Table G-3 in Appendix G (BBAE 2018). Both migratory and non-migratory birds are present in Vermont and are anticipated to use habitats within the Newbury Project area at least in part for feeding, nesting, mating, or as a travel corridor. Fish and aquatic invertebrates that may use open water aquatic habitat are described in Section 4.5, *Fish and Aquatic Resources*.

#### **4.6.1.3 Invasive Wildlife Species**

Invasive wildlife that may occur within the Newbury Project area include a number of invertebrate pests. The emerald ash borer, which is an invasive insect that infests and kills native ash trees, is a significant threat to northern forests. While not documented within the Newbury Project area, an initial detection of the Emerald Ash Borer was found in Washington County, Vermont, and is known to exist in northern Orange County, Vermont (USFS 2018; USDA 2018). Hemlock woolly adelgid is a small, aphid-like insect that feeds exclusively on hemlock species, the adelgid is not widespread and was not documented in Orange County but is known to exist in Vermont (USFS 2016).

#### **4.6.1.4 Temporal and Spatial Distribution of Wildlife Resources**

Species considered important because of their commercial, recreational, or cultural value are not likely to use the Project area and immediate surrounding lands for permanent habitat as the area is fragmented by residential development and the U.S. Route 302 corridor. Most terrestrial species common to the area are likely habitat generalists, and therefore are likely found in a variety of habitats throughout the Project vicinity. Larger species may cross through the Project area due to the location of the Project along a river corridor. Migratory waterfowl species, such as the mallard and black duck, would be expected to occupy the Project area during breeding season. Similarly, neotropical avian species such as various flycatchers and warblers, likely occupy the lands surrounding the Project during the spring, summer, and fall before returning to the tropics of Central and South America during the winter season. Passerine species may inhabit the forested,

shrubland areas, roadsides, and residential areas of the Project area. Additionally, as noted above, there are likely many avian species that make their homes in or utilize the littoral zones of the Project area.

#### **4.6.2 Environmental Effects**

##### **4.6.2.1 Effects of Existing Project Operations on Wildlife and Terrestrial Resources**

The Newbury Project as currently operated has very limited effects on wildlife resources or terrestrial habitat. The current flow regime adequately protects wildlife habitat upstream and downstream of the Newbury dam. Stable run-of-river impoundment elevations upstream of the dam create consistent habitat for wildlife.

GMP's continued maintenance activities inclusive of occasional weed whacking of the minimal vegetation surrounding the dam, intake, and powerhouse area is not anticipated to negatively affect wildlife or terrestrial resources. GMP maintains the area to ensure dam and operations safety.

Potential required maintenance activities and associated drawdowns do have the potential to affect wildlife resources and terrestrial habitat upstream of the Newbury dam. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

##### **4.6.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations). Stable run-of-river impoundment elevations upstream of the dam create consistent habitat for wildlife. The proposed changes to the aesthetic flow and minimum bypass flow regime are not expected to affect wildlife or terrestrial resources.

To avoid negative effects to wildlife or terrestrial resources, GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur

often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

GMP proposes to continue weed whacking as a continued maintenance and dam safety measure around the dam, intake, and powerhouse areas. GMP does not anticipate that this continued maintenance measure will have adverse effects on the disturbed, roadside and parking lot adjacent habitat features present next to these project structures.

In regard to potential impacts on avian species, as noted in Exhibit A, there are three 150-foot-long generator leads that create a 480 V, 3-phase 150-foot underground transmission line that connects to three pole mounted 167 KVA step-up transformers located adjacent to the Project powerhouse area. Transformer infrastructure associated with the Project is very minimal and this Project is connected to a typical distribution system set up. Like all other GMP hydroelectric generating facilities, there are no Newbury Project components that would necessitate avian protection measures or known species that would necessitate such measures.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment has the potential to temporarily impact wildlife and terrestrial resources along the shoreline during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the proposed access area designs will require only short-term temporary construction related effects on terrestrial resources. The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. The presently utilized informal access area largely consists of the old U.S. Route 302 roadbed with grown up grasses, shrubbery, and small trees. GMP will additionally work to gain necessary federal, state, and local permit approvals and ensure that proper protective measures are in place for construction of the access area per permit approvals.

GMP's proposal to reduce the Project boundary by removing any non-Project related structures from the boundary is not expected to have any effect on wildlife or terrestrial resources within the Newbury Project area.

#### **4.6.3 Unavoidable Adverse Effect**

None anticipated. Continued operation and relicensing of the Newbury Project as proposed is not expected to have unavoidable adverse effects to wildlife resources or terrestrial habitat.

## **4.7 Botanical Resources**

### **4.7.1 Affected Environment**

#### **4.7.1.1 Overview of Upland Botanical Resources**

The Newbury Project area consists of limited upland space. Though the impoundment area is surrounded by a vegetated shoreline buffer, the shoreline along both sides of the impoundment margins is steep and narrow. The shoreline along the bypassed reach and tailwater area is also steep and narrow and consists of ledge wall with forest growth situated at the top of the bank.

Much of the dam and powerhouse area is composed of a parking lot where the landowner conducts commercial business. GMP occasionally weed whacks the minimal vegetation surrounding the dam, intake, and powerhouse area (Photo 4.9; Photo 4.10; Photo 4.11). GMP maintains the area to ensure dam safety and makes a point to trim vegetation growth back from Project structures one to two times per year to ensure there is no growth within 15-feet of structures.

Within the Newbury Project area, upland forested habitat is present primarily along the northern shoreline. These areas are dominated by commonly occurring habitats known to the Southern Vermont Piedmont region including Northern Hardwood Forest and Oak-Pine-Northern Hardwood Forest (VTFWD 2005). Northern Hardwood Forest community types occur at Vermont's middle elevations and the habitat is widespread in the state. Beech, sugar maple, and yellow birch are the prominent tree species in Northern Hardwood Forest communities. Northern Hardwood Forest communities additionally commonly contain hemlock, red oak, red maple, white ash, basswood, white pine, and some scattered red spruce (VTFWD 2005).

Portions of the Newbury Project area shoreline, including dry south facing slopes likely include Oak-Pine-Northern Hardwood Forests. In these habitats, hardwoods such as sugar maple, beech, and yellow birch are common, but warmer climate species such as red oak, shagbark hickory, and white oak can be present in significant numbers. White pine is normally a prominent part of this formation (VTFWD 2005).

#### **4.7.1.2 Wetlands, Riparian, and Littoral Habitat**

##### **4.7.1.2.1 Wetland Habitat**

The National Wetland Inventory (NWI) identifies 10 acres of freshwater wetland within the Newbury Project area (Table 4.16; Figure 4.10; Photo 4.12) (NWI 2021). Open water wetlands (PUB) are most prevalent (6.7 acres). Permanently flooded open water wetlands are characterized by small particles and vegetative coverage of less than 30%. Emergent wetlands within the Project area account for 2.9 acres of wetland. All emergent wetlands are mapped as persistent, temporary flooded, emergent wetland. These wetlands are characterized by shallow emergent marsh which is a common and variable marsh type with mineral or shallow organic soils that are moist to saturated and only seasonally inundated. Several grasses, bulrushes, and joepy weed may be abundant. Other species such as sedges and cattail may also occur (VTFWD 2005). Invasive species may occur within wetlands, particularly species such as common reed which are an aggressive colonizer of wetland habitats, particularly along roadsides and rivers.

Wildlife utilization of wetlands varies depending on wetland type, but wetlands are important to several species of waterfowl such as black ducks and mallard ducks. Wetlands provide important habitat for several species of amphibians and reptiles including green frogs, eastern newts, and snapping turtles. Wetlands often provide important foraging and cover opportunities.

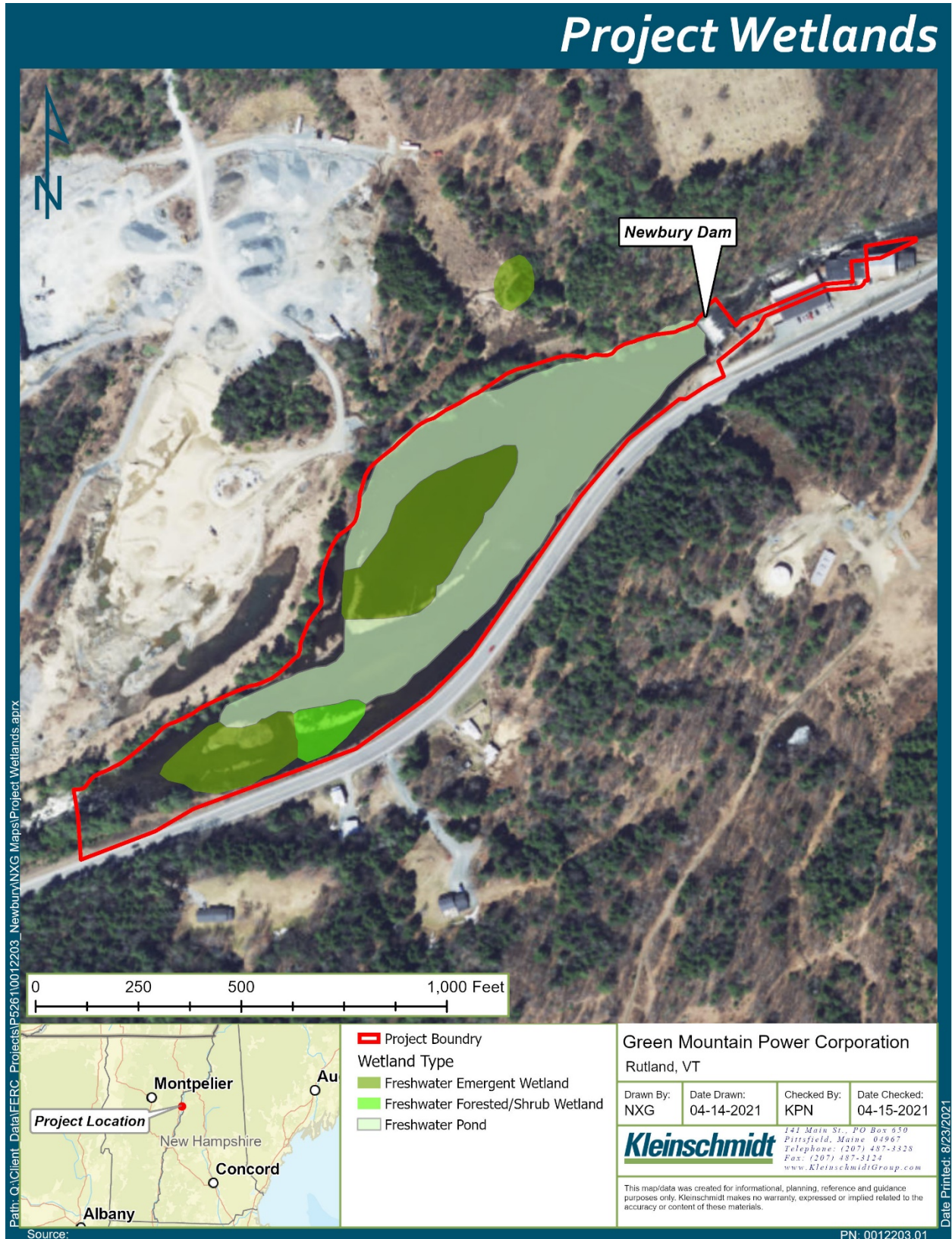
No forested wetlands are mapped within the Newbury Project area (NWI 2021). The only wooded wetland type identified is an area of palustrine scrub-shrub wetland (PSS). The PSS wetland identified is deciduous and temporary flooded. This common natural community type is found on alluvial soils in the floodplains of small rivers. This riverine PSS wetland is a high energy, dynamic environment that receives regular flooding and ice scour. While speckled alder is the dominant species in this wetland, black willow, and boxelder can be very abundant under certain conditions. Ostrich fern typically dominates the ground layer although some grasses, herbs, and vines can also be common in more sheltered areas (VTFWD 2005). Figure 4.10 shows the locations of wetlands identified by the NWI within the Project area.



**Table 4.16 Wetland Types Identified within the Newbury Project Area**

<b>Wetland Type</b>	<b>Cowardin Class</b>	<b>Acres</b>
Freshwater Pond	PUBHh	6.7
Freshwater Emergent Wetland	PEM1Ah	0.5
Freshwater Forested/Shrub Wetland	PSS1Ah	0.4
Freshwater Emergent Wetland	PEM1/USAh	1.0
Freshwater Emergent Wetland	PEM1Ch	1.4
<b>Total</b>		<b>10.0</b>

Source: NWI 2021



**Figure 4.10 Wetlands Within the Newbury Project Area**



**Photo 4.12 Wetland Habitat within Newbury Project Impoundment (View from Upper Middle Impoundment Area Looking Downstream)**

#### **4.7.1.2.2 Littoral Habitat**

The littoral zone is the transitional zone from the shoreline habitat to an entirely aquatic zone (Cowardin et al. 1979). The littoral zone includes emergent vegetation, floating vegetation, as well as submerged aquatic vegetation. In Vermont, common shoreline emergent plants include pickerel weed, cattail, arrowhead, and a variety of sedges and grasses. Floating-leaved plants include yellow water lily, white water lily, bur-reed, and smartweed. Common submerged vegetation found within Vermont littoral zones include coontail, muskgrass, waterweeds, pondweeds, and wild celery (VDEC 2016). Common wildlife includes wading birds such as great blue herons and waterfowl. Turtles such as painted turtles are commonly found in the littoral zone foraging or basking on exposed logs. Mammals such as raccoons or striped skunk are commonly found foraging along



the shore and in the shallow waters of the littoral zone. The littoral zone is also often susceptible to invasion by invasive species, such as purple loosestrife or yellow iris due to the proximity to the waterway (which often provides transport of seeds or root material).

#### **4.7.1.2.3 Riparian Habitat**

Riparian habitat within Vermont is dominated by forested floodplains, wetlands, and uplands (Cowardin et al. 1979). Floodplain forests are usually dominated by silver maple or occasionally sugar maple, with abundant ostrich fern or sensitive fern. Upland shore communities often occur as small patches intermixed and include areas of forested and meadow areas alongside riverside outcrops which is sparsely vegetated, primarily by herbaceous species with only a few shrubs and vines able to withstand the regular disturbance regime. A wide range of wildlife may utilize riparian forests. These areas are often used as travel corridors and larger species such as white-tailed deer are commonly found using riparian habitat for forage and cover. Any number of smaller species include small mammals, birds, and herptiles may utilize these habitats.

Within the Newbury Project area, a majority of the shoreline is dominated by mixed hardwood and softwood forest, particularly along the northern shoreline. Along the Project's northern shoreline there is a narrow band of upland forest, just beyond the narrow riparian fringe is a sand and gravel pit (outside of the Project boundary). The Project's southern shoreline is directly adjacent to U.S. Route 302 which limits the potential for significant woody riparian vegetation. Invasive species often found within riparian habitats include species such as garlic mustard or oriental bittersweet.

#### **4.7.1.3 Invasive Plants and Noxious Weeds**

Approximately one-third of the plant species found in Vermont are not native to the state (VTFWD 2005). Approximately eight percent of Vermont's non-native species have the potential to create environmental and economic harm due to their ability to grow rapidly, profusely, and widely. Often invasive species occur along rivers and waterbodies because these locations are used for recreation which may introduce species, and the ability for many species to infest shorelines through transportation of vegetation fragments.

Vermont has a noxious weed quarantine that was created to regulate the importation, movement, sale, possession, cultivation and/or distribution of certain invasive plants. Table G-4 included within Appendix G lists the species included on Vermont's noxious

plant list that may occur within the Newbury Project area (VTFWD 2005). These listed species either pose a threat the Vermont environment or are already negatively impacting waterways and natural areas in the state. Based on a review of the Vermont Aquatic Invasive Species Map, there are no known infestations of aquatic invasive species within the Newbury Project area (VDEC 2021).

The Vermont Natural Resource Atlas was additionally reviewed for identification of any invasive plant species occurring within the Newbury Project area (VANR 2020c). Review of the Atlas does not identify any documented invasive plant species within the Project area.

#### **4.7.2 Environmental Effects**

##### **4.7.2.1 Effects of Existing Project Operations on Botanical Resources**

The Newbury Project as currently operated has very limited effects on botanical resources. Stable run-of-river impoundment elevations upstream and downstream of the Newbury dam create consistent habitat.

Potential required maintenance activities and associated drawdowns do have the potential to affect botanical resources upstream of the Newbury dam. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

##### **4.7.2.2 Proposed Action**

GMP proposes to continue to operate the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except during brief periods of maintenance or emergency operations). The proposed changes to the aesthetic flow and minimum bypass flow regime are not expected to affect botanical resources.

GMP's continued maintenance activities inclusive of occasional weed whacking of the minimal vegetation surrounding the dam, intake, and powerhouse area is not anticipated to negatively affect botanical or wildlife resources. GMP maintains the area to ensure dam and operations safety.

To avoid negative effects to botanical resources, GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment has the potential to temporarily impact soils and cause erosion along the shoreline during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the proposed access area designs will require only short-term temporary construction related effects on terrestrial resources. The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. The presently utilized informal access area largely consists of the old U.S. Route 302 roadbed with grown up grasses, shrubbery, and small trees. GMP will additionally work to gain necessary federal, state, and local permit approvals and ensure that proper erosion and sediment control measures and vegetation protection measures are in place for construction of the access area per permit approvals.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on botanical resources within the Newbury Project area.

#### **4.7.3 Unavoidable Adverse Effects**

None anticipated. Continued operation and relicensing of the Newbury Project as proposed is not expected to result in unavoidable adverse effects to botanical resources, or to adversely affect botanical, wetlands, littoral, or riparian resources.



## **4.8 Rare, Threatened, and Endangered Species**

### **4.8.1 Affected Environment**

#### **4.8.1.1 Overview**

The rare, threatened, and endangered (RTE) and special status species are defined for purposes of this document to include all plant and animal species that are listed, proposed for listing, or candidates for listing under federal and state endangered species acts and those listed by the USFWS or the VTFWD as sensitive or special status species.

#### **4.8.1.2 Species of Interest**

The USFWS Information for Planning and Conservation (IPaC) online database was reviewed to identify federally protected species that may occur near the Newbury Project area. Based on the IPaC Official Species Report results, there is one federally threatened species, the northern long-eared bat (*Myotis septentrionalis*), which may occur within the Newbury Project area (USFWS 2021). The northern long-eared bat is listed as an endangered species in Vermont (Appendix C; VTFWD 2015a).

As identified within the USFWS IPaC Report, a number of migratory birds protected under the Federal Migratory Bird Treaty Act and the Federal Bald and Golden Eagle Protection Act may potentially occur within the Project area. The bald eagle (*Haliaeetus leucocephalus*) and rusty blackbird (*Euphagus carolinus*) are both identified on this list and are additionally listed as an endangered species in the state of Vermont (VTFWD 2015a).

Based on an official response obtained from the USFWS IPaC Report, a review of the Vermont Natural Resource Atlas, and communications with VANR staff, there are no rare, threatened, or endangered botanical resources or habitats identified as occurring within the Newbury Project area (USFWS 2021; VANR 2020c; Bob Popp, personal communication April 9, 2018).

##### **4.8.1.2.1 Northern Long-Eared Bat**

The northern long-eared bat is one of a number of North American bat species which have experienced a significant population decline as the result of the white-nose syndrome (USFWS 2020b). White-nose syndrome is a fungal disease affecting hibernating

bats that was introduced to the east coast of North America in 2006. Named for the white fungus that appears on the muzzle and other parts of hibernating bats, white-nose syndrome is associated with extensive mortality of bats in eastern North America (USFWS 2020b).

The northern long-eared bat range is extensive, and spreads across the northeast United States, into the northcentral United States, and north into the Canadian provinces. Under the Federal ESA protection, the bat is protected across its entire U.S. range of 37 states. Northern long-eared bats hibernate in caves and abandoned mine shafts in Vermont during the winter, and during the summer will often roost in crevices, cavities, or under exfoliating bark of trees in forested areas and in certain instances on bridges and other structures (USFWS 2020b). According to the VTFWD Natural Heritage Inventory (NHI), and in accordance with direct communications with the VTFWD, there are no known winter hibernacula or known summer maternity roost sites within the Newbury Project boundary or within at least 1-mile of the boundary, which is the typical distance threshold used for USFWS consideration of potential impacts from projects (Tim Appleton, personal communication April 12, 2018). Given there is not a known winter hibernaculum or summer maternity roost site within the Newbury Project boundary or buffer area, it is likely that any northern long-eared bats utilizing the Newbury Project area would be utilizing the riparian and impoundment areas for feeding purposes or as a travel pathway.

The 2016 USFWS Programmatic Biological Opinion on Final 4(d) Rule for the northern long-eared bat and Activities Excepted from Take Prohibitions addresses the effects to the northern long-eared bat resulting from the USFWS's finalization of a special rule under the authority of Section 4(d) of the ESA (USFWS 2016a). The USFWS Threatened listing of the northern long-eared bat includes an ESA Section 4(d) rule, for which due diligence measures have been defined, if followed, allow tree cutting activities to proceed in the absence of known, occupied hibernacula or summer roost trees in the vicinity without requiring a Federal Takings Permit. Tree clearing is not currently proposed for continued run-of-river operations at the Project.

#### **4.8.1.2.2 Bald Eagle**

The bald eagle is listed as endangered in the state of Vermont (VTFWD 2015a). In Vermont, bald eagle numbers have increased substantially over the past 20 years, and Vermont now has 40 known pairs. Vermont completed a reintroduction program from

2004-2006, which released 29 eagles, in Addison Vermont. The bald eagle has reached its recovery goals in Vermont and has been proposed for removal from the State Endangered Species List (Audubon 2021a).

The Northern States Bald Eagle Recovery Plan was published in 1983 (USFWS 1983). The primary recovery objective is to reestablish self-sustaining populations of bald eagles throughout the Northern States Region (Region). An initial, tentative goal was to have 1,200 occupied breeding areas distributed over a minimum of 16 states within the Region by the year 2000, with average annual productivity of at least 1.0 young per occupied nest. In 2007 the bald eagle was delisted from the federal ESA, after confirming that populations had reached recovery goals (USFWS 2020a). The bald eagle still maintains protection under the Federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Bald eagle habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering. Bald eagles often select tops of large trees to build nests and typically return each year. Nests may reach 10-feet in diameter and weigh a half ton. They may have one or more alternate nests within their breeding territory. The breeding season occurs over a period from December 1<sup>st</sup> to August 31<sup>st</sup> (USFWS 2020a). Bald eagles likely occur temporarily, utilizing trees for perching and the impoundment and shoreline for foraging within the Newbury Project area.

#### **4.8.1.2.3 Rusty Blackbird**

The rusty blackbird was listed as endangered in Vermont in 2015 (VPR 2015). Some scientists believe that the total population of this species may have declined by more than 80 percent in recent decades (Audubon 2021b). Vermont is in the southern edge of the species' boreal forest breeding habitat (IRBTG 2009). The rusty blackbird may be present within the Newbury Project area during the breeding season (May 10<sup>th</sup> to July 20<sup>th</sup>). The rusty blackbird prefers forested wetlands, particularly wet coniferous forests. During the breeding season, the species is often found in spruce bogs. Nesting habitat is typically located within dense cover in coniferous trees or shrubs, typically above the water. The rusty blackbird forages by wading in shallow water or wetlands searching for prey. The diet consists of insects including caddisflies, mayflies, dragonflies, and water beetles (Audubon 2021b).

Within the Newbury Project area, the rusty blackbird would likely occur as a transient species during migration or for short periods of time. The Project area does not support any mapped forested wetlands or large areas of dense coniferous forests which are characteristic of rusty blackbird habitat. There is no designated critical habitat for this species (USFWS 2021).

## **4.8.2 Environmental Effects**

### **4.8.2.1 Effect of Project Operations on Rare Threatened and Endangered Species**

Typical run-of-river Project operations are not anticipated to impact the northern long-eared bat, bald eagle, or rusty blackbird that may transiently utilize the Newbury Project area.

Maintenance activities such as impoundment drawdowns or tree clearing have the potential to affect RTE species that may transiently utilize the Project area. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat. In the case of tree removal, GMP would additionally follow time of year restrictions and consult with pertinent resource agencies regarding proposed removal plans.

### **4.8.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations). The proposed changes to the aesthetic flow and minimum bypass flow regime are not expected to affect RTE species.

To avoid negative effects to RTE species, GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

Additionally, for any activities requiring clearing of trees 4 inches diameter base height or greater, GMP proposes to abide by seasonal tree clearing restrictions and only clear trees between November 1st – April 14th. Should tree clearing be required during the restricted time period (April 15th – October 31st), GMP will consult with the USFWS and VTFWD regarding removal needs.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment could have the potential to temporarily impact the northern long-eared bat, bald eagle, or rusty blackbird that may transiently utilize the Newbury Project area during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the proposed access area designs will require only short-term temporary construction related effects on terrestrial resources. The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. The presently utilized informal access area largely consists of the old U.S. Route 302 roadbed with grown up grasses, shrubbery, and small trees. GMP will additionally work to gain necessary federal, state, and local permit approvals and ensure that proper protections are in place surrounding potential RTE species presence per permit approvals.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on RTE species that may occur within the Newbury Project area.

#### **4.8.3 Unavoidable Adverse Effects**

None. Continued operation of the Newbury Project as proposed is not expected to have unavoidable adverse effects on identified RTE species.

## **4.9 Recreational Resources and Land Use**

### **4.9.1 Affected Environment**

#### **4.9.1.1 Overview**

The Newbury Project is located in east-central Vermont; this region provides numerous recreation opportunities as well as a mix of landscapes including mountains, lakes, rivers, and forests.

An Outdoor Recreation Demand Survey completed by the University of Vermont (UVM) in 2011 found that the most popular outdoor activities of Vermont residents were (in order of decreasing popularity) hiking, walking, hunting, fishing, swimming, biking, camping, snowshoeing, snowmobiling, and skiing (VANR 2013). A survey of visitors to Vermont completed in 2012 to 2014 by UVM found that in winter the most popular recreation activities were sightseeing, food and drink experiences, shopping, skiing, and farms/farmer's markets (UVM 2021). The most popular activity in summer was sightseeing followed by hiking/backpacking, shopping, food and drink experiences, historic sites/museums, farms and farmer's markets, viewing wildlife, canoeing/kayaking, and factory tours. Natural attractions (i.e., mountains, state parks, lakes, wildlife) were rated as the most important type of attraction to visit (UVM 2021).

#### **4.9.1.2 Recreation**

##### **4.9.1.2.1 Regional Recreation Opportunities**

Numerous opportunities to pursue a wide variety of recreation activities throughout the entire year exist within east-central Vermont. The Groton State Forest is approximately 15 RM northwest of the Newbury Project in the towns of Groton and Peacham, Vermont. Groton State Forest consists of over 26,000 acres with more than 17 miles of hiking trails and over 20 miles of multi-use trails (VANR 2018a). It is the second largest state forest in Vermont (NEK Chamber 2018). Groton State Forest includes seven state parks (Ricker Pond State Park, Stillwater State Park, New Discovery State Park, Kettle Pond State Park, Big Deer State Park, Boulder Beach State Park, Seyon Lodge State Park), the Groton Nature Center, eight lakes and ponds, and several state designated natural areas (i.e., Peacham Bog Natural Area, Lords Hill Natural Area) (VANR 2018a). The Groton State Forest provides opportunities for primitive camping, hiking, picnicking, boating, fishing, swimming, horseback riding, snowshoeing, and cross-country skiing.



The Northeast Kingdom region of Vermont is just north of the Newbury Project and includes Caledonia, Essex, and Orleans Counties. This region of Vermont is known for scenic mountains, valleys, lakes, and art and culture centers and includes 37,575 acres of public lakes and ponds and 3,840 miles of public rivers and streams (NEK Chamber 2018). State parks in this region include Maidstone State Park in Maidstone, Brighton State Park in Island Pond, and Crystal Lake State Park in Barton; these parks provide amenities for camping, swimming, boating, canoeing, hiking, and picnicking. Burke Mountain and Jay Peak are popular skiing destinations in the Northeast Kingdom. Kingdom Trails consists of approximately 1,500 miles of unpaved roads for hiking and biking; the Bayley-Hazen Military Road Trail begins near the mouth of the Wells River and extends approximately 90 miles to the northwest (NVDA 2018).

#### **4.9.1.2.2 County and Municipal Recreation Opportunities**

Local access to the Wells River is provided via the:

Wells River Wildlife Area – The VTFWD owns a hand carry boat access area that is located off of U.S. Route 302, approximately 1 RM upstream of the Newbury dam (Photo 4.13);



**Photo 4.13 Wells River Wildlife Area**

Haverhill Bridge Boat Launch – The Town of Haverhill owns a boat ramp that accommodates all boat types and is located on the Connecticut River approximately 10 RM downstream of the confluence with the Wells River (VANR 2018b).

Halls Lake is not connected to the Wells River but is located approximately 5.5 miles southwest of the Newbury Project. The Town of Newbury provides public access to the Lake beach in the summer (Town of Newbury 2015).

The various sections of the Wells River Conservation Trail System provide over four miles of trails throughout the Wells River Valley (NCC 2018a). The Montpelier and Wells River Rail Trail is a 1.7-mile trail along a former railroad bed (UVTA 2018). The Cross Vermont Trail is an 85-mile multi-use trail that begins near the mouth of the Wells River, extends west to the Groton State Forest, and continues west to Burlington in western Vermont (UVTA 2018). The Blue Mountain Trail is 1.4 miles long and leads to the Wells River Conservation Area; this trail connects with the Cross Vermont Trail. The Boltonville Nature Trail is 0.6-mile spur of the Cross Vermont Trail and provides views of a small gorge on the Wells River (NCC 2018a).

Several opportunities for visiting unique ecological areas are also available within the vicinity of the Newbury Project. The Wells River Conservation Area, located approximately 1.5 RM upstream of the Project, contains diverse wetlands and forestlands. Peacham Bog in Groton State Forest, located approximately 15 RM northwest of the Newbury Project, contains hiking trails and opportunities for viewing unique plant and wildlife habitat. Tucker Mountain, Woodchuck Mountain, and the Newbury Town Forest are located approximately seven miles southwest of the Newbury Project and are used for scenic viewing, hiking, bird watching, wildlife viewing, picnicking, snowshoeing, and cross-country skiing and include several different natural community types (i.e., swamps, hardwood forest, vernal pools, wetlands) (VLT 2016; NCC 2018b).

The Wells River is not designated as a National Wild or Scenic River, is not under study for inclusion in the system, and is not adjacent to a river segment that is included in the system. There are no Project lands included in the National Trails System or designated as a Wilderness Area.

#### **4.9.1.2.3 Existing Newbury Project Recreation Opportunities and Use**

GMP leases Newbury Project land and the Project powerhouse area from a private landowner. There are no Project recreation facilities associated with the Newbury Project. Recreational development at the site has not been pursued because of high, steep banks on the river left<sup>17</sup> shoreline, because of the proximity of U.S. Route 302 along the river right<sup>18</sup> shoreline, and because of the commercial use of the parking lot associated with the Project dam and powerhouse area. In 1992, FERC granted the Newbury Project an exemption from filing the FERC Form 80 because there was only minor existing or potential recreational use of the Project (FERC 1992)<sup>19</sup>.

In accordance with consultation with DEC, CRC, and American Whitewater, GMP understands that paddlers utilize the reach of the Wells River located upstream of the Project impoundment for whitewater boating. American Whitewater has expressed interest in enhancing an existing, informal access area located along the upper edge of the Newbury Project impoundment and just within the Newbury Project boundary.

GMP met with a landscape architect consultant during July 2020 to conduct a reconnaissance exercise to better understand the existing informal upstream whitewater access areas located above the Project impoundment and to begin developing conceptual access improvement concepts to share with interested stakeholders. Due to safety precautions surrounding the COVID-19 pandemic in summer 2020, GMP did not immediately move forward with holding a group site meeting to discuss potential recreation enhancement ideas. On June 30, 2021, GMP hosted a recreation site meeting with interested resource agencies and stakeholders. The purpose of this meeting was to better understand recreational uses occurring around the Newbury Project and to evaluate potential needs and improvement options for access. Representatives from VTFWD, DEC, Town of Newbury, American Whitewater, CRC, and Chief Logging and Construction Inc. (local landowner) participated in the meeting. The site meeting predominantly reviewed stakeholder interest in establishing improved access to the river in areas located towards the head of the impoundment and further upstream of the impoundment for whitewater use. No interest was expressed in developing recreation access around the immediate area of the Newbury dam or tailrace, but interest for

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<sup>17</sup> River left refers to the left side of the river when looking downstream.

<sup>18</sup> River right refers to the right side of the river when looking downstream.

<sup>19</sup> FERC has since amended regulations to eliminate Form 80 recreation reporting requirements.

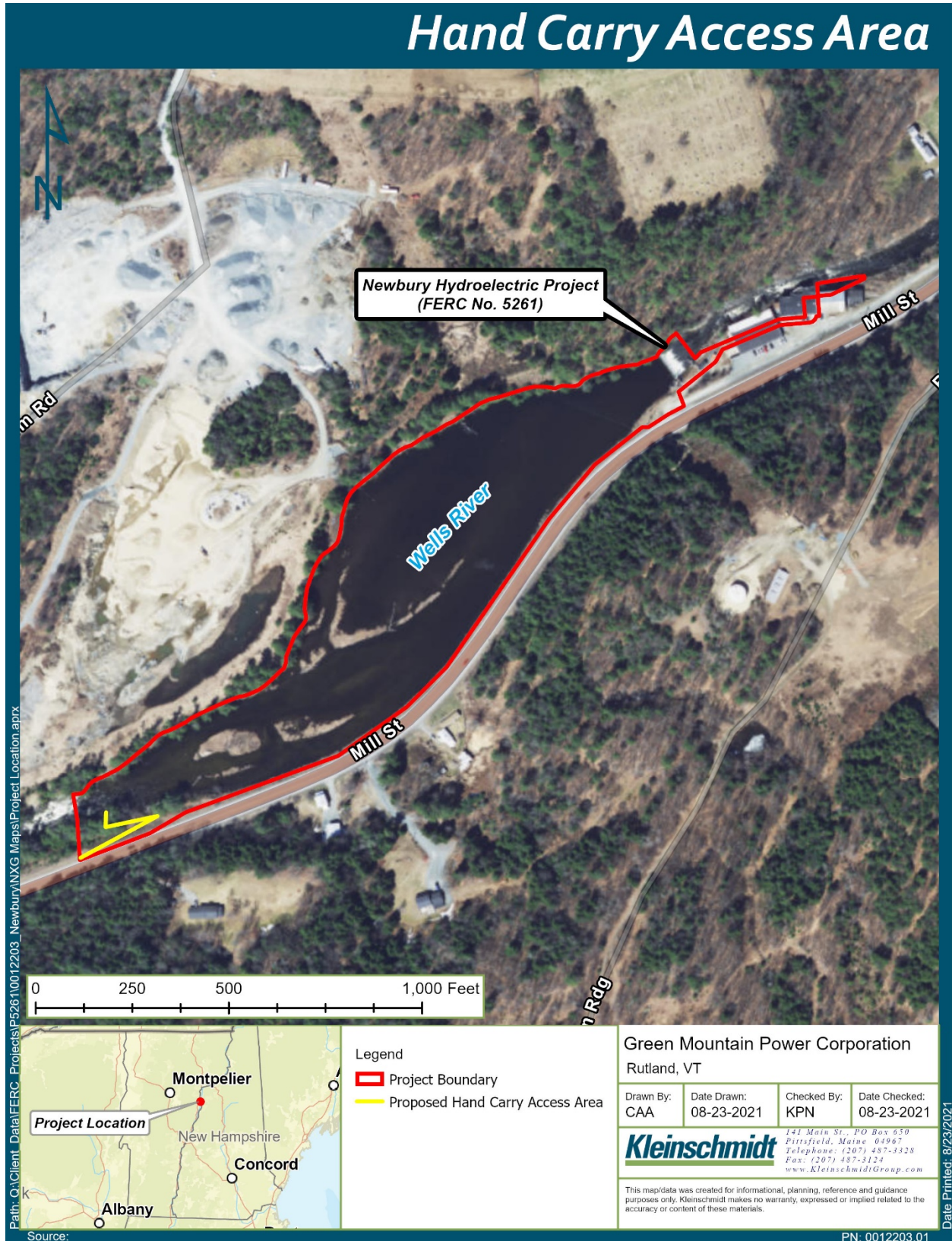
improved access to support informal access occurring upstream of the impoundment was expressed. Stakeholders agreed that an improved access area for hand carry boat access would also improve access for recreational fishing and other general river access uses. Stakeholder interests were reviewed on site at the Newbury dam and then the meeting group toured three sites where boating access is presently occurring upstream of the dam: 1) upper impoundment edge access area; 2) VTFWD Wells River Fishing Access Area; and 3) the Chief Excavating defunct access bridge (to be rehabilitated at a date to be determined). A summary of the June 30, 2021 recreation site meeting is included in Appendix C.

As a result of options discussed with interested stakeholders during the June 30, 2021 site visit, GMP proposes to develop a simple hand carry access area consisting of a possible stairway and access trail (or similar) at the head of the Newbury Project impoundment where informal river access is already occurring (Figure 4.11; Photo 4.14; Photo 4.15 Photo 4.16; Photo 4.17). GMP proposes to develop a simple access area to provide easier access to and from the upper reaches of the Newbury Project impoundment as recreationists are currently scrambling up a steep vegetated embankment with hand carry boats.

During the site visit, it was noted that simple improvements to this informal access area would go a long way in improving existing recreation access. This is a safe location located a good distance upstream of the Newbury dam and is also safely located downstream of the last set of rapids run by whitewater users. This location could additionally provide recreationists other than whitewater users with access to the impoundment for fishing and boating. This location primarily consists of an old, paved section of the U.S. Route 302 roadbed. This area has been disturbed over time and consists of shrubbery and overgrown vegetation that has established itself on the old roadbed.

GMP will work with its landscape architect to develop access area plans in consultation with American Whitewater, VTFWD, DEC, CRC, the Town, and Chief Logging and Construction Inc as a post license compliance measure. It should be noted though that although this added recreational access area is being proposed, none of the land for proposed river access is owned by GMP (appears to be owned by a combination of Chief Logging Inc. and part of a Town of Newbury Right-of-Way). Any recreation improvement concepts would be contingent upon landowner permission and approval as well as ensuring that cultural resources are adequately protected in consultation with the VDHP.





**Figure 4.11 Proposed Hand Carry Access Area**





**Photo 4.14 Existing Conditions at Proposed Hand Carry Access Area. View Towards Improvement Area from Roadside.**





**Photo 4.15 View of Existing Conditions at Proposed Hand Carry Access Area in Fall. Vie of Old U.S. Route 302 Roadbed as well as View Looking Downstream Towards Dam.**





**Photo 4.16 Existing conditions at Proposed Hand Carry Access Area. Note Old Access Roadbed. View Looking up Towards Road.**





**Photo 4.17 Existing Conditions Along Shoreline. Note End of Last Set of Rapids to the Left**

#### **4.9.1.3 Land Use**

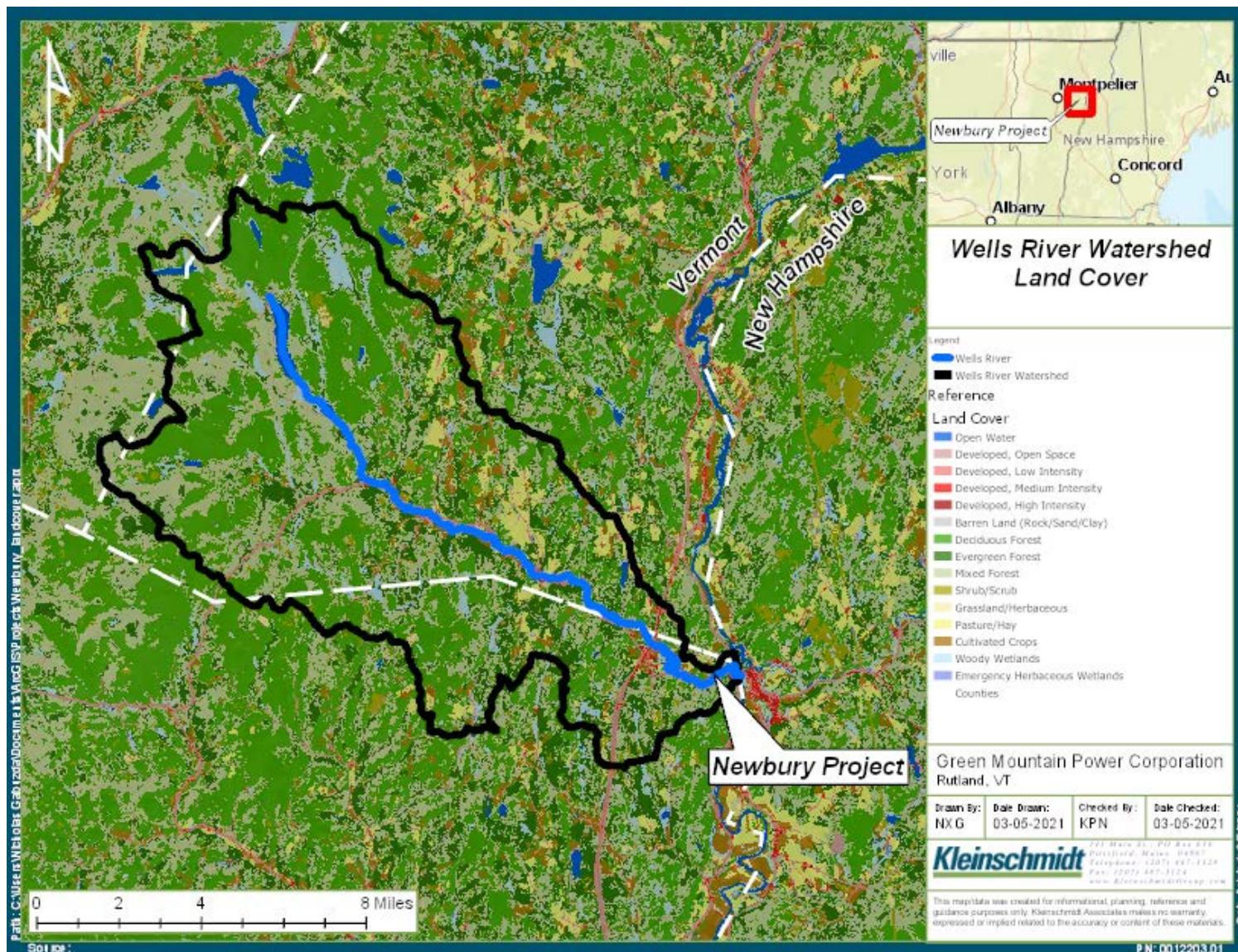
The Wells River watershed is approximately 102 square miles (VCGI 2014). The dominant land cover class in the Wells River watershed is forest (81 percent) followed by nearly equal amounts (approximately 4 percent each) of developed land, pasture/hay, and woody wetlands (Table 4.17; Figure 4.12) (VCGI 2014). Open water constitutes approximately 1 percent of the area.

**Table 4.17 Wells River Watershed Land Cover**

Land Cover Type	Area (Square Miles)	Percent
Open Water	1.26	1.3%
Developed	4.13	4.1%
Barren Land	0.06	0.1%
Deciduous Forest	38.87	38.8%
Evergreen Forest	13.41	13.4%
Mixed Forest	29.19	29.1%
Shrub, Scrub	2.28	2.3%
Grassland/Herbaceous	0.56	0.6%
Pasture/Hay	3.64	3.6%
Cultivated Crops	2.82	2.8%
Woody Wetlands	3.87	3.9%
Emergent Herbaceous Wetlands	0.08	0.1%

Source: VCGI 2014



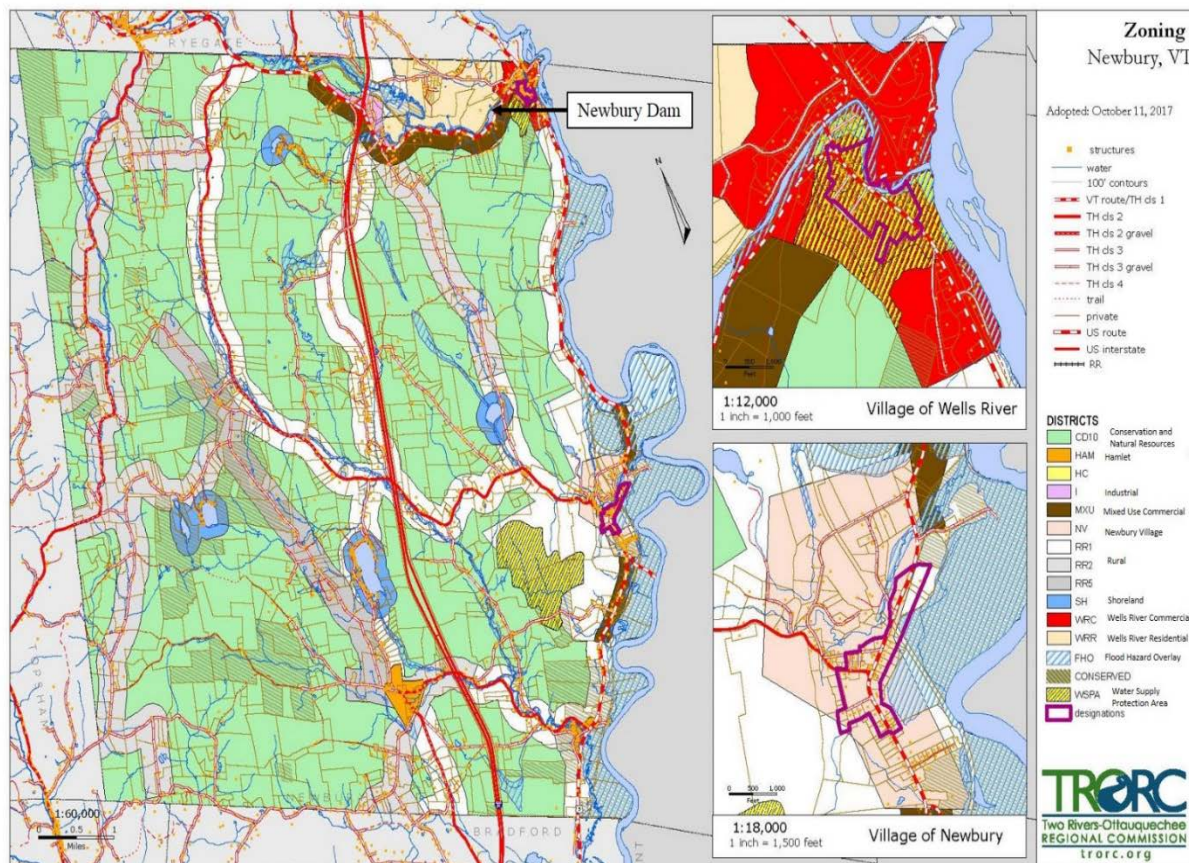


Source: VCGI 2014

**Figure 4.12 Wells River Watershed Landcover**



The Newbury Project resides completely within the Village of Wells River in the northern section of Newbury in Orange County, Vermont. Newbury consists of several small villages and hamlets and is largely composed of forest and agricultural land (Figure 4.13). Approximately 70 percent of Newbury's land consists of forest parcels of 20 acres or more (Town of Newbury 2015). The Village of Wells River includes the main commercial and retail section of Newbury as well as a historic district (Town of Newbury 2015) (Figure 4.13).



Source: Town of Newbury 2015

**Figure 4.13 Zoning Map of the Town of Newbury, Vermont**

Project lands are not owned but leased by GMP for operation of the hydroelectric facility. GMP leases the dam and space within the non-Project mill building to house the Newbury Project's powerhouse components. Multiple businesses are currently operating out of the former mill building and GMP is one of a few business tenants who utilize the

site/property. For safety purposes, access to the dam, minimum flow generating unit (Unit No. 2), and powerhouse area is blocked to unauthorized vehicles or public use.

Project lands are additionally not owned but leased by GMP for operation of the hydroelectric facility. One property owner owns the immediate mill property that the dam, intake, penstock, powerhouse, and tailrace areas are located on. The Town of Newbury owns the road shoulder buffer area located along the river right impoundment margin and a private property owner (gravel pit business) owns lands at the upper end of the impoundment on the river right and all lands on the river left of the Project boundary.

Project operations and maintenance are the primary activities that occur on the Newbury Project lands immediately surrounding the dam, intake, and powerhouse. GMP occasionally weed whacks the minimal vegetation surrounding the dam, intake, and powerhouse area. GMP maintains the area to ensure dam safety and makes a point to trim vegetation growth back from Project structures one to two times per year to ensure there is no growth within 15-feet of structures.

#### **4.9.2 Environmental Effects**

##### **4.9.2.1 Effect of Existing Project Operations on Recreation and Land Use**

Maintenance activities have the potential to affect recreation opportunities through impoundment drawdowns or temporary restrictions to public access. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat. Generally, drawdowns and maintenance activities will likely have minimal effects on recreation opportunities in the Project area and will be coordinated with pertinent state and federal agency consultation.

##### **4.9.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations). The proposed changes to the aesthetic flow and minimum bypass flow regime are not expected to affect recreation or land use.



To avoid negative effects to these resources, GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have the potential to have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

GMP proposes to finalize design and construct a hand carry access area at the head of the Newbury Project impoundment pending private landowner approval and consultation surrounding cultural resources. The intent of this access area is to provide safe and more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access. The presently utilized informal access area largely consists of an old access roadbed with grown up grasses, shrubbery, and small trees.

GMP will work to gain necessary federal, state, and local permit approvals and ensure that proper erosion and sediment control measures are in place for construction of the access area per permit approvals. GMP proposes to construct this recreation access improvement within 3 years of receipt of subsequent license (pending landowner approval and permit approvals). Though construction of this access area could temporarily impede recreational access at this location, this proposed action is not expected to have adverse long term adverse effects on area recreation or land use.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on recreation or land use within the Newbury Project area. GMP will consult with FERC upon completion of the hand carry access area construction to finalize the Project boundary as required.

#### **4.9.3 Unavoidable Adverse Effects**

None. Continued operation of the Newbury Project as proposed is not expected to have unavoidable adverse effects on recreation and land use resources.

## **4.10 Aesthetic Resources**

### **4.10.1 Affected Environment**

#### **4.10.1.1 Overview**

The Newbury Project is located just upstream of the Village of Wells River historic district. Upstream of Newbury dam, the Wells River flows south-east through rural, forest, and agricultural land and through small towns including Ryegate, Boltonville, and Groton, Vermont.

Scenic attractions within the vicinity of the Newbury Project include conservation areas, wildlife management areas, state forests, state parks, and scenic byways. Brief descriptions of several scenic attractions near the Newbury Project are provided below.

- The Wells River Conservation Area in Newbury, Vermont, was established for floodplain protection and wildlife conservation. It is approximately 69-acres, contains diverse wetlands and forestlands, and includes approximately 8,000-feet along the Wells River (VRC 2018).
- The Groton State Forest consists of over 26,000-acres and includes seven state parks, the Groton Nature Center, eight lakes and ponds, and several state designated natural areas (VANR 2010).
- The Lords Hill Natural Area is 25-acres within Groton State Forest and contains an old-growth hemlock-northern hardwoods forest (VANR 2018a).
- Peacham Bog Natural Area is a 748-acre state-designated natural area in the Groton State Forest, is the second largest peatland in Vermont, and includes a 125-acre bog (VANR 2018a).
- The Levi Pond Wildlife Management Area is 262-acres in Groton, Vermont (VANR 2018a).
- The Pine Mountain Wildlife Management Area is 2,274-acres in Groton, Newbury, Ryegate, and Topsham, VT (VANR 2018a).
- The 410-mile Connecticut River Byway (Byway) is the only National Scenic Byway in Vermont that passes near the Newbury Project (USDOT 2018). The Byway travels along the Connecticut River from its headwaters in Canada south between the White Mountains in New Hampshire and the Green Mountains in Vermont (CT River Byway 2018). The byway provides numerous opportunities for visiting museums, historic sites, theaters, other arts and culture centers, and state parks; for participating in recreation activities (i.e., hiking, skiing, canoeing/kayaking); and

for lodging, shopping, and eating. The Newbury Project is near the Wells River-Haverhill section of the Byway (CT River Byway 2018).

- The town of Newbury Planning Commission has additionally identified four Scenic Roads within the Newbury town limits (Town of Newbury 2015). These scenic roads extend through rural farmlands, hill country, and forest land and include Rogers Hill Road, Jefferson Hill Road, North Road, and Wallace Hill Road.
- Three historic covered bridges are within approximately 5 miles of the Newbury Project (CT River Byway 2018). The Bath Bridge and the Bath-Haverhill Bridge (the oldest covered bridge in New Hampshire) (CT River Byway 2018) cross the Ammonoosuc River in Woodsville, New Hampshire, which is just east of the Wells River across the Connecticut River. The Swiftwater Bridge crosses the Wild Ammonoosuc River in Bath, New Hampshire.

#### **4.10.1.2 Visual Character of Project Lands and Waters**

The Newbury Project resides within a narrow, straight portion of the Wells River valley (Redstart 2009). The Project's river left bank is steep and forested with ledge outcrops along the impoundment, bypassed reach, and tailwaters (Photo 4.18; Photo 4.19). The Project's river right bank consists of a narrow impoundment shoreline that follows U.S. Route 302, intake, and minimum flow unit (Unit No. 2), and the former Adams Paper Company mill complex which houses the Project powerhouse area within the lower level of the former mill building (Photo 4.20 and Photo 4.22). The Project is momentarily visible from U.S. Route 302 when driving by (Photo 4.21). Much of the dam and powerhouse area consists of a gravel/dirt parking area utilized by the commercial businesses located on the property (Photo 4.22).

When the minimum flow unit is in operation, GMP maintains a 5 cfs aesthetic flow over the dam. During times of minimum flow unit shutdown, GMP maintains flow requirements via spillage over the dam, typically by partially lowering a 10-foot-long section of the pneumatic crest gates.

The 5 cfs year-round aesthetic flow presents icing and dam safety issues during the winter months, limiting GMP's ability to deflate the pneumatic crest (an operational and dam safety concern).



**Photo 4.18 River Left View of Forested Ledge,  
Newbury Dam, Intake, and Downstream Fishway**



**Photo 4.19 Newbury Project Bypassed Reach, Minimum Flow Turbine,  
and Forested Steep Banks Along the River Left Bank**





**Photo 4.20 Newbury Project Impoundment, Emergent Wetland, and U.S. Route 302 along the River Right (south) Shoreline**



**Photo 4.21 View of Dam from U.S. Route 302**



**Photo 4.22 View of Parking, Vehicle Access, and Non-Project Buildings Around Newbury Project Area**

On March 4, 2021, GMP held a virtual Aesthetic Flow evaluation meeting. Over the summer 2020 field season, GMP released five aesthetic flows (leakage, 5 cfs, 10 cfs, 15 cfs, and 25 cfs) by adjusting generation to increase or decrease impoundment elevation, which resulted in spill over the dam. GMP documented each of the flows via video and still photos. An in-person aesthetics flow demonstration study with stakeholders was not feasible in 2020 due to drought conditions in the northeast (inability to manipulate water flows) and concerns with safety surrounding the COVID-19 pandemic. GMP alternatively held this evaluation meeting virtually with interested stakeholders.

Representatives from the VANR, the CRC, Kleinschmidt, and GMP took part in the evaluation via MS Teams. Participants used an aesthetics flow evaluation form to individually score each flow release based on aesthetic quality, water character, flows, water level, bed, and channel characteristics, and flowing and falling water to determine which flows provided good aesthetic value. After reviewing videos and photos of each



flow over the dam, the participants discussed their individual rankings for each release collaboratively to reach a consensus.

Based on the collaborative discussion and ranking of aesthetics flows, meeting participants agreed that an aesthetic flow release of 10 cfs provided Good aesthetic value, and as such would meet Vermont's Class B(2) water quality standards for aesthetic flows. The parties agreed that 10 cfs provided a full veil across the dam, a good level of noise from falling water, mixing and flow of water in the pool below the dam, and wetted bedrock areas on the river margin that enhanced overall aesthetics (Photo 4.23).

The Final Instream Habitat and Aesthetic Flow Study Report is included in Appendix F for stakeholder review and comment.



**Photo 4.23 10 cfs Aesthetic Flow Release**

## **4.10.2 Environmental Effects**

### **4.10.2.1 Effect of Existing Project Operations on Aesthetic Resources**

Aesthetics within the Newbury Project area are predominantly affected by a combination of the wooded shoreline buffer along the river left and the mill complex located directly next to the dam on the river right. The Project releases a 5 cfs aesthetic flow over the dam when the minimum flow unit is operating. GMP experiences issues with this aesthetic flow requirement during the winter months over the inflatable bladder. The aesthetic flow is problematic in winter because it turns to ice and prevents deflation of the pneumatic crest. This is a dam safety and operational concern for GMP.

Maintenance activities have the potential to affect aesthetic resources through impoundment drawdowns, temporary reduction or removal of a veiled flow over the dam, and temporary staging of equipment. Generally, drawdowns and maintenance activities will likely have short term durations and minimal effects on aesthetic resources in the Project area and will be coordinated with pertinent state and federal agency consultation. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

### **4.10.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations).

In accordance with the virtual aesthetic flow evaluation meeting conclusion, GMP proposes to provide a 10 cfs aesthetic flow from May 15<sup>th</sup> to October 15<sup>th</sup>, annually.<sup>20</sup> during daytime hours. To address aesthetic flow freezing issues during the winter, GMP does not propose providing an aesthetic flow between October 16<sup>th</sup> – May 14<sup>th</sup>. The current 5 cfs winter aesthetic flow causes freezing issues and limits the ability to properly

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<sup>20</sup> GMP is additionally assessing the practicality of providing this aesthetic flow during the daytime only. If DEC deems this as a feasible measure for provision of aesthetic flows, GMP may consider proposing daytime only timing for aesthetic flows within the FLA.

operate the inflatable crest during the winter, potentially creating dam safety concerns. The Project site itself has minimal visibility from the roadway and no formal recreation areas and therefore has limited flow viewing opportunity. The operational needs of the Project outweigh the benefits of a year-round veiling flow. This proposal is not expected to negatively affect this resource.

GMP's proposal to alter the minimum flow to 35 cfs from May 15<sup>th</sup> to October 15<sup>th</sup> and 30 cfs for the remainder of the year, or inflow to the reservoir, whichever is less, for the purpose of protecting and enhancing aquatic resources in the Wells River is not anticipated to negatively affect aesthetic resources. This altered minimum flow will result in a release of 40 cfs to the bypass reach during the daytime at times when the minimum flow turbine is operational (30 through the min flow turbine plus 10 for aesthetics). If there is not enough water in the river to generate with the minimum flow turbine (i.e., less than 30 cfs), GMP will pass all flows over the dam. This operational change is not expected to negatively affect aesthetic resources.

To avoid negative effects to aesthetics, GMP proposes to develop a Flow Management and Monitoring Plan in consultation with DEC and to file this plan with the Commission within 6 months of receipt of subsequent license.

GMP proposes to consult with DEC prior to the conduct of Project maintenance and repair work should the work have an adverse effect on water quality. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP proposes to consult with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment has the potential to temporarily impact aesthetics during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and anticipates that the proposed access area designs will require only short-term temporary construction related effects on terrestrial resources. The presently utilized informal access area largely consists of the old U.S. Route 302 roadbed with grown up grasses, shrubbery, and small trees.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on aesthetics within the Newbury Project area.

#### **4.10.3 Unavoidable Adverse Effects**

None anticipated. Continued operation of the Newbury Project as proposed is not expected to have unavoidable adverse effects on aesthetic resources.

## **4.11 Socioeconomic Resources**

### **4.11.1 Affected Environment**

#### **4.11.1.1 Overview**

The Newbury Project is located in the Town of Newbury, Orange County, Vermont. As described within the 2015 Town Plan, Newbury is split into a mixture of diverse villages and hamlets, each one distinct with its own set of characteristics (Town of Newbury 2015). The Town is essentially separated into the four following entities:

- Wells River – A town center area, including a historic district. Wells River is located at the northern limits of Town forming the commercial/retail nucleus of the Town.
- Newbury Village – A historic settlement where many of the buildings have historic significance. The Village is centrally located on the north/south axis of Town.
- South Newbury – An area dominated by farmland, which is important to Newbury's economy. South Newbury farms produce dairy, fruits, vegetables, beef, emu, and poultry for both retail and wholesale.
- West Newbury – An area that contains a mix of farmland and historical buildings and is prized for its scenic beauty (Town of Newbury 2015).

Orange County is a member of the Two Rivers-Ottawaquechee Regional Commission (TRORC) which consists of 30 municipalities, including the Town of Newbury, in east-central Vermont. Founded in 1970 by the acts of its constituent towns, TRORC is a political subdivision of state government, and exists to advocate for the needs of its members and to help bridge the opportunities and concerns that exist between towns and the state (TRORC 2017).

#### **4.11.1.2 General Land Use Patterns**

The Two Rivers-Ottawaquechee Region is rural. The region has already been settled into clusters of residences and other activities in the form of villages and hamlets surrounded by less dense settlement, or large spaces in natural vegetation (TRORC 2017). Due to severe physical site limitations and the relatively high costs incidental to land development in certain areas as compared to others, much of the region is neither readily available nor suited for intense development (TRORC 2017).

Rather than undergoing intense development in areas with minimal development, the Newbury Town Plan proposes to invest in existing or planned settlement centers and areas where public facilities and services are planned or available. Because agricultural use, as well as aesthetic and recreational value, are important to the Town, the first goal for land use planning outlined in the Town Plan is to protect and preserve agriculture, forestry, and natural resources. It also focuses on preserving the historical features of the Town and protecting rural areas and natural resources by avoiding scattered development (Town of Newbury 2015).

#### **4.11.1.3 Population Patterns**

In July 2019, an estimated 28,892 people were living in Orange County, Vermont (US Census Bureau 2019a). The 2017 population estimate represents a 0.2% decrease from the April 1, 2010 County estimate. The population in Vermont during this timeframe decreased by 0.3% as the population estimate on July 1, 2019 was 623,989 people (U.S. Census Bureau 2019b).

The population of the Town of Newbury at the 2010 census was 2,216 people (Town of Newbury 2015). This represents a 11.33% change in population from 2000 to 2010. This constitutes greater growth than that of Orange County and the State of Vermont during that timeframe, which were 2.45% and 2.70%, respectively.

Like much of Vermont, Newbury's elderly population is growing. Between 2000 and 2010, Newbury experienced a 33% jump in the number of residents aged 45 and older (Town of Newbury 2015). The Town plans to provide adequate public transportation and health care for this growing demographic (Town of Newbury 2015).

#### **4.11.1.4 Households/Family Distribution and Income**

The U.S. Census Bureau estimated 12,279 households present within Orange County between 2015-2019 (U.S. Census Bureau 2019a). These households contain an average of 2.3 persons and 96.6% of the households contain English speakers where no other language is spoken in the home (U.S. Census Bureau 2019a).

Orange County's median household income between 2015 and 2019, in 2019 dollars, was \$60,925, compared to the statewide median of \$61,973 during that timeframe (U.S. Census Bureau 2019a; 2019b). The estimated median household income in Newbury in



2015 was \$45,428 (TRORC 2017). The County has a poverty rate of 9.4% compared to a statewide average of 10.2% (U.S. Census Bureau 2019a; 2019b).

#### 4.11.1.5 Project Vicinity Employment Sources

At \$31 billion, Vermont has the smallest economy in the U.S., but is the leading producer of maple syrup in the country (Forbes 2017).

Within the Two Rivers-Ottawquechee Region, 42.7% of the regional workforce (people who live in the region but may or may not work in it) were employed in occupations classified as "Management, Professional, or Related Occupations," 20.1% were employed by "Sales and Office Occupations," 15.4% were employed by "Service Occupations," 11.6 % were employed by "Natural Resources, Construction & Maintenance Occupations," and 10.2% were employed by "Production, Transportation & Material Moving Occupations" in 2015 (TRORC 2017). Most of the Two Rivers-Ottawquechee Region employment is in the private sector as depicted in Table 4.18.

**Table 4.18 Regional Salary Classification 2015**

	<b>Private Wage and Salary Workers</b>	<b>Government Workers</b>	<b>Self Employed Workers in Their Own Business (Not Incorporated)</b>	<b>Unpaid Family Workers</b>
<b>2015</b>	75.3%	13.9%	11.4%	0.2%

Source: TRORC 2017

Much of the Town of Newbury's economy is based in agriculture and silviculture with approximately 70% of the Town's lands in forest parcels of 20 acres or more (Town of Newbury 2015).

Some portion of the jobs in the region are held by people who don't live within it. The region houses the employees of other regions' businesses as well. For instance the region's top two major employers, Dartmouth College and Dartmouth Hitchcock Medical Center, are located outside of the region. Table 4.19 lists the major employers within the Two Rivers-Ottawquechee Region.

**Table 4.19 Major Employers Located in or Near the two Rivers – Ottaquechee Region**

<b>Employers With 1,000 or More Employees</b>	
Dartmouth College	Hanover, NH
Dartmouth Hitchcock Medical Center	Lebanon, NH
Hypertherm	Lebanon, NH
<b>Employers with 500-999 Employees</b>	
Killington/Pico Mountain Resort	Killington, VT
Veterans Administration Hospital	Hartford, VT
<b>Employers with 250-499 Employees</b>	
G.W. Plastics, Inc.	Bethel, VT
Hartford School District	Hartford, VT
Simon Pearce (US), Inc.	Quechee, VT
King Arthur Flour Company	Norwich & Hartford, VT
State of Vermont	Throughout Region
Vermont Castings, Inc.	Bethel, VT
Woodstock Resort Corp	Woodstock, VT
Mt. Ascutney Hospital & Health Center	Windsor, VT
Gifford Medical Center	Randolph, VT
Vermont Technical College	Randolph, VT
<b>Employers with 100-249 Employees</b>	
Copeland Furniture	Bradford, VT
DuBois & King, Inc.	Randolph, VT
Town of Hartford	Hartford, VT
Mascoma Savings Bank	Throughout Region
Oxbow Union High School District #30	Bradford, VT
Pompanoosuc Mills Corporation	Thetford, VT

Randolph Town School District	Randolph, VT
Quechee Lakes Landowners Association	Quechee, VT
U.S. 1st & 2nd Class Post Offices	Throughout Region
Vermont Law School	Royalton, VT
Visiting Nurses Alliance of VT & NH	Throughout Region
Woodstock Union High School District	Woodstock, VT

Source: TRORC 2017

#### **4.11.2 Environmental Effects**

##### **4.11.2.1 Effect of Existing Project Operations on Aesthetic Resources**

During the prefiling consultation process, agencies and stakeholders raised no issues or study requests related to socioeconomic resources. Continued operation of the Newbury Project is not anticipated to result in any adverse effects on area socioeconomics.

##### **4.11.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations). The proposed changes to the aesthetic flow and minimum bypass flow regime and proposed construction of the hand carry access area are not expected to affect socioeconomics as no socioeconomic issues have been identified.

GMP's proposal to alter the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on socioeconomics within the Newbury Project area.

##### **4.11.3 Unavoidable Adverse Effects**

None anticipated. Continued operation of the Newbury Project as proposed is not expected to have unavoidable adverse effects on socioeconomic resources.

## **4.12 Cultural and Tribal Resources**

### **4.12.1 Affected Environment**

#### **4.12.1.1 Cultural Resources**

##### **4.12.1.1.1 General Native American Pre-Contact Context**

The history of human occupation in Vermont and the broader New England region is currently understood archaeologically as corresponding to four major periods of time (Haviland and Power 1994). These periods relate to cultural changes that occurred in response to a variety of environmental factors such as those described above, as well as social and political factors, and continue to be further defined as new evidence emerges concerning stylistic and functional changes in the artifacts people left behind as well as their shifting settlement patterns and presence across the landscape. The following outline broadly defines current archaeological understanding of human history in New England up until the contact era when Europeans arrived, and massive cultural shifts occurred across the present day northeastern United States (Haviland and Power 1994; Peterson 1995).

- Paleoindian period, ca. 9000-7000 B.C.
  - Early Paleoindian period, ca. 9000-8300 B.C.
  - Middle Paleoindian period, ca. 8300-8100 B.C.
  - Late Paleoindian period, ca. 8100-7000 B.C.
- Archaic period, ca. 7000-1000 B.C.
  - Early Archaic period, ca. 7000-5500 B.C.
  - Middle Archaic period, ca. 5500-4000 B.C.
  - Late Archaic period, ca. 4000-1000 B.C.
- Woodland period, ca. 1000 B.C.-A.D. 1550
  - Early Woodland period, ca. 1000-100 B.C.
  - Middle Woodland period, ca. 100 B.C.-A.D. 1000
  - Late Woodland period, ca., A.D. 1000-1550
- Contact period, ca. A.D. 1550-1750

As noted, the Newbury Project area is located along Wells River approximately 1.0 km west of the confluence with the Connecticut River, a major travel corridor and resource rich environment supporting a wide range of plants and animals important to Native Americans. Limited archaeological survey has taken place in the northern or upper portion of the Connecticut River drainage basin and as a result there are relatively few documented Native American sites in the region; however, there is a rich written and oral history of Abenaki settlement up and down the river. In particular, the historically documented but archaeologically elusive site of a reputedly palisaded Abenaki village known as Kowasec is a contact era settlement that is believed to be located in the vicinity of the Great Oxbow on the Connecticut River, approximately 6.0 km downstream from the Project near Newbury proper (NE ARC 2020).

The Great Oxbow on the Connecticut River and a smaller one to the south are not immediately proximate to the Project but include some of the most archaeologically significant sites currently documented in present day Newbury and therefore reveal something of the people who were living in this region prior to European colonization and provide some indication of potential sites that could be expected within the area of the Project. Sites around the oxbows include VT-OR-0001, VT-OR-0002, VT-OR-0089, VT-OR-0017, VT-OR-0088, VT-OR-0018, VT-OR-0019, and VT-OR-0022 (NE ARC 2020).

In closer proximity to the Newbury Project area, the Guilford Site (VT-OR-0066) located approximately 900 m east of the Project represents a small, ephemeral encampment, likely attributable to two short-term Native American occupations possibly associated with travel or resource procurement activities within the region, such as food or lithic acquisition (Kitson et al. 2001). Further south on the west bank of the Connecticut River, sites VT-OR-0030 and VT-OR-0046 are located approximately 1.9 km and 2.75 km from the Project, respectively, and represent a buried hearth and a Middle Woodland period site (NE ARC 2020).

#### **4.12.1.1.2 Post Contact Euroamerican Settlement and Context**

The Town of Newbury was first chartered by Governor Wentworth of New Hampshire in 1763 granted to Jacob Bailey, John Hazen, Jacob Kent and Timothy Bedell, former military officers in the French and Indian War (NE ARC 2020). Settlement was initially concentrated around Newbury proper, to the south of the Newbury Project, and the prime farmland near two oxbows in that region along the Connecticut River. The village of Wells River

began to be actively settled a few years later around 1770 by Er Chamberlin, who cleared the land around the river, which was reportedly a mess of down timber and meandering streams. Chamberlin built the first gristmill and house and eventually constructed a sawmill, blacksmith shop, and a ferry that crossed the Connecticut River to connect Wells River to Woodsville, New Hampshire (Wells 1902). Given the strategic location of Chamberlin's settlement at the confluence of the Connecticut and Wells Rivers, it did not take long for people seeking opportunities to venture into the area. The junction of the two rivers was a determinant factor in the development of the town, providing power for early industries that served the surrounding agricultural communities in Newbury and acting as a major highway for transporting goods throughout northern New England (DeLaittre 1983).

The settlement and industrial development of Wells River accelerated during the 19th century following construction of a bridge linking Vermont and New Hampshire and the establishment of a paper mill around 1800, which remained in operation until the early 2000s (NE ARC 2020). The original paper mill site is believed to have been housed where the Corning Fibers Mill containing GMPs powerhouse is now located. A review of historic maps from 1858 (Walling 1858) and 1877 (Beers 1877) shows a vibrant town center clustered along the bend of the Wells River just west of its confluence with the Connecticut River. The Boston, Concord, and Montreal Railroad arrived in Wells River around 1850 and further connected the town with outside industries and commercial markets expanding economic reach. The railroad also brought prosperity to Woodsville, NH across the river, which became a prosperous railroad center between Concord and Montreal. By the mid to late-19th century there were over a dozen commercial buildings including fulling mills, additional grist mills, blacksmiths, a brickmaker, a tannery, slaughter houses, and various mercantile ventures as well as residences and public structures dotting Main Street and the surrounding off shoot streets (DeLaittre 1983; Beers 1877; Walling 1858). Population growth increased in the village of Wells River through the 19th century and then leveled off and today the town supports a population of just under 400 residents.

There is one post-contact archaeological site in the vicinity of the Newbury Project on Maple Street approximately 650 m east of the Project on the south side of Wells River. The site archaeology appears to be related to a schoolhouse that stood on the property from 1808 to circa 1850, with some later deposits (NE ARC 2020). The site is considered



to be part of a complex of historic sites likely present throughout the Wells River village, which was designated an NRHP District in 1983 (DeLaittre 1983).

Additionally, the Corning Fibers Mill (Survey #907-53), where the Newbury Project powerhouse area is located, was designated a State Historic Site in 1989 but falls outside the boundary of the NRHP district (NE ARC 2020). As previously mentioned, the mill originated as a paper mill and dates back to circa 1800. It was owned by multiple investors over its 200-year history, including Union Durant and Joseph Adams who did much to contribute to the mills success and were the largest employers in the town. At that time the mill was known as the Durant and Adams Paper Mill and later the Adams Paper Company. Durant and Adams were responsible for the oldest section of the mill still in existence, which was built around 1850-1856. The mill produced various paper products throughout its history and most consistently, tissue paper, which was still being produced under the name the Corning Fiber Mill when it was nominated to the Vermont State Register in 1989 (NE ARC 2020). The current dam, which originally served to power the paper mill is also historic and dates to 1912. Additionally, the Montpelier and Wells River Railroad, which linked the community to the capitol, was once located along the north side of Wells River along the northern boundary of the Project area (NE ARC 2020). The railroad was built in 1867 and operated until 1956 (Plainfield Historical Society No Date). During the 1920s over twenty daily freight and passenger trains could be seen passing through Wells River along this rail line (NE ARC 2020).

#### **4.12.1.1.3 Area of Potential Effect**

The Newbury Project Area of Potential Effect (APE) was developed in consultation with VDHP. The VDHP approved APE extends approximately 0.4 river miles from the Newbury dam and approximately 600 feet downstream of the Newbury dam and 10 meters (32.8 feet) back from the river on both the north and south sides (Figure 4.14). The APE is

slightly larger than the FERC Project boundary which does not include the section of riverbank directly across from the Corning Fibers Mill or approximately 20 meters of shoreline upstream containing powerhouse ruins.



**Figure 4.14 Newbury Project Area of Potential Effect**

#### **4.12.1.1.4 Cultural Resource Investigations within the Project Area**

There have been no prior cultural resources investigations of the Project area (NEARC 2020).

In 2020 GMP's consultant, Northeast Archaeology Research Center (NE ARC) completed an Archaeological Resource Assessment that identified site sensitivity for Native American archaeological sites and recommended the conduct of a Phase 1 Archaeological Resources Assessment in the Newbury Project APE. A Phase I Assessment was completed during the 2020 field season. The field work portion of the survey was conducted over a period of two days (November 11th and 12th, 2020) and included subsurface excavation of three 0.5 meter by 0.5 meter shovel test sites. Two of the test pits contained post-contact artifacts, totaling eleven artifacts made up of metal, glass, and plastic. Photo documentation within two identified sensitive sites and additional archival research was performed for a third site to complete the Phase I Assessment work. The Phase I Assessment identified structural remains from the former Wells River Electric Light Plant and Pumping Station circa 1896-1938 at the upstream end of the Project APE. These structural remains were designated Vermont archaeological site number VT-OR-0122. Historic artifacts were recovered in this area related to the Electric Light Plant, and no Native American artifacts were identified. VDHP concurred with this Phase I Assessment and its corresponding recommendation for a Phase II Archaeological Resource Assessment for VT-OR-0122 (Appendix C). No additional archaeological work is recommended at this time in any areas of the Project outside of the site VT-OR-0122.

GMP completed Phase II investigation field work for VT-OR-0122 on June 18<sup>th</sup> and 19<sup>th</sup>, 2021 after receiving verbal concurrence from VDHP on the scope of survey work. Eight 0.5 meter by 0.5 meter shovels tests were excavated along three transects within site VT-OR-0122. As a result of Phase II testing, an additional 67 artifacts were identified, including glass, metal, ceramics, brick, and plastic. All of the artifacts identified during Phase I and Phase II testing appear to be contemporaneous with the Wells River Electric Light Plant and Pumping Station (1896 – circa 1930) or of a later origin. NE ARC recommends the Wells River Electric Light Plant and Pumping Station as eligible for the NRHP under *criterion a* for association with the early development of hydropower in Vermont as one of the first hydropower facilities (1896) built by a local Vermont municipality taking the initiative to bring electric power and greater water access into the local community. The site is also recommended eligible under *criterion d* for the potential to yield information

important in history including information related to early hydropower construction and design and the development of early community sponsored water and electric service. The structural elements that remain present, while unstable, maintain an adequate degree of integrity to provide pertinent information regarding construction, materials, and design. An End of Field Letter for Archaeological Phase II work was submitted to VDHP on August 26, 2021. NE ARC will provide a full technical report for VDHP review that details the results of the Phase II investigation.

GMP's consultant, VHB additionally completed a Vermont Architectural Resource Inventory Form for the Newbury Hydroelectric Project (buildings, dam, reservoir, intake structure, mill buildings, mill remains). VHB's recommendation that the Newbury Project is not eligible for inclusion in the NRHP due to lack of historic and architectural significance was concurred with by VDHP on March 4, 2021 (Appendix C).

GMP will provide a Section 106 report to VDHP to conclude Cultural Resource Study efforts upon completion of the full technical Archaeological Phase II Evaluation Report.

#### **4.12.1.2 Tribal Resources**

There are no federally recognized Indian tribes in Vermont, but the State of Vermont recognizes four tribes: Abenaki Nation at Missisquoi, the Elnu Abenaki Tribe, the Koasek Traditional Band of the Koas Abenaki Nation, and the Nulhegan Abenaki Tribe (National Conference of State Legislatures 2020; State of Vermont 2021).

The Project area has been documented as being historically inhabited by the Abenaki Tribe, but there are no tribal lands within the Project boundary and there are no federal reservations in the vicinity of the Project (State of Vermont 2021). As previously noted, no Native American artifacts were identified during shovel testing efforts conducted under the Phase I or Phase II archaeological field work.

The Project occupies a limited reach of the Wells River and is operated in run-of-river mode, which more closely matches the natural hydrologic regime of the River. As such, Project operations are not expected to affect any resources that may impact cultural or economic interests. Project lands are additionally not owned but leased by GMP for operation of the hydroelectric facility. One property owner owns the immediate mill property that the dam, intake, penstock, powerhouse, and tailrace areas are located on. The Town of Newbury owns the road shoulder buffer area located along the river right

impoundment margin and a private property owner (gravel pit business) owns lands at the upper end of the impoundment on the river right and all lands on the river left of the Project boundary.

By letter dated September 1, 2017, FERC invited the Saint Regis Mohawk Tribe to participate in the relicensing process. No response has been included in FERC's administrative record nor received by GMP.

GMP received feedback from Chief Don Stevens of the Nulhegan Band of the Coosuk – Abenaki Nation concerning the Newbury Project relicensing on November 16, 2018 (Appendix C ). Chief Stevens noted "There is a lot of rich Native History in the Coos meadows and surrounding area. In fact, the earliest mission was in that area called "Mission De Loops". Chief Stevens put GMP in contact with Chief Colin Wood and Chief Shirly Hook for the Newbury Project relicensing and asked that sensitive areas in the Project be protected and if anything new is found that the Abenaki Nation be contacted immediately. Chief Colin Wood and Chief Shirly Hook have been included on the relicensing distribution list.

Chief Stevens additionally discussed the desire to develop an access agreement with GMP as the tribe is interested in gaining access to GMP's FERC licensed Project boundaries for the purpose of plant collections. GMP and Chief Stevens met and discussed the topic over the course of 2018 and 2019. Upon further research into the topic, GMP concluded that it would be unable to grant access to Newbury Project lands as GMP does not own any lands associated with the Newbury Project. Although GMP is unable to grant access to Newbury Project lands, GMP commits to continued consultation with the Abenaki Nation regarding the results of archaeological work and to consultation with the Abenaki Nation prior to any ground disturbing activities at the Project (language to be incorporated within the Project HPMP).

#### **4.12.2 Environmental Effects**

##### **4.12.2.1 Effect Existing Project Operations on Cultural and Tribal Resources in Project Area**

Newbury Project operations have minimal effects on cultural or tribal resources within the Project area. The Project's stable impoundment and run-of-river operations there are not expected to negatively affect cultural resources in this Project area.



Maintenance activities and infrequent drawdowns do have the potential to cause some erosion and affect bank stability as well as potentially disturbing Project grounds. Though drawdowns do not occur often at this Project due to the presence of the pneumatic crest gates, GMP consults with pertinent resource agencies regarding the timing and duration of periodic maintenance drawdowns and would continue to pass required minimum flows to protect downstream habitat. GMP consults with VDHP for such activities to minimize potential effects on cultural resources.

#### **4.12.2.2 Proposed Action**

GMP proposes to continue operation of the Newbury Project as a run-of-river development with minimal impoundment drawdowns (except for brief periods of maintenance or emergency operations). Continued run-of-river operations as well as proposed changes to the aesthetic flow and minimum bypass flow regime are not expected to affect identified cultural or archaeological resources. To avoid negatively affecting these resources, GMP proposes to develop a HPMP in consultation with VDHP. The HPMP will be filed with the Commission within 1 year of receipt of subsequent license. As afore noted, GMP plans to include consultation with the Abenaki Nation prior to any ground disturbing activities at the Project within the HPMP.

GMP's proposal to construct a hand carry access area at the upper limits of the Newbury Project impoundment does have the potential to cause land disturbing activities during construction. GMP is developing proposed access area designs in consultation with interested resource agencies and stakeholders and does not anticipate that the proposed access area designs will require large amounts of tree, vegetation, or soil removal. The intent of this access area is to provide more formalized access to an area that is presently receiving informal use. Development of a potential pathway and stairway (or similar set up) that works with the local area topography is anticipated to be a low impact provision for access with limited ground disturbance anticipated. The presently utilized informal access area largely consists of the old U.S. Route 302 roadbed with grown up grasses, shrubbery, and small trees. The majority, if not all, of the proposed access area resides on previously disturbed lands with presence of the old U.S. Route 302 roadbed and from prior access and disturbance from past uses at the Wells River Electric Light Plant and Pumping Station.

GMP's consultant NE ARC has completed a Phase I Archeological Survey and a Phase II Archaeological Survey within the proposed hand carry access area. Provided informal use is already occurring by recreationists surrounding the Wells River Electric Light Plant and Pumping Station, a more formalized access area may inadvertently benefit continued preservation of the Light Plant and Pumping Station as recreationists will not be forced to utilize old abutments from the plant to get in and out of the water. GMP will consult with VDHP regarding continued protection of cultural resources as access area designs are developed.

GMP's proposal to reduce the Project boundary by removing any non-Project related structures from the boundary and incorporating a proposed hand carry access area is not expected to have any effect on cultural resources within the Project APE.

#### **4.12.3 Unavoidable Adverse Effects**

None anticipated. Continued operation of the Newbury Project as proposed is not expected to have unavoidable adverse effects on cultural or tribal resources.

## 5.0 CONSISTENCY WITH COMPREHENSIVE PLANS

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Section 10(a)(2)(A) of the FPA, 16 U.S.C. Section 803 (a)(2)(A), requires FERC to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the Project. On April 27, 1988, FERC issued Order No. 481-A, revising Order No. 481, issued October 26, 1987, establishing that FERC will accord FPA Section 10(a)(2)(A) comprehensive plan status to any federal or state plan that: (1) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; (2) specifies the standards, the data, and the methodology used; and (3) is filed with the Secretary of FERC.

FERC currently lists 46 comprehensive plans for the state of Vermont (FERC 2020). Of these listed plans, 21 are potentially relevant to the Project, as listed in Table 5.1.

**Table 5.1 List of Qualifying Federal and State or Tribal Comprehensive Waterway Plans Potentially Relevant to the Newbury Project**

<b>Resource</b>	<b>Comprehensive Plan</b>
Hydropower	Vermont Agency of Natural Resources. 1988. Hydropower in Vermont: an assessment of environmental problems and opportunities. Waterbury, Vermont. May 1988.
Water Resources	National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.
	Vermont Agency of Environmental Conservation. 1986. Vermont Rivers Study. Waterbury, Vermont.
	Vermont Agency of Natural Resources. 1986. The waterfalls, cascades, and gorges of Vermont. Waterbury, Vermont. May 1986.
	Vermont Agency of Natural Resources. 2019. Passumpsic River Tactical Basin Plan. Montpelier, Vermont. October 2019.
	Vermont Agency of Natural Resources. 2020. Stevens, Wells, Waits, Ompompanoosuc & Connecticut River Direct Tributaries. Montpelier, Vermont. December 2020.
Fisheries	Connecticut River Atlantic Salmon Commission. 2020. Connecticut River American Shad Management Plan. Sunderland, Massachusetts. June 9, 2017, updated February 28, 2020.
	U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.
	Vermont Agency of Natural Resources. 1990. Vermont's lake trout management plan for inland waters. Waterbury, Vermont. May 1990. St. Johnsbury, Vermont. July 1990.
	Vermont Department of Fish and Wildlife. 2018. The Vermont plan for Brook, Brown, and Rainbow Trout. Montpelier, Vermont. January 2018.
	Vermont Fish and Wildlife Department. 2017. Statewide Management Plan for Largemouth and Smallmouth Bass. Montpelier, Vermont. August 2017.
Wildlife	Vermont Agency of Natural Resources. 2015. Vermont's Wildlife Action Plan. Montpelier, Vermont. February 2016.
	Vermont Natural Heritage Program. New Hampshire Natural Heritage Inventory. 1988. Natural shores of the Connecticut River: Windham County, Vermont, and Cheshire County, New Hampshire. December 1988.
Recreation	Vermont Agency of Natural Resources. 1988. Wetlands component of the 1988 Vermont recreation plan. Waterbury, Vermont. July 1988.
	Vermont Department of Forests, Parks and Recreation. 2013. Vermont State Comprehensive Outdoor Recreation Plan (SCORP): 2014-2018. Montpelier, Vermont. August 2013.

Resource	Comprehensive Plan
	Connecticut River Joint Commission. New Hampshire Department of Environmental Services. 2013. Connecticut River Recreation Management Plan: Riverbend Region. Concord, New Hampshire.

Source: FERC 2020

This Project conforms with the listed comprehensive management plans for VT waters. As a small run-of-river Project, and as this document has laid out, there are minimal environmental effects associated with continued operations. GMP utilizes all options available to mitigate potential impacts and follows necessary protocols and permitting needs for any maintenance or out of the norm operations.

### 5.1 Relevant Resource Management Plans

In addition to the qualifying comprehensive plans listed above, some resource agencies have developed resource management plans to help guide their actions regarding specific resources of jurisdiction. The resource management plans listed below may be relevant to the Project and may be useful in the relicensing proceeding for characterizing desired conditions:

- Two Rivers-Ottawaquechee Regional Commission. 2020. Regional Plan. Effective August 19, 2020.
- Town of Newbury. 2015. Newbury Town Plan. Adopted August 19, 2015.

Based on a review of the available plans, GMP determined that current and proposed operations of Project facilities are consistent with these plans.

## 6.0 REFERENCES

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- Audubon Society (Audubon). 2021a. Bald Eagle Recovery in Vermont. Available online: <http://vt.audubon.org/conservation/bald-eagle-recovery-vermont>. Accessed April 13, 2021.
- Audubon Society (Audubon). 2021b. Guide to North American Birds: Rusty Blackbird (*Euphagus carolinus*). Available online: <http://www.audubon.org/field-guide/bird/rusty-blackbird>. Accessed April 13, 2021.
- Beers, F.W. 1877. Atlas of the County of Orange, Vermont. New York: F.W. Beers.
- Breeding Bird Atlas Explorer (BBAE). 2018. U.S. Geological Survey Patuxent Wildlife Research Center. Data compiled from: Vermont Breeding Bird Atlas 2003-2007. Vermont Center for Ecostudies. Available online: <http://www.pwrc.usgs.gov/bba>. Accessed March 27, 2018
- Commission for Environmental Cooperation (CEC). 2011. North American Terrestrial Ecoregions-Level III. Available online: [https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/us/Eco\\_Level\\_III\\_US.pdf](https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/us/Eco_Level_III_US.pdf). Accessed on April 15, 2021.
- The Connecticut River Byway (CT River Byway). 2018. Connecticut River Byway. Available online: <http://ctriverbyways.org/> [Accessed March 30, 2018].
- Cowardin, Lewis, M., V. Carter, F.C., Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service.
- DeLaittre, M. 1983. West Newbury Village Historic District. NRHP Inventory, Nomination Form. On File VT DHP. Montpelier, VT: Vermont Division of Historic Sites.
- Federal Energy Regulatory Commission (FERC). 2020. List of Comprehensive Plans. July 2020. Available online: <https://cms.ferc.gov/sites/default/files/2020-07/ListofComprehensivePlans.pdf>. Accessed April 15, 2021.
- Federal Energy Regulatory Commission (FERC). 2015. Order Approving Transfer of Licenses. Project Nos. 2416-027, 2428-006, 2788-016, 2800-044, 2880-012, 2883-006, 3025-025, 3189-047, 3511-021, 4114-056, 4428-007, 4881-025, 5261- 020, 5702-016, 6058-020, 6059-019, 6115-014, 7153-016, 7186-048, 8909- 025, 10253-029, 10254-024, 10898-014, and 11163-046. Issued March 27, 2015. 150 FERC ¶ 62,210.
- Federal Energy Regulatory Commission (FERC). 2016. Order Approving Transfer of Licenses. Project Nos. 2801-039, 3025-027, 5261-021, 5313-015, 5702-017, 8405-021, and 11163-048, Issued November 18, 2016. 157 FERC ¶ 62,133.



- Federal Energy Regulatory Commission (FERC). 2003. Dam Safety Inspection Report. Newbury Project. Project No. 5261. June 26, 2003.
- Federal Energy Regulatory Commission (FERC). 1992. Form 80 Exemption Letter. November 9, 1992.
- Federal Energy Regulatory Commission (FERC). 1983. Order Issuing License. September 8, 1983.
- Fichtel, C. and D. G. Smith. 1995. The Freshwater Mussels of Vermont. Leahy Press. Montpelier, Vermont. 54 pp.
- Forbes. 2017. Best States for Business. Vermont. November 2017. Available online: <https://www.forbes.com/places/vt/>. Accessed on April 14, 2021.
- Haviland, William A. and Marjory W. Power. 1994. The Original Vermonters: Native Inhabitants, Past and Present. University Press of New England, Hanover, N.H.
- International Rusty Blackbird Technical Group (IRBTG). 2009. Understanding Declines in the Rusty Blackbird (*Euphagus carolinus*): An Indicator of Wooded Wetland Health. July 2005; Revised September 2009.
- Kitson, Edward C., Robert N. Bartone, and Ellen R. Cowie. 2001. Archaeological Phase IB Survey and Phase II Testing of the Proposed Haverhill-Newbury BRF 033-7(002), 12363 Bridge Replacement Project, Newbury, Orange County, Vermont, and Haverhill, Grafton County, New Hampshire. Concord and Montpelier: University of Maine at Farmington Archaeology Research Center. Submitted to the Vermont Agency of Transportation and the New Hampshire Department of Transportation.
- Kratzer, J. 2018. Angler Effort Survey on Northeast Kingdom Rivers (aka JSW500). Annual Report. Vermont Fish and Wildlife Department. 7p.
- National Conference of State Legislatures. 2020. Federal and State Recognized Tribes. Available online: <http://www.ncsl.org/research/state-tribal-institute/list-of-federal-and-state-recognized-tribes.aspx>. Accessed on April 14, 2021.
- National Oceanic and Atmospheric Administration (NOAA). 2021. Coastal Zone Management Programs. Office for Coastal Management. Available online: <https://coast.noaa.gov/czm/mystate/> [Accessed April 10, 2021].
- National Park Service (NPS). No Date National Register of Historic Places. Vermont – Orange County. Available online: <https://npgallery.nps.gov/NRHP/SearchResults/>. Accessed March 30, 2018.
- Natural Resources Conservation Service, United States Department of Agriculture (NRCS). 2021. Web Soil Survey. Available online: <https://websoilsurvey.sc.egov.usda.gov/>. Accessed April 14, 2021.

- National Wetland Inventory (NWI). 2021 Available online: <https://www.fws.gov/wetlands/>. Accessed April 15 2021.
- National Wild and Scenic Rivers System (NWSRS).2021. National Wild and Scenic River Segments - Vermont. Available online: <https://www.rivers.gov/vermont.php>. Accessed April 10, 2021.
- Newbury Conservation Commission (NCC). 2018a. Recreation Trails. Available online: <http://www.newburyconservation.org/recreation-trails/> [Accessed April 2, 2018].
- Newbury Conservation Commission (NCC). 2018b. Tucker Mountain. Available online: <http://www.newburyconservation.org/tucker-mountain/> [Accessed April 3, 2018].
- Northeast Archaeology Research Center (NE ARC). 2020. Archaeological Resource Assessment of the GMP Newbury Hydroelectric Project (FERC No. 5261). Newbury, Orange County, Vermont. Prepared for Green Mountain Power, Rutland, Vermont September 25, 2020. 51p.
- Northeast Kingdom Chamber of Commerce (NEK Chamber). 2018. Activities. Available online: [https://nekchamber.com/interior\\_textleft.php/pid/2/sid/161](https://nekchamber.com/interior_textleft.php/pid/2/sid/161) [Accessed April 2, 2018].
- Northeast Regional Climate Center (NRCC). 2021. NOAA Online Weather Data for the National Weather Service Station at St. Johnsbury, VT. Available online: <http://www.nrcc.cornell.edu/wxstation/nowdata.html>. Accessed April 14, 2021.
- Northeastern Vermont Development Association (NVDA). 2018. Cycling the Kingdom's Back Roads. Available online [https://www.nvda.net/Transp/documents/cycling\\_new.pdf](https://www.nvda.net/Transp/documents/cycling_new.pdf) [Accessed April 15, 2021].
- Peterson, James B. 1995. Preceramic Archaeological Manifestations in the Far Northeast: A Review of Current Research. *Archaeology of Eastern North America* 23: 207–230.
- Plainfield Historical Society. No Date. The Montpelier and Wells River Railroad 1867-1956. Available online: <http://plainfieldvthistory.org/Vermont%20Trains%20-%20Part%20II.pdf>. Accessed on April 14, 2021.
- Ratcliffe, N.M., Stanley, R.S., Gale, M.H., Thompson, P.J., and Walsh, G.J. 2011. Bedrock Geologic Map of Vermont: U.S. Geological Survey Scientific Investigations Map 3184, 3 sheets, scale 1:100,000.
- Redstart Forestry and Consulting (Redstart). 2016. Upper Wells River Basin Stream Geomorphic Assessment and River Corridor Plan. Groton, Ryegate, Newbury, and Topsham, Vermont 2015-2016.

Redstart Forestry and Consulting (Redstart). 2009. Wells River Watershed River Corridor Management Plan. Wells River Watershed of the Connecticut River Basin. Orange and Caledonia Counties, VT.

St. Michael's College. No Date. The Physiographic Regions of Vermont. Available online: [http://academics.smcvt.edu/vtgeographic/textbook/physiographic/physiographic\\_regions\\_of\\_vermont.htm](http://academics.smcvt.edu/vtgeographic/textbook/physiographic/physiographic_regions_of_vermont.htm). Accessed April 5, 2018.

State of Vermont. 2021. State Recognized Tribes. Available online: <http://vcnaa.vermont.gov/recognition/recognized-tribes>. Accessed April 14, 2021.

Timothy Buzzell & Associates, Inc. 1994. Stability Analysis Report. Newbury Hydro Company Dam. FERC Project No. 5261-VT, Wells River, Vermont.

Town of Newbury. 2015. Newbury Town Plan. Adopted August 19, 2015. Available online: [https://www.trorc.org/wp-content/uploads/2013/10/netp081915\\_final.pdf](https://www.trorc.org/wp-content/uploads/2013/10/netp081915_final.pdf). Accessed April 14, 2021.

Two Rivers-Ottawquechee Regional Commission (TRORC). 2017. Regional Plan. Effective August 31, 2017. Available online: <https://publicservice.vermont.gov/content/trorc-regional-plans>. Accessed On April 14, 2021.

University of Vermont (UVM). 2021. Vermont Tourism Research Center. Vermont Tourism and Recreation Survey. Available online: <http://www.uvm.edu/tourismresearch/?Page=tourism.html>. Accessed April 14, 2021.

Upper Valley Trails Alliance (UVTA). 2018. Trailfinder. Available online: <https://www.trailfinder.info/trails/trail/blue-mountain-nature-trail>  
<https://www.trailfinder.info/trails/trail/wells-river-rail-trail-newbury>  
<https://www.trailfinder.info/trails/trail/cross-vermont-trail> [Accessed April 2, 2018].

U.S. Census Bureau. 2019a. QuickFacts: Orange County, Vermont. Available online: <https://www.census.gov/quickfacts/orangecountyvermont>. Accessed on April 14, 2021.

U.S. Census Bureau. 2019b. QuickFacts: Vermont. Available online: [U.S. Census Bureau QuickFacts: Vermont](https://www.census.gov/quickfacts/VT). Accessed April 14, 2021.

U.S. Department of Agriculture (USDA). 2018. Cooperative Emerald Ash Borer Project: Initial County EAB Detections in North America. April 2, 2018. Available online: [http://www.emeraldashborer.info/documents/MultiState\\_EABpos.pdf](http://www.emeraldashborer.info/documents/MultiState_EABpos.pdf) Accessed April 15, 2021.

U.S. Department of Transportation (USDOT). 2018. Federal Highway Administration. America's Byways. Available online: <https://www.fhwa.dot.gov/byways/states/VT>. Accessed March 30, 2018.

- U.S. Fish and Wildlife Service (USFWS). 2021. IPAC Report. Official Species List. New England Ecological Services Field Office.  
<https://ecos.fws.gov/ipac/project/IV6F2JPS2RC3NOZSCWRRTYORME/determinationKeys/index>. Accessed April 15 2021.
- U.S. Fish and Wildlife Service (USFWS). 2020a. History of Bald Eagle Decline, Protection and Recovery. Available online:  
<https://www.fws.gov/midwest/eagle/history/index.html>. Accessed April 13, 2021.
- U.S. Fish and Wildlife Service (USFWS). 2020b. Northern Long-Eared Bat Fact Sheet. Available online:  
<https://www.fws.gov/midwest/endangered/mammals/nleb/nlebfactsheet.html>. Accessed on November 10, 2020.
- U.S. Fish and Wildlife Service (USFWS). 2019. Fish Passage Engineering Design Criteria. USFWS, Northeast Region R5, Hadley, Massachusetts.
- U.S. Fish and Wildlife Service (USFWS). 2016a. Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions.
- U.S. Fish and Wildlife Service (USFWS). 1983. Northern States Bald Eagle Recovery Plan. Available online: [https://www.fws.gov/midwest/eagle/recovery/pdf/be\\_n\\_recplan.pdf](https://www.fws.gov/midwest/eagle/recovery/pdf/be_n_recplan.pdf). November 10, 2020.
- U.S. Fish and Wildlife Service (USFWS). 1940. Bald and Golden Eagle Protection Act. 1940. Available online at: <https://www.fws.gov/permits/ltr/ltr.html>. Accessed April 9, 2018.
- U.S. Fish and Wildlife Service (USFWS). 1918. Migratory Bird Treaty Act. Available online at: <https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>. Accessed November 10, 2020.
- U.S. Forest Service (USFS). March 2018. Emerald Ash Borer Quarantine in New England. March 2018. Available online:  
[https://vtinvasives.org/sites/default/files/images/EAB\\_NewEngland\\_030518.jpg](https://vtinvasives.org/sites/default/files/images/EAB_NewEngland_030518.jpg). Accessed April 9, 2018.
- U.S. Forest Service (USFS). 2016. Hemlock Woolly Adelgid Infestation Map. January 1, 2016. Available online:  
[https://www.fs.usda.gov/naspf/sites/default/files/naspf/pdf/2015\\_hwa\\_infestation\\_map\\_20160502.pdf](https://www.fs.usda.gov/naspf/sites/default/files/naspf/pdf/2015_hwa_infestation_map_20160502.pdf). Accessed April 9, 2018.
- United States Geological Survey (USGS). 2018. StreamStats Version 4. Available online:  
<https://water.usgs.gov/osw/streamstats/>

- Vermont Agency of Natural Resources (VANR). 2021a. Vermont Integrated Watershed Information System. Available Online: <https://anrweb.vt.gov/DEC/IWIS/>. Accessed April 12, 2021.
- Vermont Agency of Natural Resources (VANR). 2021b. Biofinder Map. <https://anrmaps.vermont.gov/websites/BioFinder/>. Accessed April 14, 2021
- Vermont Agency of Natural Resources (VANR). 2021c. VTANR Comments on Newbury DLA. August 3, 2021.
- Vermont Agency of Natural Resources (VANR). 2020a. State of Vermont 2020 303(d) list of Impaired Waters. Part A. Impaired Surface Waters in Need of TMDL. Available online: [https://dec.vermont.gov/sites/dec/files/documents/mp\\_PriorityWatersList\\_PartA\\_303d\\_2020.pdf](https://dec.vermont.gov/sites/dec/files/documents/mp_PriorityWatersList_PartA_303d_2020.pdf). Accessed April 12, 2021.
- Vermont Agency of Natural Resources (VANR). 2020b. State of Vermont 2020 Stressed Rivers List. Available online: [https://dec.vermont.gov/sites/dec/files/documents/mp\\_PriorityWatersList\\_PartC\\_2020.pdf](https://dec.vermont.gov/sites/dec/files/documents/mp_PriorityWatersList_PartC_2020.pdf). Accessed April 12, 2021.
- Vermont Agency of Natural Resources (VANR). 2020c. Natural Resources Atlas. Available online: <https://anrmaps.vermont.gov/websites/anra5/>. Accessed April 13, 2021.
- Vermont Agency of Natural Resources (VANR). 2018a. Department of Forest, Parks, and Recreation. Groton State Forest. Available online: <https://fpr.vermont.gov/groton-state-forest> [Accessed April 15, 2021].
- Vermont Agency of Natural Resources (VANR). 2018b. Fish and Wildlife Department. Vermont Fishing Access Areas. Available online: <https://anrweb.vt.gov/FWD/FW/FishingAccessAreas.aspx> [Accessed March 30, 2018].
- Vermont Agency of Natural Resources (VANR). 2017. Vermont Department of Environmental Conservation Watershed Management Division. Vermont Water Quality Standards. Environmental Protection Rule Chapter 29(A). Effective January 15, 2017. Available online: [http://dec.vermont.gov/sites/dec/files/documents/wsmd\\_water\\_quality\\_standards\\_2016.pdf](http://dec.vermont.gov/sites/dec/files/documents/wsmd_water_quality_standards_2016.pdf). Accessed March 22, 2018.
- Vermont Agency of Natural Resources (VANR). 2016. Department of Environmental Conservation Watershed Management Division. State of Vermont 2016 Water Quality Integrated Assessment Report. Available online: <http://dec.vermont.gov/watershed/map/assessment>. Accessed March 23, 2018.

- Vermont Agency of Natural Resources (VANR). 2015. Watershed Management Division. Basin 14 Tactical Basin Plan-2015 including the Stevens River, Wells River, Waits River, Ompompanoosuc River, and Mid-Connecticut River Direct Tributaries. Available online: <http://dec.vermont.gov/watershed/map/assessment>. Accessed March 21, 2018.
- Vermont Agency of Natural Resources (VANR). 2013. Department of Forest, Parks, and Recreation. Vermont Statewide Comprehensive Outdoor Recreation Plan (SCORP). Available online: [http://fpr.vermont.gov/sites/fpr/files/Recreation/Recreation\\_Grants/Library/SCORP%202014-2018.pdf](http://fpr.vermont.gov/sites/fpr/files/Recreation/Recreation_Grants/Library/SCORP%202014-2018.pdf). Accessed November 5, 2020.
- Vermont Agency of Natural Resources (VANR). 2010. Department of Forests, Parks, and Recreation. Groton State Forest Summer Trails Guide. Available online: [https://vtstateparks.com/assets/pdf/groton\\_trails.pdf](https://vtstateparks.com/assets/pdf/groton_trails.pdf). Accessed April 3, 2018.
- Vermont Center for Geographic Information (VCGI). 2017. Vermont Protected Lands. Available online: <http://geodata.vermont.gov/#data>. Accessed March 27, 2018.
- Vermont Center for Geographic Information (VCGI). 2014. 2011 National Land Cover Dataset. Available online: <https://vcgi.vermont.gov/> Accessed April 15, 2021.
- Vermont Department Environmental Conservation (VDEC). 2021. Vermont Aquatic Invasive Species Map. Available online: <https://dec.vermont.gov/watershed/lakes-ponds/aquatic-invasives/ais-map>, Accessed April 15, 2021.
- Vermont Department of Environmental Conservation (VDEC). 2014. Wells River Watershed. Available online: [http://dec.vermont.gov/sites/dec/files/documents/WSMD\\_mapp\\_WellsWS-assmnt rpt\\_Aug2014.pdf](http://dec.vermont.gov/sites/dec/files/documents/WSMD_mapp_WellsWS-assmnt rpt_Aug2014.pdf). Accessed March 28, 2018.
- Vermont Department of Environmental Protection (VDEC). 2016. A Key to Common Vermont Aquatic Plant Species. <https://vtinvasives.org/sites/default/files/documents/aquatics/Key%20to%20Common%20Vermont%20Aquatic%20Plant%20Species%202016.pdf>
- Vermont Department of Environmental Conservation (VDEC). 1982. Water Quality Certification. Newbury Hydro Company.
- Vermont Fish and Wildlife Department (VTWD). 2021. Fish Stocking Search. Available online: <https://anrweb.vt.gov/FWD/FW/FishStockingSearch.aspx>. Accessed April 14, 2021



- Vermont Fish and Wildlife Department (VTFWD). 2017a. Mammals of Vermont. Vermont Natural Heritage Inventory. Vermont Fish and Wildlife Department. March 22, 2017. Available online: <https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Learn%20More/Library/REPORTS%20AND%20DOCUMENTS/NONGAME%20AND%20NATURAL%20HERITAGE/SPECIES%20LISTS/Mammals%20of%20Vermont.pdf>. Accessed April 15, 2021.
- Vermont Fish and Wildlife Department (VTFWD). 2017b. Reptiles and Amphibians of Vermont. Vermont Natural Heritage Inventory. Vermont Fish and Wildlife Department. March 24, 2017. Available online: <https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Learn%20More/Library/REPORTS%20AND%20DOCUMENTS/NONGAME%20AND%20NATURAL%20HERITAGE/SPECIES%20LISTS/Reptiles%20and%20Amphibians%20of%20Vermont.pdf>. Accessed April 15, 2021.
- Vermont Fish and Wildlife Department (VTFWD). 2015a. Endangered and Threatened Animals of Vermont. Vermont Natural Heritage Inventory and Vermont Fish and Wildlife Department. March 28, 2015. Available online: <https://vtfishandwildlife.com/conservation/conservation-planning/endangered-and-threatened-species>. Accessed November 6, 2020.
- Vermont Fish and Wildlife Department (VTFWD). 2015b. Vermont Wildlife Action Plan 2015. Vermont Fish & Wildlife Department. Montpelier, VT. [https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/About%20Us/Budget%20and%20Planning/WAP2015/\\_2015-VT-Wildlife-Action-Plan.pdf](https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/About%20Us/Budget%20and%20Planning/WAP2015/_2015-VT-Wildlife-Action-Plan.pdf). Accessed April 14, 2021.
- Vermont Fish and Wildlife Department (VTFWD). 2005. Vermont's Wildlife Action Plan. Approved by the U.S. Fish and Wildlife Service November 22, 2005. Available online: <http://climatechange.lta.org/wp-content/uploads/cct/2015/03/Vermont-Wildlife-Action-Plan.pdf> [Accessed April 5, 2018].
- Vermont Land Trust (VLT). 2016. Rapid Ecological Assessment of the Newbury Town Forest, West Newbury, VT for the Vermont Land Trust. Part I: Tucker Mountain East. Available online: <https://www.vlt.org/wp-content/uploads/2017/07/T-TuckerMountain.pdf> [Accessed April 3, 2018].
- Vermont Public Radio (VPR). 2015. Protecting Vermont's Threatened and Endangered Species. July 10, 2015. Available online: <https://www.vpr.org/post/protecting-vermonts-threatened-and-endangered-species#stream/0>. Accessed on April 13, 2021.

Vermont River Conservancy (VRC). 2018. Wells River Conservation Area. Available online: <http://www.vermontriverconservancy.org/completed-projects/wells-river-conservation-area>. Accessed April 2, 2018.

Walling, H.F. 1958. Map Of Orange County, Vermont. New York.: Baker and Tilden.

Wells, Frederic P. 1902. History of Newbury, Vermont, from the Discovery of the Coös Country to Present Time. With genealogical records of many families. Available online: [https://archive.org/stream/historyofnewbury00wellrich/historyofnewbury00wellrich\\_djvu.txt](https://archive.org/stream/historyofnewbury00wellrich/historyofnewbury00wellrich_djvu.txt). Accessed March 30, 2018.

Yoder, C.O., L.E. Hersha, and B.R. Apell. 2009. Fish Assemblage and Habitat Assessment of the Upper Connecticut River: Preliminary Results and Data Presentation. Available online: <http://www.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-650.pdf>. Accessed April 9, 2014.

## **APPENDIX A**

### **EXISTING LICENSE AND LICENSE AMENDMENTS**

WATER QUALITY CERTIFICATION  
(P.L. 92-400, Section 401)

In the matter of: Newbury Hydro Company  
P.O. Box 142  
Warren, VT 05674  
Application for the Newbury Hydroelectric Project

The Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering (the Department) makes the following findings after reviewing the Water Quality Certification application and Federal Energy Regulatory Commission Short-Form License application filed by Newbury Hydro Company:

1. The applicant proposes to redevelop the hydroelectric generation facilities at the location of the former Adams Paper Company Mill on the Wells River in the Town of Newbury. The site was originally developed in about 1912 and abandoned in the mid-1950's. The dam is a concrete, gravity-type structure, 20 feet high and 60 feet in length. A 5-foot diameter, 380 foot long steel penstock extends from the forebay, on the right end of the dam, down to the generating equipment housed in the paper mill building. The existing equipment, which consists of a two-wheel horizontal turbine and a 312kw generator, are to be used. An additional new turbine would be connected to the existing penstock using a bifurcation and a 30-inch, 30 foot long section of penstock. This turbine would use a 110kw generator.

2. The project would be operated in a run-of-the-river manner. Five (5) feet of flashboards would be installed to provide an available head of 32 feet with a pool elevation of 463.87' NGVD. The hydraulic capacity of the two turbines would range from 20 cfs to 193 cfs.

3. The site is located just west of the Village of Wells River and about 0.9 mile upstream of the Connecticut River confluence. About 0.6 mile further upstream, the U.S. Geological Society operates a surface water gaging

station (#11390) on the Wells River. Measurements have been collected since August, 1940. The drainage area at the gage is 98.4 square miles. With the intervening watershed area, the site drainage area may be estimated at 100 square miles. Based on a direct drainage area proration, several hydrologic parameters may be estimated for the site:

<u>Parameter</u>	<u>Value (cfs)</u>
7Q10	14
Mean annual flow	142 (19.3 in./yr.)
95% exceedance	23
50% exceedance (median)	77
10% exceedance	346

During the history of the gage, some upstream flow regulation has occurred.

4. The surface area of the present impoundment is about 6.9 acres, and the installation of flashboards would increase the area to 11.4 acres (February 4, 1982 letter from Donnelly, Conklin, Phipps & Buzzell, Inc. to FERC). Most of the additional flooded area lies on the northern side of the river as Vermont Route 302 borders the southern side. The backwater would extend about 0.4 mile upstream.

5. The Wells River has been designated by the Vermont Water Resources Board as Class B, Water Management Type I or II from Boltonville to the Adams Paper Company dam. Below the dam the classification changes to Class C, allowing the discharge of treated wastewater from the mill, which is now abandoned.

The minimum standard for dissolved oxygen (D.O.) is 6 mg/l, and a standard of 7 mg/l may be applied at and near spawning areas.

6. The Department concludes that this project would not have a significant adverse impact on D.O. levels. The impoundment is relatively small, and a minimum flow in excess of 7Q10 would be spilled at the dam. Substantial reaeration opportunities are available both upstream and downstream of the impoundment.

7. Fish species which may be expected to inhabit the Wells River below the dam include rainbow trout, brown trout, brook trout and walleye. In order to preserve the excellent habitat available in the 500-foot bypassed section of river and to maintain good D.O. levels, a minimum flow of 25 cfs is required unless inflows are less. For spring spawning of walleyes and rainbow trout, a minimum flow of 50 cfs is required.



CONDITIONS

The Department of Water Resources and Environmental Engineering certifies that this project will meet Vermont Water Quality Standards with the following conditions:

A. The hydroelectric facility shall be operated in a strict run-of-the-river manner, with instantaneous flows below the tailrace maintained equivalent to instantaneous project inflows. A minimum instantaneous flow of 25 cfs, or instantaneous inflow, if less, shall be passed at the dam at all times with the exception of the period from April 15 to June 10, when the required minimum shall be 50 cfs or instantaneous inflow, if less. When the facility is shut down, all flows shall be passed at the dam.

The aforesaid minimum flows of 25 cfs and 50 cfs shall also apply in the unusual cases when some inflow must be put into storage, such as during refill periods following a maintenance operation, including the replacement of flashboards.

The applicant shall provide the Department with a description and plans detailing how releases will be made at the dam, for review and approval.

B. During the final engineering phase or earlier, the applicant shall file a comprehensive erosion and sediment control plan with the Department for review and approval. The plan shall cover temporary and permanent measures to limit adverse impacts on water quality from turbidity and sedimentation with regard to construction activities. The plan shall also specify how flows will be managed during construction. It may be beneficial to consult with the Department for input during the development of the plan.

C. The applicant shall insure that every reasonable precaution is taken during construction to prevent the discharge of petro chemicals, wet concrete and debris to state waters.

D. Any debris removed from the project area during construction and later operation shall be disposed of properly.

E. Any significant changes to the project including the operational scheme must be submitted to the Department for review and approval.

F. Upon completion of the project, the applicant shall provide the Department with an as-built set of plans for the record.

G. No construction may commence until the Department has issued written approval under Conditions A, B and E. Operational changes made after project completion are subject to Condition E and must be approved prior to effecting the change.



John R. Ponsetto, Commissioner  
Department of Water Resources  
and Environmental Engineering

Dated at Montpelier, Vermont this  
10th day of December, 1982.

JRC/rh

THIS DOCUMENT CONTAINS  
POOR QUALITY PAGES

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UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Newbury Hydro Company	)	Project No. 5261-001
Vermont Power Consortium	)	Project No. <u>5209-000</u>

ORDER ISSUING LICENSE (MINOR) AND  
DENYING COMPETING PRELIMINARY PERMIT APPLICATION

( Issued September 8, 1983 )

Newbury Hydro Company (Newbury) 1/ has filed an application for a license under Part I of the Federal Power Act (Act) to construct, operate, and maintain the Newbury Project No. 5261. 2/ The project would be located on the Wells River, in Orange County, Vermont, and would affect the interests of interstate or foreign commerce.

Notice of the application has been published and comments have been received from interested Federal, State, and local agencies. No protests or motions to intervene have been received, and none of the agencies objected to issuance of the license.

Competing Applications

The Applicant for Project No. 5209 requests a preliminary permit to study the feasibility of a hydroelectric project having an installed capacity of 334 kW and an annual estimated generation of 1,865,160 kWh. The energy produced from this project would be sold to a local public utility.

- 1/ A minor license application for Project No. 5261 was filed on December 17, 1981, by the Newbury Hydro Company. Vermont Power Consortium, filed a competing application for a preliminary permit on August 11, 1981, for Project No. 5209 on the same site.
- 2/ Authority to act on this matter is delegated to the Director, Office of Electric Power Regulation, under §375.308 of the Commission's regulations, 18 C.F.R. §375.308 (1982), FERC Statutes and Regulations §30,238. This order may be appealed to the Commission by any party within 30 days of its issuance pursuant to Rule 1902, 18 C.F.R. §385.1902, FERC Statutes and Regulations §29,052, 47 Fed. Reg. 19014 (1982). Filing an appeal and final Commission action on that appeal are prerequisites for filing an application for rehearing as provided in Section 313(a) of the Act. Filing an appeal does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically directed by the Commission.

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Section 4.33(f) of the Commission's regulations states that the Commission will favor applications for license over applications for preliminary permits; therefore, this license is being issued to the Newbury Hydro Company, and the competing application for preliminary permit is denied.

#### Project Description

Newbury proposes to use the existing concrete gravity dam which is 20 feet high and 60 feet long, add flashboards 5 feet high, and make use of an existing powerhouse. One new generating unit would be added to the one existing generating unit. The project would have a total generating capacity of 360 kW and would operate in a run-of-the-river mode.

A more detailed project description is contained in ordering paragraph (B).

#### Safety and Adequacy

Staff analysis indicates that the dam may not be safe for extreme flood loading conditions due to tension at the dam-foundation contact. The dam has been classified as having a significant hazard potential and dam failure may cause significant property damage or loss of human life. Article 24 requires the licensee to submit a dam break analysis and a plan and schedule for modifying the dam to ensure that a failure during flood flows would not create any additional hazard to downstream life and property beyond that which would be created by flood flows alone.

It is concluded that the project under the terms and conditions of this license is safe and adequate.

#### Minimum Flows

Development of this project as proposed would result in the dewatering of approximately 500 feet of the Wells River. The State of Vermont Agency of Environmental Conservation (VEC) commented that a minimum flow schedule of 50 cfs from April 15 through June 10 and 25 cfs the remainder of the year, would be necessary to protect the aquatic resources of the Wells River. The U.S. Department of the Interior (Interior) supported the VEC position on minimum flow. Interior further recommended that an instream flow analysis be conducted to determine the exact requirements of the Wells River. The Applicant accepted the minimum flow recommendation by VEC, and indicated that a study of the minimum flow requirement may result in a lower discharge that would be acceptable to VEC and the Applicant.

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The minimum flows as proposed by the agencies for the protection for the aquatic resources of the Wells River appear reasonable. 3/ Further, any studies performed by the Applicant, VEC, and Interior should be utilized in the development of any alternative minimum flow recommendations that may subsequently be filed with the Commission for approval. Article 25 requires the minimum flow releases at the project dam recommended by VEC.

#### Other Environmental Considerations

Construction of the Newbury Project would result in minor, short-term increases in turbidity in the Wells River due to ground disturbing activities. Inundation caused by installation of 5-foot-high flashboards would result in the loss of 4.5 acres of terrestrial habitat and associated wildlife. No federally listed threatened or endangered species or sites eligible for inclusion on the National Register would be affected by the proposed project.

On the basis of the record, including agency comments and our staff's independent analysis, it is concluded that issuance of a license for this project, as conditioned, is not a major Federal action significantly affecting the quality of the human environment.

#### Other Aspects of Comprehensive Development

The project would have an installed capacity of 360 kW and operate at an annual plant factor of 60 percent. The flow of the Wells River would equal or exceed the hydraulic capacity of the project (193 cfs) approximately 16 percent of the time.

In addition, the project would make good use of the flow and fall of the Wells River, and would not be in conflict with any proposed or planned development, and would be best adapted to a plan for the comprehensive development of the basin for beneficial purposes upon compliance with the terms and conditions of the license.

#### Economic Feasibility

The run-of-the-river project would generate an annual average 1,865,000 kWh 4/ at an estimated cost during the first year of

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3/ The Vermont Department of Water Resources and Environmental Engineering has issued a water quality certificate for the project, in accordance with Section 401 of the Federal Water Pollution Control Act.

4/ The proposed project, with its average annual generation of 1,865 million kWh, will utilize a renewable resource that will save the equivalent of approximately 3,060 barrels of oil or 860 tons of coal per year.

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operation of \$113,600 or approximately 61 mills/kWh. The project is economically feasible based on the sale of project power at the 1981 PURPA rate in the State of Vermont.

#### License Term

The proposed development of this project using an existing dam is similar to relicensing an existing licensed project at which a moderate amount of new development is proposed; therefore, consistent with the Commission's policy a 40-year license term is reasonable in this instance. 5/

#### It is ordered that:

(A) This license is issued to Newbury Hydro Company (Licensee), of Warren, Vermont, under Part I of the Federal Power Act (Act), for a period of 40 years, effective the first day of the month in which this order is issued, for the construction, operation, and maintenance of the Newbury Project No. 5261, located in Orange County, Vermont, on the Wells River and affecting the interests of interstate or foreign commerce. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The Newbury Project No. 5261 consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, constituting the project area and enclosed by the project boundary. The project area and boundary are shown and described by certain exhibits that form part of the application for license and that are designated and described as:

Exhibit A - Paragraph 1.0 of the application filed December 17, 1981.

<u>Exhibit</u>	<u>FERC No. 5261-</u>	<u>Description</u>
K, Sheet 1	1	Project Map

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5/ See The Village of Lyndonville Electric Department Project No. 2839, Order Issuing License (Minor), issued June 29, 1979.



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(2) Project works consisting of: (a) a concrete gravity dam, 20 feet high and 60 feet long; (b) 5-foot-high flashboards; (c) a reservoir having a negligible storage capacity, a surface area of 11.4 acres, and a normal water surface elevation of 463.87 feet m.s.l. with flashboards installed; (d) a 5-foot-diameter steel penstock 380 feet long; (e) a powerhouse with 2 generating units with a total capacity of 360 kW; (f) a tailrace; (g) 240-V generator leads; (h) 240-V/12.47-kV three phase step-up transformer; (i) a 112.47-kV transmission line 300 feet long; and (j) appurtenant facilities.

The location, nature, and character of these project works are generally shown and described by the exhibits cited above and more specifically shown and described by a certain other exhibit that also forms a part of the application for license and that is designated and described as:

<u>Exhibit</u>	<u>FERC No. 5261-</u>	<u>Showing</u>
L	2	Plan of Existing Hydro-electric facility

(3) All of the structures, fixtures, equipment, or facilities used or useful in the operation or maintenance of the project and located within the project boundary, all portable property that may be employed in connection with the project, located within or outside the project boundary, as approved by the Commission, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits K, L and A, designated in ordering paragraph (B) above, are approved and made a part of the license.

(D) Pursuant to Section 10(i) of the Act, it is in the public interest to waive the following Sections of Part I of the Act, and they are excluded from the license:

Section 4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) The application for preliminary permit filed by Vermont Power Consortium, on August 11, 1981, for Project No. 5209 is denied.

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(F) This license is also subject to Articles 1 through 18 except Article 15 set forth in Form L-15, (revised October 1975), entitled "Terms and Conditions of License for Unconstructed Minor Project Affecting the Interests of Interstate or Foreign Commerce," attached to and made a part of this license. The license is also subject to the following additional articles:

Article 19. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 20. The Licensee shall commence the construction of the project within one year after the date of issuance of the license, and shall complete construction of project works within three years of the date of issuance of the license.

Article 21. The Licensee shall review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction and shall ensure that construction of cofferdams and deep excavations are consistent with the approved design. At least 30 days prior to start of construction of the cofferdam the Licensee shall file with the Commission's Regional Engineer and Director, Office of Electric Power Regulation, one copy of the approved cofferdam construction drawings and specifications and a copy of the letter(s) of approval.

Article 22. The Licensee shall file with the Commission's Regional Engineer and the Director, Office of Electric Power Regulation, one copy each of the contract drawings and specifications for pertinent features of the project such as water retention structures, powerhouse and water conveyance structures, at least 60 days prior to start of construction. The Director, Office of Electric Power Regulation may require changes to the plans and specifications to ensure a safe and adequate project.

Article 23. The Licensee shall within 90 days of completion of construction, file for approval of the Director, Office of Electric Power Regulation revised Exhibits A and K to describe and show the project as-built.

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**Article 24.** The Licensee shall prior to start of construction file with the Director, Office of Electric Power Regulation stability analyses of the Newbury Dam under flood conditions up to the probable maximum flood or the flood flow at which the dam would be submerged. In the event that the analyses indicate that the dam would fail under flood loading, Licensee shall also file an evaluation of the consequences of failure on downstream life and property. If failure of the dam during flood flows would constitute a hazard to human life or cause extensive property damage, the Licensee shall file concurrently with the analyses and evaluation, a plan and schedule for modifying the project structures to ensure that a failure during flood flows would not create a significant hazard to downstream life and property. Construction of the project shall not commence until the Director, Office of Electric Power Regulation approves the study and proposed modifications, if necessary.

**Article 25.** The Licensee shall discharge from the Newbury Project dam, a continuous minimum flow of 50 cubic feet per second (cfs) from April 15 through June 10 and 25 cfs during the remainder of the year, or inflow to the reservoir, whichever is less, for the purpose of protecting and enhancing aquatic resources in the Wells River. These flows may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods for fishery management purposes upon mutual agreement between the Licensee and the Vermont Department of Fish and Game.

**Article 26.** Prior to the commencement of any future construction or development of any project works or other facilities at the project, the Licensee shall consult and cooperate with the appropriate State Historic Preservation Officer (SHPO) to determine the need for, and extent of, any archeological or historic resource surveys and any mitigative measures that may be necessary. The Licensee shall provide funds in a reasonable amount for any such activity. If any previously unrecorded archeological or historical sites are discovered during the course of construction, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the Licensee shall consult with the SHPO to develop a mitigation plan for the protection of significant archeological or historic resources. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historic work related to the project, the Commission reserves the right to require the Licensee to conduct, at its own expense, any such work found necessary.

**Article 27.** The Licensee shall pay the United States the following annual charge(s), effective the first day of the month in which this license is issued:

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For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 480 horsepower.

Article 28. The Licensee shall continue to consult and cooperate with appropriate Federal, State and other natural resource agencies for the protection and development of the environmental resources and values of the project area. The Commission reserves the right to require changes in the project works or operation that may be necessary to protect and enhance those resources and values.

Article 29. (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain other types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The types of use and occupancy of project lands and waters for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values,

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the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable State and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary State and Federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The Licensee may convey fee titles to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary State and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and State water quality certificates or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of

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support structures within the project boundary, for which all necessary Federal and State approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must file a letter to the Director, Office of Electric Power Regulation, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any Federal or State agency official consulted, and any Federal or State approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraphs (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with Federal and State fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.



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(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G or K drawings would be filed for approval for other purposes.

(G) The Licensee's failure to file a petition appealing this order to the Commission shall constitute acceptance of this license. In acknowledgment of acceptance of this order and its terms and conditions, it shall be signed by the Licensee and returned to the Commission within 60 days from the date this order is issued.

Lawrence R. Anderson  
Director, Office of Electric  
Power Regulation

Project No. 5261-001

IN TESTIMONY of its acknowledgment of acceptance of all of the terms and conditions of this Order, Newbury Hydro Company this \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, has caused its corporate name to be signed hereto by \_\_\_\_\_ its \_\_\_\_\_ President, and its corporate seal to be affixed hereto and attested by \_\_\_\_\_ its Secretary, pursuant to a resolution of its Board of Directors duly adopted on the \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, a certified copy of the record of which is attached hereto.

By \_\_\_\_\_  
President

Attest:

\_\_\_\_\_  
Secretary

(Executed in quadruplicate)

Form E-15  
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR UNCONSTRUCTED  
MINOR PROJECT AFFECTING THE INTERESTS OF  
INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes

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made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any feature or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other

- 3 -

officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams in which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative.

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The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 7. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 8. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 9. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.



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Article 10. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 11. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of the project structures, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 12. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall

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permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 13. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 14. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 15. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, stumps, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition,

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all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 16. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 17. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

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Article 18. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

Document Content(s)

13590709.tif.....1-20

WATER QUALITY CERTIFICATION AMENDMENT  
(P.L. 92-400)

In the matter of: Newbury Hydro Company  
Mr. Matthew J. Bonaccorsi  
c/o Timothy Buzzell and Associates Inc.  
Methodist Hill Road  
Lebanon, New Hampshire 03766  
Application to Amend the Water Quality  
Certification for the Newbury Hydro  
Project

The Department of Environmental Conservation (the Department) has completed its review of an application dated May 27, 1988, and submitted by Newbury Hydro Company (the applicant) to amend the Water Quality Certification for the Newbury Hydro Project issued December 12, 1982. The Department makes the following findings based on this review and consultation with the applicant, the Vermont Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service:

1. The applicant proposes to install a bulb-type turbine/generator near the project dam. The unit would discharge into the lower end of the dam's plunge pool. The purpose of this proposal is to enable the facility to generate with the project's bypass minimum flow requirements, which are presently spilled over the dam, and to compensate for a power production shortfall caused by undersized generating equipment presently installed in the project's powerhouse.
2. The turbine would have two manually adjusted blade settings, which would allow the unit to operate at 40 kW



with a flow of 35 cfs and 100 kW with a flow of 70 cfs. The project would continue to generate with a hydraulic capacity of 20 cfs to 193 cfs as presently certified.

3. The project is required to maintain a minimum instantaneous flow of 25 cfs, or instantaneous inflow if less, at the dam at all times, with the exception of the period April 15 to June 10 when the required minimum is 50 cfs, or instantaneous inflow if less. These flow requirements are presently maintained as spillage over the dam. Under the applicant's proposal, these minimum flow requirements in the project's bypass would continue to be maintained. However, they would be discharged through the new turbine when in use. During a scheduled turbine shutdown, the applicant would maintain these flow requirements as spillage over the dam using the presently approved techniques.
4. To reduce the incidence of flashboard breakage and to insure passage of the project's minimum flow requirements in the event of an unscheduled turbine shutdown, the applicant proposes to replace a 24-foot section of the project's flashboards with a hydraulically operated crest gate. This gate, coupled with the necessary circuitry, would be designed to automatically open in the event of high water or an unscheduled shutdown.
5. When the new turbine is in operation, the applicant proposes to maintain a spillage flow over the dam of

5 cfs for aesthetics. This flow would also help to maintain the water quality of the section of plunge pool upstream of the turbine discharge.

6. The Department of Fish and Wildlife intends to stock the Wells River with Atlantic salmon as part of the Connecticut River restoration program. In order to insure that the project is compatible with the need to provide safe downstream passage of salmon smolt, certain measures will be required by condition of this certification during the spring and fall outmigration periods. The need for downstream accommodations for salmon is not expected before 1990.

The Department amends the Newbury Hydro Company's Water Quality Certification by adding conditions H and I as follows:

- H. A minimum spillage flow of 5 cfs shall be maintained over the dam at all times when the turbine at the dam is in operation.

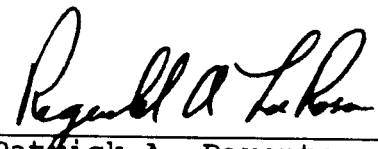
The applicant shall provide the Department with a description and plans detailing how this spillage will be maintained for prior review and approval.

- I. The applicant shall install downstream fish passage facilities at the project when so directed by the Department. These facilities shall include a slot 18 inches wide by 36 inches in dimension to convey a flow of 20 cfs for the period April 1 to June 1. This slot shall be adjacent to the forebay. A similar device shall be installed for the period September 1 to November 15 and sized to convey a flow of 10 cfs. The Department may, if found to be necessary for fish passage, increase this 10 cfs flow requirement to 20 cfs.

During both periods, a screening device shall be maintained at the log boom, from the water surface to a depth of 10 feet and angled to direct fish towards the weir. This screening device shall have a maximum one inch opening.

The applicant shall provide the Department with a description, plans, and hydraulic sizing calculations for the downstream fish passage facilities to be installed for prior review and approval.

Dated at Waterbury, Vermont, this 21<sup>st</sup> day of July, 1988.

*For*  *Acting Comm*  
Patrick A. Parenteau  
Commissioner  
Department of Environmental  
Conservation

PAP:AMD/eh

UNITED STATES OF AMERICA 66 FERC 62,115  
FEDERAL ENERGY REGULATORY COMMISSION

Newbury Hydro Company                      Project No. 5261-012  
New York

ORDER AMENDING LICENSE AND REVISING ANNUAL CHARGES  
(Issued March 3, 1994)

On January 17, 1989, the Commission authorized the Newbury Project, FERC No. 5261, to have an installed capacity of 410 kW.<sup>1</sup> The project was authorized to have a powerhouse containing 2 generating units with a total capacity of 310 kW, and a third minimum-flow generating unit, rated at 100 kW, located at the dam tailwater pond.

On November 2, 1993, the licensee, Newbury Hydro Company, informed the Commission that the third turbine-generator unit failed during operation, and substantial mechanical and electrical damage was incurred. The licensee replaced the failed unit with a smaller unit having a capacity of 30 kW due to economical reasons. The replacement of the third unit changed the project's total installed capacity from 410 kW to 340 kW, and the hydraulic capacity from 192 cfs to 159 cfs.

The reduction in hydraulic capacity will not result in impacts to the environmental resources other than those identified during the original project review. The change in installed capacity for the Newbury Project will amend the annual charges effective the first day of the month in which this order amending license is issued.

The change in installed capacity does not materially affect the Commission's determination that the Newbury Project is best adapted to a comprehensive plan for the waterway.

The Director orders:

(A) The license for the Newbury Project, FERC No. 5261, is amended as provided in this order, effective the first day of the month in which this order is issued.

(B) Ordering paragraph (B)(2), item (e), of the license is

revised as follows:

a powerhouse containing 2 generating units with a total capacity of 310 kW and a third generating unit, rated at 30 kW, located at the dam tailwater pond, for a total project installed capacity of 340 kW;

1 46 FERC 62,036, Order Amending License and Revising Annual Charges issued January 17, 1989.

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(C) Article 27 of the license is revised to read as follows:

The licensee shall pay the United States the following annual charge(s), effective the first day of the month in which this order amending license is issued:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 450 horsepower.

(D) Within 90 days of the date of issuance of this order, the licensee shall file with the Commission revised exhibits A, K, and L to describe and reflect the project's actual condition.

(E) The licensee shall report to the Commission of any future proposed changes to the project prior to implementing them.

(F) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. 385.713.

J. Mark Robinson  
Director, Division of Project  
Compliance and Administration



145 FERC ¶ 62,084  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Newbury Hydro Company

Project No. 5261-019

ORDER APPROVING REVISED AS-BUILT EXHIBIT A AND L DRAWINGS  
AND REVISING ANNUAL CHARGES

(Issued November 4, 2013)

1. On September 19, 2013, Newbury Hydro Company, the licensee for the Newbury Hydroelectric Project, FERC No. 5261, filed revised as-built Exhibit A and L drawings for Commission approval as required by Article 23 of the project's license.<sup>1</sup> The project is located on the Wells River in Orange County, Vermont.

**Background**

2. Article 23 requires the licensee, within 90 days of completion of construction, to file for approval revised Exhibits A and K to describe and show the project as-built.

3. The licensee filed the revised Exhibit A and Exhibit L drawings to show the as-built conditions of the Newbury Project following the completion of the generating units nos. 1 and 2 upgrade project. The licensee replaced unit nos. 1 and 2 with a single 315 kilowatt (kW) unit. The existing 50kW unit no. 3 was not changed.<sup>2</sup> The project's total installed capacity increased from 360kW to 365kW (or 450 horsepower<sup>3</sup> to 469 horsepower); therefore, this order amends annual charges under Article 27 of the license.

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<sup>1</sup> 24 FERC ¶62,275. Order Issuing License (Minor) and Denying Competing Preliminary Permit Application (September 8, 1983).

<sup>2</sup> The previous Exhibit A describes unit no. 3 as a 30kW unit; however, it was confirmed via telephone conversation on November 1, 2013, with Kevin M. Webb the Hydro Licensing Manager for the project that the nameplate capacity for unit no. 3 has always been 50kW. The 30kW rating was a clerical error. The Exhibit A approved by this order corrects the error.

<sup>3</sup> 66 FERC ¶62,115. Order Amending License and Revising Annual Charges (March 4, 1994).

**Review**

4. Our review of the revised Exhibit A found that it accurately describes the project as-built and is approved in ordering paragraph (A). Ordering paragraph (B) revises Article 27 of the license. The review of the Exhibit L drawings found that they accurately reflect the project as-built and conform to the Commission's rules and regulations. Ordering paragraph (C) of this order approves the revised Exhibit L drawings, and ordering paragraph (D) requires the licensee to file the approved drawings in aperture card and electronic file formats.

**The Director orders:**

(A) The revised Exhibit A, filed on September 19, 2013, for the Newbury Hydroelectric Project, conforms to the Commission's rules and regulations and is made part of the license. The previous Exhibit A is eliminated from the license.

(B) Article 27 of the license is revised to read as follows:

The licensee shall pay the United States the following annual charge(s), effective the first day of the month in which this order amending license is issued:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 365kW.<sup>4</sup>

(C) The following as-built Exhibit L drawings conform to the Commission's rules and regulations and are approved and made a part of the license.

Exhibit	FERC No.	Superseded No.	Drawing Title
L-1	5261-7	5261-6	Plan and Profile
L-2	5261-8	5261-4	Turbine Room Plan and Section

(D) Within 45 days of the date of issuance of this order, the licensee shall file

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<sup>4</sup> Article 27 provides for the collection of funds for administration of the Federal Power Act. Under the regulations currently in effect, projects with an authorized installed capacity of less than or equal to 1,500 kW, like this project, will not be assessed an annual charge.

the approved exhibit drawing in aperture card and electronic file formats.

a) Three sets of the approved exhibit drawing shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project Drawing Number (i.e., P-5261-7) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., L-1), Drawing Title, and date of this order shall be typed on the upper left corner of each aperture card. See Figure 1.

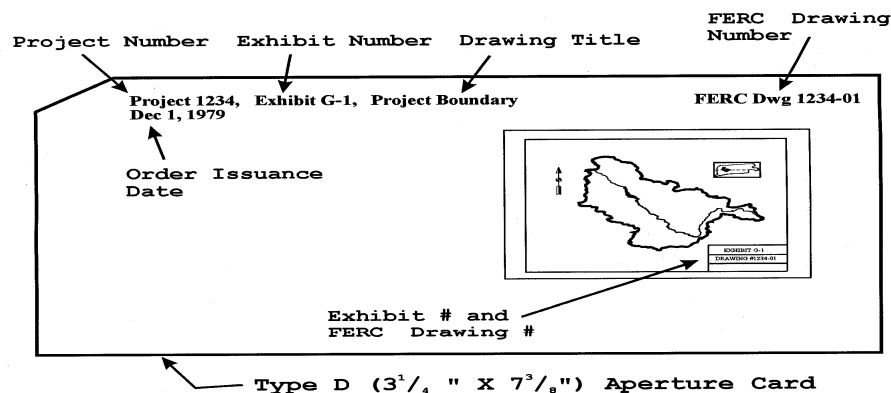


Figure 1 Sample Aperture Card Format

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office.

b) The licensee shall file two separate sets of the exhibit drawing in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office. Exhibit F drawings must be identified as **(CEII) material under 18 CFR § 388.113(c)**. Each drawing must be a separate electronic file, and the file name shall include: FERC Project Drawing Number, FERC Exhibit, Drawing Title, date of this order, and file extension [i.e., P-5261-7, L-1, Plan and Profile, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file  
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4  
RESOLUTION – 300 dpi desired, (200 dpi min.)  
DRAWING SIZE FORMAT – 24” X 36” (min), 28” X 40” (max)  
FILE SIZE – less than 1 MB desired

(E) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825l (2012), and the Commission’s regulations at 18 C.F.R. § 385.713 (2013). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee’s failure to file a request for rehearing shall constitute acceptance of this order.

Charles K. Cover, P.E.  
Chief, Project Review Branch  
Division of Hydropower Administration  
and Compliance

Document Content(s)

P-5261-019.DOC.....1-4

## **APPENDIX B**

### **PROPERTY LEASE**



DUPLICATE ORIGINALS

LEASE AGREEMENT

DEFINITIONS

- (1) LESSOR: MAURY WALLACE  
 P. O. Box 43  
 Corning, County of Steuben  
 State of New York
- (2) LESSEE: WILLIAM McDONOUGH L. MACRAE ROOD  
 128 East 62nd Street P.O. Box 142  
 New York City, and Warren, County of  
 County of New York Washington,  
 State of New York State of Vermont

Partners, doing business as Mad River Hydro, a Vermont Partnership with a principal place of business in Warren, County of Washington and State of Vermont.

(3) PREMISES:

Being a portion only of certain premises located in the Town of Newbury, County of Orange and State of Vermont, described in a certain Certificate of Redemption in the matter of Vermont Industrial Development Authority v. Corning Fibers, Inc., et al; C. A. Docket No. S 177-81 OeC, which portions are more particularly and shown on a plan plot attached and incorporated and marked Exhibit "A"; and which portions are generally described as follows:

That area of the mill building and grounds required for construction, operation and maintenance of the hydroelectric facility, as described below and on accompanying drawings;

(A) The area on the basement level of the building where the turbine and generator are located, being approximately 44 feet by 43 feet, as indicated on the drawing;

(B) The area directly over the turbine on the main level of the mill building, being approximately 44 feet by 43 feet and including the access hatch and adjacent area outside the building. Except for the area devoted to the "proposed new room for switchgear", this floor area will be available for use by the owner of the rest of the building most of the time. However, the area must be kept free of permanent machinery and/or structures to allow for infrequent servicing of the hydroelectric equipment, which may require the removal of the floor above the machinery.

(C) Access to hatchway on the south wall of mill building with the right to expand the existing hatchway to develop separate, independent access to leased areas;

(D) Complete right of access to, in, around and from the mill building and grounds for ingress, egress, and regress to and from leased premises; including use of bathrooms;

(E) Right to puncture through the levels of the mill building at areas designated and outlined in red on the attached and incorporated floor plans, including puncture through the so-called "office" level of the mill to allow for placement and operation of a crane, or similar device, for removal and replacement of turbine, generator or appurtenant equipment; and

(F) Use and right to remove and relocate two (2) panels of existing switchgear located at the southerly end of the existing six (6) panel switchgear.

(4) USE:

The leased property will be used in connection with but not limited to the utilization of the hydroelectric facility for the purpose of generating, electric power for sale. The LESSEE may maintain an office, telephone, storage, equipment and will regularly visit all areas of the leased property in connection with operation of the facility. LESSOR may also engage the services of contractors and operators to construct, maintain and operate the facility. Occasional visitors, business associates, engineers, etc., may be given access to the facility at the LESSEE's discretion.

(5) TERM:

The term of this Lease Agreement shall be for a period of Ninety-Nine (99) Years, commencing on the 31<sup>ST</sup> day of DECEMBER, 1982 and ending on the 31<sup>ST</sup> day of DECEMBER, 2081.

(6) OPTION:

LESSEE shall have the right to an additional one term of 99 years, subject to the same conditions, covenants and price of this Lease Agreement. Unless LESSEE shall notify LESSOR to the contrary, in writing, it is LESSEE's intent to exercise this option.

(7) BASE RENT:

LESSEE shall pay to LESSOR, during the TERM, as BASE RENT, the amount of ONE THOUSAND, TWO HUNDRED DOLLARS and NO CENTS (\$1,200.00), per year, payable in annual installments in advance. Rental shall accrue upon possession.

AGREEMENT

FOR AND IN CONSIDERATION of the mutual agreements and covenants herein expressed and other good and valuable consideration, LESSOR hereby lets and leases to LESSEE the premises for the stipulated TERM.

In consideration of said letting and leasing and other good and valuable consideration, the parties hereby covenant and agree as follows:

(1) LESSEE shall pay to LESSOR, RENT as provided above.

(2) ADJUSTMENT FOR TAXES

The parties shall attempt to have the Newbury Listers separately assess, for tax purposes, the property of LESSOR and LESSEE. Should that occur, each party shall be responsible for their own municipal tax exposure.

Should the parties be unable to obtain separate assessments, LESSEE shall be responsible for 9% of LESSOR's real estate tax exposure for each tax year. If, at any time during the term of this Lease or any extension thereof subsequent to that date, the taxes assessed upon or against the land and buildings in which the leased premises are located exceed the taxes which would have been assessed as of April 1, 1982, then the LESSEE covenants and agrees that it will pay the LESSOR, as additional rent, its proportionate share (9%) of such increase in taxes. However, the LESSEE shall not be required to pay any portion of such increase which is due to improvements in the property other than that portion occupied by the LESSEE. The proportion of the tax increase to be paid by the LESSEE shall be One Hundred (100%) percent of said increase. That proportionate share shall be paid in twelve (12) equal installments commencing at such time as LESSOR is required to pay this additional taxes as described herein above.

(3) APPORTIONMENT OF EXPENSES

(a) LESSOR shall provide and/or bear the expense of: fire and other casualty insurance on the building, real estate taxes assessed against the land and building, and at LESSOR's own discretion heating fuel or power for the leased premises and common areas, water and sewer, maintenance and repair of the heating system, plumbing system, electrical system, roof, passageways, snow and rubbish removal and other common areas and the outside of the building.

(b) The LESSEE shall provide and/or bear all other expenses, including, without limitation: electricity, heat, loss from glass breakage, cleaning of the leased premises, window washing, decorating and special lighting fixtures for the leased premises, ~~provided, however, that all substantial repairs, alterations and renovations shall be first approved in writing by the LESSOR.~~

(4) TRASH DISPOSAL

The LESSEE shall store and dispose of trash and other rubbish in the area designated by the LESSOR.

(5) SIGNS AND DISPLAYS

The LESSEE may not affix to the building or premises a sign, logo or other designation of or identification of the LESSEE, without prior written approval of the LESSOR.

(6) INSURANCE

The LESSOR agrees that it will at all times, during the term hereof or any renewal or extension thereof, keep the buildings on said premises insured against loss or damage by fire, lightning and all standard extended coverage perils for the full fair insurable value, in an amount sufficient to satisfy all applicable state statutes and regulations, and shall provide LESSEE, upon request with proof of such insurance.

(7) PUBLIC LIABILITY INSURANCE

LESSEE shall provide and keep in force comprehensive general liability insurance policies protecting the LESSOR and LESSEE as insureds as their respective interests appear against any liability arising out of the use and operation of the leased premises for bodily injury and death in amounts of not less than \$300,000.00 each person and \$300,000.00 each occurrence or combined single limits of \$500,000.00 and shall furnish certificates of insurance to the LESSOR upon request. The LESSOR agrees to provide and keep in force similar insurance policies protecting the LESSOR as insured.

(8) ADDITIONAL INSURANCE

The LESSEE will not do anything, except as described in Paragraph (4) of DEFINITIONS, in connection with the operation and maintenance of the hydroelectric facility on the said premises to make void or voidable any insurance upon the said premises or building, or render necessary any increased or extra premium for the said insurance required of LESSOR in Paragraph 6 above. In the event of improper maintenance, poor housekeeping, or other activities on the part of the LESSEE, and the insurance premiums are increased, the LESSEE will pay the additional costs thereof, and in the event the conduct of the LESSEE's business results in an increase in insurance premiums to be paid by the LESSOR, the LESSEE shall pay to the LESSOR the amount of such increase. In the event of such increase the LESSEE shall have the right to obtain similar coverage from another insurance company. Minimum insured value of the premises shall be \$150,000.

(9) ENTRY BY LESSOR

The LESSOR may enter the leased premises for the purpose of maintaining and making repairs to the leased premises or to the building, provided that such repairs do not unreasonably interfere with the LESSEE's use of the leased premises; for the purpose of observing whether the LESSEE is complying with the terms, conditions and provisions of this Lease; and for any other reasonable purpose. The LESSOR

(10) PARTITIONS

All partitioning erected or installed shall conform with applicable building codes and is subject to the written consent of the LESSOR, which consent will not be unreasonably withheld. Any changes in wiring due to this partitioning is also subject to the written consent of the LESSOR.

(11) CONDITION OF PREMISES

The LESSEE acknowledges that it knows the condition of the premises and that no representation as to the condition or the repair thereof has been made by the LESSOR and that no repairs, alterations or renovations are to be made by the LESSOR except as herein set forth.

(12) LIENS

The LESSEE shall not suffer or permit any lien arising out of alterations, renovations or repairs made by it to be filed or perfected against the leased premises or the building or the land on which they stand. In the event such a lien shall arise LESSEE shall have a reasonable time acting with due diligence to correct and/or have said lien satisfied.

(13) SIDEWALKS AND ALLEYWAYS.

Neither the LESSOR nor the LESSEE shall encumber or obstruct the sidewalks, alleyways, passageways, common areas or entrances to the other parts of the building. Permission for outside displays shall not be unreasonably withheld.

(14) OWNERSHIP OF FIXTURES AND IMPROVEMENTS

All personal property including but not limited to turbines, generators, exciters, switchgear, controls, special wiring, cabinets, etc. installed on the leased premises or on the building by the LESSEE shall remain the property of the LESSEE and may be removed by the LESSEE at the termination of the Lease, doing no unnecessary damage to the leased premises or the building.

(15) WASTE MATERIAL

The LESSEE shall not permit any ashes or combustible waste material to remain on the leased premises or in the building unless in a safe deposit of brick, stone or approved metal container.

(16) CONDUCT OF BUSINESS

The LESSEE shall not conduct on the leased premises during the term of this Lease or any extension or renewal thereof any business substantially different from the proposed use as hydro-electric generation without the written consent of the LESSOR. The LESSEE shall not make or allow any unlawful, improper or offensive use of the premises and shall not do or permit anything to be done thereon contrary to the laws of the United States of America, the laws of the State of Vermont, or municipal rules and ordinances. The LESSEE shall not do any act or transact any business on the leased premises by which the insurance thereon on the building will be restricted except as in connection with the use of the premises herein and above described. All consents required pursuant here to shall not be unreasonably withheld.

(17) INDEMNITY

In the event of the failure of Lessee to maintain the insurance as provided for here and above, the LESSEE agrees to indemnify the LESSOR against all loss, damage, liability or expense, including expenses of litigation arising out of injury to third parties or their property in connection with any act, failure to act, or negligence of the LESSEE or LESSEE's servants or agents.

(18) SUBLETTING AND ASSIGNING

The LESSEE may lease, sublease, underlet or assign the leased premises or any part thereof; assign or transfer this lease; or permit any other person, firm or corporation to occupy the leased premises or any part thereof subject to the terms of this lease.

(19) FIRE OR OTHER CASUALTY

If any part of the building suffers substantial damage by fire or other casualty so that the leased premises become untenable, and the LESSOR in the exercise of reasonable judgment determines that it is uneconomical to restore or repair the same, the LESSOR shall not be obligated to incur expenses for repairs beyond the amount of insurance proceeds payable on account of the loss; and it is expressly agreed and understood by and between the parties hereto that:

Any such insurance proceeds received by LESSOR shall be applied first to repair and replace the Leased Premises; and

The lease shall not terminate unless at the sole election of LESSEE;

LESSEE reserves the right, at its expenses to repair and replace the Leased Premises.

(20) CONDEMNATION

If all or a substantial part of the premises are taken by condemnation or other process of law by the United States of America, the State of Vermont, or a political subdivision or agency thereof, this Lease and the LESSEE's obligation to pay rent shall terminate without notice or other act of either party and the LESSOR shall return any rent paid beyond the date of such taking. Nothing contained herein shall limit the right of the LESSOR or the LESSEE to recover damages for such taking.

(21) SURRENDER AT TERMINATION

The LESSEE shall not make or suffer any waste on the leased premises and it shall peaceably quit and deliver up the leased premises when required to do so under the terms of this Lease, in as good an order and condition, reasonable wear and tear and unavoidable casualties excepted, as the same are now in or may be put into during the term of this Lease by the LESSOR or the LESSEE.

(22) DEFAULT BY LESSEE

If the rent hereby reserved shall be in arrears for a period of more than thirty (30) days or if the LESSEE shall violate any of the covenants, conditions, warranties or provisions contained herein and such violation shall continue for more than thirty (30) days after notice thereof in writing, the LESSOR may immediately avail himself of all appropriate legal remedies, where-upon this Lease shall absolutely terminate and it shall be no defense to the LESSEE that previous violations of any covenants have been waived by the LESSOR either expressly or by implication.

(23) MUTUAL WAIVER OF SUBROGATION

Neither the LESSOR nor the LESSEE shall be liable to the other for any business interruption or any loss or damage to property or for injury to or death of persons occurring on the leased premises or the adjoining property or in any manner growing out of or connected with the LESSEE's use and occupation of the leased premises or the condition thereof or of the adjoining property whether or not caused by the negligence or other fault of the LESSOR or the LESSEE or of their respective agents, employees, subtenants, licensees or assignees. This release shall apply only to the extent that such business interruption, loss or damage to property or injury to or death of persons is covered by insurance, regardless of whether such insurance is payable to or protects the LESSOR or the LESSEE or both. Nothing in this paragraph shall be construed to impose any other or greater liability on either the LESSOR or the LESSEE than would have existed in the absence of this

(24) LEASE BINDING ON HEIRS, ETC.

All of the obligations, conditions and undertakings herein contained shall extend to and be binding upon the legal representatives, heirs, executors, administrators, successors and assigns of the LESSOR and LESSEE and any other parties hereto. It is EXPRESSLY understood and agreed that any transfer of title, use or possession of the property of LESSOR in Newbury shall be subject to all terms and conditions of this Lease Agreement.

(25) RIGHT OF FIRST REFUSAL

LESSOR hereby grants to LESSEE for due consideration, a Right of First Refusal on all real estate, personalty and other rights appurtenant, of LESSOR in Newbury, Vermont, to be exercised as follows:

LESSOR shall notify LESSEE in writing at the address above-indicated, within 30 days of receipt by LESSOR of a bona-fide third party offer to purchase all or any part of LESSOR's real estate, personalty and rights appurtenant in Newbury, Vermont, and shall outline the property subject to offer, price, terms and any other conditions of said third party offer. LESSEE shall have 30 days to notify LESSOR in writing of their intent to exercise this Right of First Refusal. If they do so exercise, closing shall be within 90 days of LESSEE's notice to LESSOR of exercise. Should LESSEES either fail to properly notify LESSOR, or notify LESSOR of their intent not to exercise their Right of First Refusal, LESSOR may convey the property to said bona-fide third party offer or at no less onerous conditions, price and terms as outlined in LESSOR's notice to LESSEE. Upon such conveyance, said Right of First Refusal shall lapse as to the conveyed property.

This paragraph in no way affects the mandate of Paragraph 24 above.

(26) TOTAL AGREEMENT

This Agreement encompasses the total understanding of the parties hereto.

IN WITNESS WHEREOF, LESSOR and LESSEE have subscribed their names to this LEASE AGREEMENT as of the day and year below indicated.

DATED at New York City, in the County of New York and State of New York this 26th day of November, 1982.

IN THE PRESENCE OF:

Raymond C. Jones  
(As to Wm. McD)

William McDonough  
William McDonough LESSEE

Mary R. Leary  
(As to Wm. McD)

STATE OF New York  
COUNTY OF New York

At New York City, in said County on this 26th day of November, 1982, personally appeared WILLIAM McDONOUGH, and he acknowledged the above instrument, by him sealed and subscribed, to be his free act and deed.

HUGHES, MILLER  
& CANNON  
NOTARY PUBLIC  
HORWICH, VERMONT

RAYMOND C. JONES  
NOTARY PUBLIC, State of New York  
NO. 31-4763903  
Qualified in New York County

Raymond C. Jones

DATED at New York City in the County of New York and State of New York this 26 day of November, 1982.

IN THE PRESENCE OF:

Raymond C. James  
(As to LMR)

L. Macrae Rood  
L. Macrae Rood LESSEE

Marion R. Lenny  
(As to LMR)

STATE OF New York  
COUNTY OF New York

At New York City, in said County on this 26<sup>th</sup> day of November, 1982, personally appeared L. MACRAE ROOD, and he acknowledged the above instrument, by him sealed and subscribed, to be his free act and deed.

Before me,

RAYMOND C. JAMES  
NOTARY PUBLIC, State of New York  
NO. 31-4763903  
Qualified in New York County  
Commission Expires March 30, 1984

Raymond C. James  
Notary Public

DATED at Cornwall, in the County of Staten and State of N.Y. this 12 day of December, 1982.

IN THE PRESENCE OF:

Marion R. Lenny  
(As to MW)

Maury Wallace  
Maury Wallace LESSOR

Julia P. Stenger  
(As to MW)

STATE OF New York  
COUNTY OF Staten

At Cornwall, NY, in said County on this 15 day of December, 1982, personally appeared Maury Wallace, and he acknowledged the above instrument, by him sealed and subscribed, to be his free act and deed.

Before me,

JULIA P. STENGER  
Notary Public in the State of New York  
STATEN COUNTY, N. Y.  
My Commission Expires March 30, 1983

Julia P. Stenger  
NOTARY PUBLIC



LEASE AGREEMENT

Maury Wallace and Mad River Hydro Attachment  
December , 1982

Add to Paragraph 7 on page 2:

From and after December 31, 1992, the base rent shall be annually increased by the percentage increase, if any, in the prior year's "Consumer Price Index For All Urban Consumers" published by the United States Department of Labor Bureau of Labor Statistics in its monthly report next preceding the rental payment date. In the event that this Consumer Price Index is no longer published, the parties shall use the most nearly equivalent information provided by the United States Government.

Substitute for the last two sentences of paragraph (2) on page 2 the following:

The proportion of that tax increase to be paid by the LESSOR shall be One Hundred (100%) per cent of said increase. That proportionate share or increase shall be in twelve (12) equal installments commencing at such time as LESSOR is required to pay this additional tax as described hereinabove. The LESSOR shall not be required to pay any portion of such increase which is due to improvements in the property other than that portion occupied by the LESSOR. The proportion of such tax increase to be paid by the LESSEE shall be One Hundred (100%) per cent of said increase.

SIGNED COPY WARREN

NOTICE FOR RECORDING

OF

LEASE AGREEMENT,  
RIGHT OF FIRST REFUSAL

AND

PURCHASE AND SALE AGREEMENT

KNOW ALL MEN BY THESE PRESENTS, that MAURY WALLACE of Corning, County of Steuben and State of New York, hereinafter "LESSOR/OFFEROR/SELLER;" and WILLIAM McDONOUGH of New York, County of New York and State of New York and L. MACRAE ROOD of Warren, County of Washington and State of Vermont, hereinafter "LESSEE/OFFEREE/BUYER," have entered into, on the date below indicated, binding Lease Agreement, Right of First Refusal and Purchase and Sale Agreement affecting certain property, fixtures, equipment and rights appurtenant in Newbury, Vermont, all or a portion of which are described in a certain Certificate of Redemption in the matter of VIDA v Corning Fibers, Inc., et al, C.A. Docket No. S 117-81 OcC.

Copies of said documents are available at the Law Offices of Hughes, Miller & Candon, 1820 House, Main Street, Norwich, Vermont, 05055 and at the Law Offices of Cheney and Brock, P.O. Box 489, Montpelier, Vermont, 05602.

Dated at Corning, County of Steuben and State of New York, this 12 day of December, 1982.

IN THE PRESENCE OF:

James R. Kramel  
(as to Maury Wallace)

Maury Wallace  
MAURY WALLACE

Julius Stenger  
(as to Maury Wallace)

Dated at New York City, County of New York and State of New York, this 26 day of November, 1982.

IN THE PRESENCE OF:

Raymond C. Jones  
(as to William McDonough)  
William R. Lacey  
(as to William McDonough)

William McDonough  
WILLIAM McDONOUGH

Noted at New York City, County of New York and State of New York, this 26 day of November, 1982.

IN THE PRESENCE OF:

Raymond C. James  
(as to L. MacRae Rood)  
Myra R. Leung  
(as to L. MacRae Rood)

L. MacRae Rood  
L. MACRAE ROOD

STATE OF New York  
Schenectady County, ss

§ At Corning in said County  
§ this 15 day of December 1982  
personally appeared

MAURY WALLACE and he acknowledged this instrument by him sealed and subscribed to be his free act and deed.

JULIA P. STENGER  
Notary Public in the State of New York  
Schenectady County, N.Y.  
My Commission expires: March 30, 1982  
My Commission Expires March 30, 1982

Before me: Julia P. Stenger  
NOTARY PUBLIC

STATE OF New York  
New York County, ss

§ At New York City in said County  
§ this 26 day of November personally appeared

WILLIAM McDONOUGH and he acknowledged this instrument by him sealed and subscribed to be his free act and deed.

Before me: Raymond C. James  
NOTARY PUBLIC  
RAYMOND C. JAMES  
NOTARY PUBLIC, State of New York  
NO. 31-4763903  
Qualified in New York County  
Commission Expires March 30, 1984  
My Commission expires: March 30, 1984

STATE OF New York  
New York County, ss

§ At New York City in said County  
§ this 26 day of November personally appeared

L. MACRAE ROOD and he acknowledged this instrument by him sealed and subscribed to be his free act and deed.

Before me: Raymond C. James  
NOTARY PUBLIC  
My Commission expires: March 30, 1984

RAYMOND C. JAMES  
NOTARY PUBLIC, State of New York  
NO. 31-4763903  
Qualified in New York County  
Commission Expires March 30, 1984

PURCHASE AND SALE AGREEMENT

(Duplicate Originals)

(1) PARTIES:

(A) SELLER:

MAURY WALLACE  
P. O. Box 43  
Corning, County of Steuben  
State of New York.

(B) BUYER:

WILLIAM McDONOUGH  
128 East 62nd Street,  
New York City, County of New York  
State of New York

and

L. MACRAE ROOD  
P. O. Box 142  
Warren, County of Washington  
State of Vermont

Partners, doing business as Mad River Hydro, a  
Vermont Partnership with a principal place of  
business in Warren, County of Washington  
and State of Vermont.

(2) AGREEMENT:

The SELLER agrees to sell and the BUYER agrees to buy the property/  
premises described below, at the price and upon the terms and conditions  
hereinafter set forth. Acceptance of BUYER'S offer remains with the  
SELLER, and acceptance shall occur upon SELLER'S execution of this  
contract.

(3) PROPERTY:

Being a portion only of certain lands and premises located in the  
Town of Newbury, County of Orange and State of Vermont, as described in  
a certain Certificate of Redemption in the matter of Vermont Industrial  
Development Authority v. Corning Fibers, Inc. et al, C. A. Docket No.  
S117-81 OeC, which portion is more particularly described as follows:

(A) Fee Simple Title to all of said lands and premises, together  
with dam and all improvements located thereon; located westerly of a  
line located parallel to and one-hundred feet (100') easterly of the  
western edge of the dam across the Wells River, which line commences at  
the northerly right of way of Route 302, so-called, and runs N 7° W to  
the northerly property line of said lands and premises; said line and  
parcel created are more particularly shown on a plan entitled "Plan of  
Wallace Mill and Property - Newbury, Vt.; dated October 11, 1982; Scale:  
(varies); L. Macrae Rood", to which plan reference should be made for a  
more particular description of lands and premises here described.

(B) Fee Simple Title to all water rights to the impoundment and  
river owned by SELLER, less that water which is needed for the operation  
of the paper mill on the site, that being no more than six-tenths (0.6)  
cubic feet per second; together with the dam, headworks, forebay, pond,  
penstock and tailrace.

(C) Easement and Right of Way:

(1) Simultaneous with the closing the parties will sign a  
lease agreement. The easement granted pursuant hereto is intended to  
give full and complete access to the property leased pursuant to that  
agreement.

(2) For access to, maintenance of, and all rights for an  
existing penstock as it currently exists on said property of SELLER in  
Newbury, Vermont as shown on the Plan above-referenced, including such  
property as shall remain SELLER's following the closing of the title to  
the transaction, intending, without limitation, to include all rights of  
repair, maintenance and replacement together with ingress, egress and

(3) For possible replacement of said penstock as described immediately above by relocation to "ALTERNATE PENSTOCK LOCATION" as shown on the PLAN above-referenced, intending, without limitation, to include all rights of placement, repair, maintenance and replacement onto said alternate route, together with rights of ingress, egress and regress necessary to reasonably effect the same. It is understood and agreed that final determination of an alternate penstock location will be by mutual agreement of the PARTIES, but, in any event, will be allowed along the route indicated by the Plan above-referenced on such lands as will remain the property of the SELLER.

(4) For access to and use of an area of approximate dimensions of 15' x 30', for use as a switchyard, which area is located on lands to be retained by SELLER at the southeast corner of the building complex as indicated on the PLAN above-referenced.

(5) For general use for parking, loading, unloading and access to the main building, which shall be tied to a Lease Agreement to be executed in conjunction with this Agreement.

(D) Bill of Sale, free and clear of all liens and encumbrances to the fixtures, inventory and equipment as identified on the attached and incorporated Exhibit "B", being all electromechanical equipment related to the generation and transmission of hydroelectricity, including, without limitation, turbines, generator, exciter and switchgear.

(E) SELLER will execute warranty deed in recordable form granting to purchasers, their heirs and assigns the easements described in paragraph (C) above.

(4) PURCHASE PRICE:

The total PURCHASE PRICE for the PROPERTY is ONE HUNDRED, FIFTEEN THOUSAND DOLLARS and NO CENTS (\$115,000.00), payable as follows:

(A) SIXTY-TWO THOUSAND, FIVE HUNDRED DOLLARS and NO CENTS (\$62,500.00) by cash or certified check at closing; and

(B) FIFTY-TWO THOUSAND, FIVE HUNDRED DOLLARS and NO CENTS (52,500.00) by a Promissory Note secured by a first mortgage on the PROPERTY, according to the following terms: TWELVE PERCENT (12%) annual interest payable in annual installments of interest only on the anniversary date of note, each year for ten years after closing, with entire balance of principal and interest due on the tenth (10th) anniversary of note. ~~In the event there is sufficient equity in the secured premises to protect SELLER, said Note and Mortgage shall, at the request of BUYER, be subordinated by SELLER to any Note and Mortgage given by BUYER to obtain financing for business purposes. \* see below~~

(C) The purchase price of ONE-HUNDRED FIFTEEN THOUSAND (\$115,000) is attributable as follows:

- (i) \$105,000 to personal property; and
- (ii) \$10,000 to real property

(5) CLOSING:

Closing shall be on or before December 31, 1982, except as provided in Paragraph 11 below.

(6) TITLE:

Upon full payment of the PURCHASE PRICE, a good and sufficient Warranty Deed and Bill of Sale will be delivered, at time of closing, to BUYER, conveying good and marketable title to PROPERTY, free from encumbrances.

(7) POSSESSION:

Possession to be given at the time of closing.

HUGHES, MILLER  
& CANNON  
NORWICH, VERMONT

It is contemplated that Buyer or assignees will seek bank financing. Seller agrees at the request of Buyer or assignees to subordinate the lien created hereby to the

(8) RECORDING:

SELLER shall pay for costs of recording any documents necessary to provide clear and marketable title. BUYER shall pay for costs of recording all other documents associated with this sale. Upon recording the Warranty Deed by BUYER, BUYER shall be deemed to have accepted said deed.

(9) TAXES AND ASSESSMENTS:

BUYER shall pay the Vermont Property Transfer Tax. If applicable, all property taxes, water, fire, sewer or other municipal charges, fuel, or real shall be apportioned as of the actual date of closing, according to the appropriate billing period. Should any tax, charge or rate not be finally determined as of date of actual closing, the last determined tax, charge or rate will be used to apportion.

(10) DAMAGES TO PROPERTY:

In the event that, prior to the delivery of the deed, any of the above described property is destroyed or substantially damaged by fire or other casualty, then this Agreement shall become null and void at the option of the BUYER, and all money paid hereunder shall be refunded to BUYER. However, if BUYER elects to proceed with this Agreement, they shall be entitled to receive the proceeds of any insurance or other reimbursement paid by reason of such damage.

(11) DEFECT IN TITLE:

In the event that title to the premises shall prove not marketable and the SELLER is unable to cure such title within said thirty (30) day period, BUYER shall be entitled to cancel this Agreement upon written notice to the SELLER and shall receive the return of the one-hundred, (\$100.00) earnest money deposit paid hereunder.

(12) PERMIT CONTINGENCY:

BUYER'S obligation hereunder to purchase is also expressly contingent upon the acquisition, by SELLER, on or before closing of all state and local permits necessary for the sale of the property to BUYER, specifically to INCLUDE state and local subdivision permits or deferral thereof. This does NOT contemplate SELLER'S acquisition of any permits required by the Federal Energy Regulatory Commission, which permits are SPECIFICALLY EXCLUDED from the effect of this paragraph.

The cost of acquisition of permits called for herein shall be borne by the SELLER. BUYER, at his option, may waive the provisions of this section by so notifying SELLER in writing.

Should SELLER fail to acquire the permits called for herein by the date above-noted, and BUYER has not waived, in writing, the provisions of this paragraph, then, and in that event, BUYER may demand the return by SELLER of BUYER'S earnest money deposit, and declare this Agreement to be null and void and of no further force and effect.

(13) DAMAGES:

(A) In the event BUYER willfully breaches this Agreement, the SELLER shall be entitled to receive as liquidated damages, Ten Thousand Dollars (\$10,000).

(B) In the event SELLER willfully breaches this Agreement, the BUYER shall be entitled to, at BUYER'S option, either:

- (1) Insist upon specific performance; or
- (2) Receive back its earnest money deposit and declare this Agreement null and void, and receive actual damages from SELLER.

(C) In the event either party claims any default under this agreement notice of this default shall be sent in writing and the party against whom a default is claimed shall have 30 days to cure same or make diligent attempts to do so.

(14) BROKER:

The parties hereto agree that this Agreement has been brought about without the services of any real estate broker.

(15) POWER PURCHASE AGREEMENT:

SELLER agrees to purchase from BUYER, in calendar year 1983, upon written request of BUYER, electricity produced on site by BUYER, but not more than FIVE-HUNDRED DOLLARS (\$500) of value of such electricity, which cost to SELLER may, at agreement of the parties, take the form of credit to BUYER of amounts owed SELLER.

(16) MODIFICATION OF AGREEMENT:

This Agreement may not be changed orally, but only against whom enforcement of any event, change, modification or discharge is sought, and this Agreement represents the full and complete understanding and agreements of all the parties unless changed in writing as set forth herein.

(17) BINDING EFFECT:

This Agreement is binding upon and inures to the benefit of the successors, survivors, heirs, administrators, executors and assigns of the parties hereto. This Agreement shall survive closing.

(18) ASSIGNMENT

The rights of BUYER under this Agreement are freely assignable, either in whole or in part, by BUYER.

DATED at New York City, County of New York and State of New York, this 26<sup>th</sup> day of November, 1982.

IN PRESENCE OF:

Raymond C. Jones  
(As to William McDonough)

William A. McDonough  
WILLIAM McDONOUGH

Myron R. Leung  
(As to William McDonough)

DATED at New York City, County of New York and State of New York, this 26 day of November, 1982.

IN PRESENCE OF:

Raymond C. Jones  
(As to L. Macrae Rood)

L. Macrae Rood  
L. MACRAE ROOD

Myron R. Leung  
(As to L. Macrae Rood)

DATED at Cornwall, County of Green and State of New York, this 1<sup>st</sup> day of December, 1982.

IN PRESENCE OF:

Daniel R. Kram  
(As to Maury Wallace)

Maury Wallace  
MAURY WALLACE

Julia P. Hengst  
(As to Maury Wallace)



EXHIBIT B

- Turbine: Double Leffel runners on a single shaft, two draft tubes exiting from a single pressure case originally made for a Trump 35" 200 HP, 200 RPM 28 foothead turbine.
- Generator: Westinghouse 240V, 752 amp., 312 KVA, 3 phase 60 HZ, 360 RPM, linked by direct drive to turbine.
- Exciter: Linked by direct drive to turbine and generator.
- Penstock: 5' diameter buried, leading from dam forebay to turbine casing.
- Switchgear: Two right (southend) panels of the existing six panels on the main level of the mill building.

PURCHASE AND SALE AGREEMENT  
Maury Wallace and Mad River Hydro Attachment

December , 1982

Add to Paragraph 4 in lieu of the handwritten additions:

In the event there is sufficient equity in the secured premises to protect SELLER, said Note and Mortgage shall, at the request of BUYER, be subordinated by SELLER to any Note and Mortgage given by BUYER to obtain financing for business purposes. The consent of BUYER to any such subordination shall not be unreasonably withheld. The promissory Note contemplated by this paragraph shall be in customary form acceptable to BUYER and SELLER, but will in any event allow prepayment without penalty at any time.

MAD RIVER HYDRO  
Hydroelectric Development

William A. McDonough  
145 Fifth Avenue  
New York, New York 10011  
212-777-2850

☒ Reply

L. Macrae Rood  
P.O. Box 142  
Warren, Vermont 05674  
802-496-5200

Reply ☐

14 December 1982

Richard Brock  
Cheney & Brock  
Montpelier, Vermont

Dear Mr. Brock,

We have received the signed Purchase and Sales Agreement, Lease Agreement, and Notice for Recording on the property owned by Maury Wallace in Newbury, Vermont. We have reviewed the addition you have made to paragraph 4 of the Purchase & Sales Agreement, the addition to paragraph 7 on page 2 of the Lease Agreement and the substitution in paragraph 2 on page 2 of the Lease Agreement. These changes are all acceptable to us and we will consider them made.

Sincerely,

*L. Macrae Rood*

L. Macrae Rood

LMR:lr



# Know all Men by these Presents

That I, Maury Wallace,

of Ithaca in the County of Tompkins  
and State of New York Grantor, in the consideration of  
Ten and more ----- Dollars  
paid to my full satisfaction by -----

Newbury Hydro, a Vermont partnership, with a principal place  
of business in Warren

~~of~~ and State of Vermont in the County of Washington  
freely Give, Grant, Sell, Convey and Confirm Grantee, by these presents, do  
unto the said Grantee

Newbury Hydro,

and its / ~~heirs~~ successors and assigns forever, a  
certain piece of land in Newbury in the  
County of Orange and State of Vermont, described as  
follows, viz:

Being a part of all and the same land and premises as were vested in  
Maury Wallace by Judgment and Decree of Foreclosure in an action  
entitled Vermont Industrial Development Authority v. Corning Fibers,  
Inc. et al. dated September 10, 1982 along with Certificate of  
Redemption in the same action dated October 6, 1982, all of which  
are recorded at Book 69 Pages 142-150 of the Newbury Land Records.

Being a part of all and the same land and premises as were conveyed  
to Corning Fibers, Inc. by deed of Vermont Industrial Development  
Authority dated May 25, 1977 and recorded at Book 61 Pages 147-148  
of the Newbury Land Records. That portion of the above referred to  
land and premises hereby conveyed may be described as follows.

First, all that portion of that land and premises located west of a  
line parallel to and 100 feet east of the western edge of a dam now  
across the Wells River located on the above referred to land and  
premises which line commences at the northerly assumed right-of-way  
of United States Route 302 and runs N 07° W to the northerly  
property line of the above referred to land and premises and which  
line is more particularly shown on a plat entitled "Plan of Wallace  
Mill and Property--Newbury, Vt." dated October 11, 1982 and drawn by  
L. Macrae Rood. Meaning to convey all the land and premises vested  
in Maury Wallace through the above referred to instruments located  
west of the above described line, including the dam.

Second, all water rights, flowage rights and empoundment rights  
vested in Maury Wallace through the above referred to instruments  
and appurtenant to the dam located on the herein conveyed land and  
premises, reserving, however, to the grantor that amount of water  
needed for the operation of a paper mill on lands retained by the  
grantor, being no more than .6 of a cubic foot per second.

Third, an easement and right of way in perpetuity to the use of the  
existing penstock and tailrace, as currently located, for the  
generation of electric power by means of the dam hereby conveyed to  
grantees; together with the right to relocate that penstock as  
described on the above referred to plan as "alternate penstock  
location," or at such other place on lands of the grantor as may be  
mutually agreed between grantor and grantee. Grantee will have all

rights as may be convenient to enter upon lands of grantor for repair, maintenance and replacement or reconstruction of that penstock and tailrace wherever located, doing as little damage as possible to lands of the grantor and restoring the lands of the grantor as nearly as possible to their condition prior to such entry.

Grantee shall have a perpetual easement for access to and use of an area of approximate dimensions of 15 feet by 30 feet for use as a switch yard as indicated on the above referred to plan and on lands retained by grantor at the southeast corner of the structure now existing on the herein conveyed land and premises.

Grantee shall have a perpetual easement in common with grantor for use of the parking, loading and access spaces to the structure now located on lands retained by grantor and to those lands and premises conveyed to grantee by this deed whether in fee or in easement.

Reference may be had to the above referred to instruments and their records, and to all prior instruments and their records, for a more particular description of the herein conveyed land and premises.

The herein conveyed land and premises are subject to State of Vermont Deferral of Subdivision Permit #D-3-1046. The herein retained land and premises are subject to State of Vermont Deferral of Subdivision Permit D-3-1047. Both are subject to the following waiver of development rights:

"In order to comply with State of Vermont Environmental Protection Rules on the subdivision of lands and disposal of waste including sewage, the grantee shall not construct or erect a structure or building on the parcel of land conveyed herein, the useful occupancy of which will require the installation of plumbing and sewage treatment facilities or convey this land without first complying with said State regulations. The grantee by acceptance of this deed acknowledges that this lot may not qualify for approval for development under the appropriate environmental protection or health regulations and that the State may deny an application to develop the lot."

Also conveyed hereby is all right, title and interest acquired by deed of Sarah Lamare dated March 21, 1983 and to be recorded in the Newbury Land Records.

Newbury Hydro

Maury Wallace

Newbury Hydro, its successors

And I hereby engage to Warrant and Defend the same against all lawful claims whatever, except as above

In Presence of

76 - Candon	Maury Wallace	L.S.
Deuxer Book		L.S.
		L.S.
		L.S.
		L.S.
		L.S.

State of Vermont, ss. At Newbury day of April this  
ORANGE County 4 A. D. 1983

Maury Wallace

personally appeared, and he acknowledged this instrument, by  
him sealed and subscribed, to be his free act and deed.

Before me Richard J. Burke  
\_\_\_\_\_  
Notary Public  
(Title)

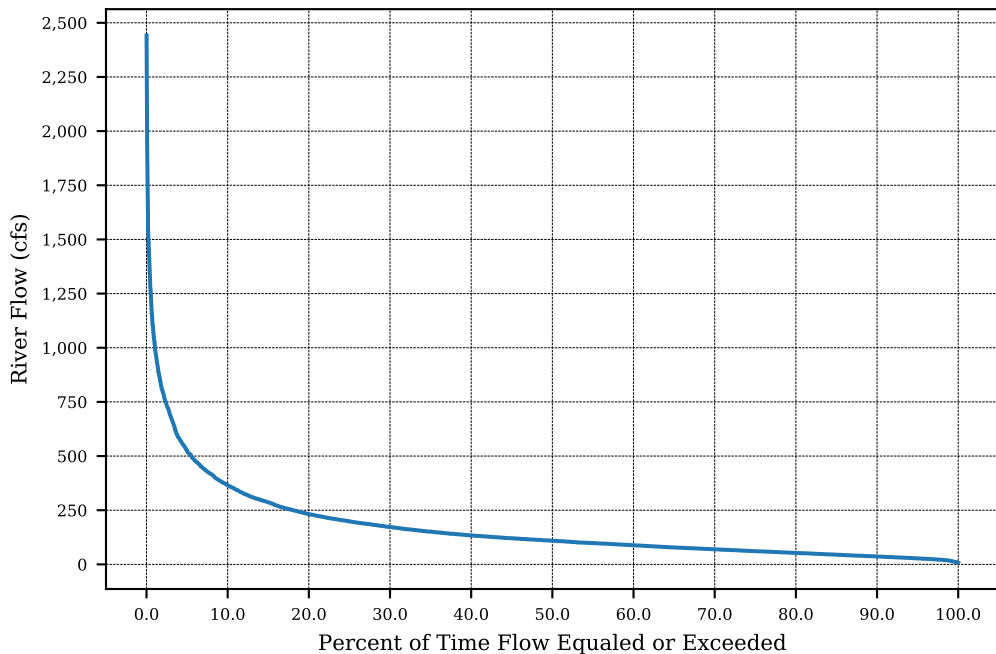
**APPENDIX C**  
**CONSULTATION SUMMARY**  
**FILED SEPARATELY**



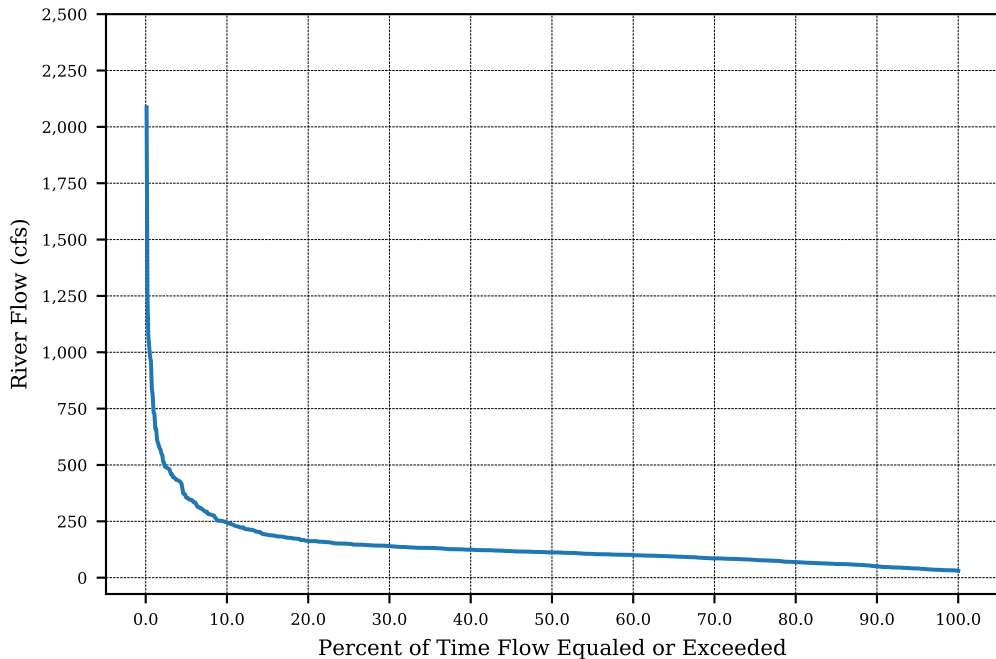
## **APPENDIX D**

### **FLOW DURATION CURVES**

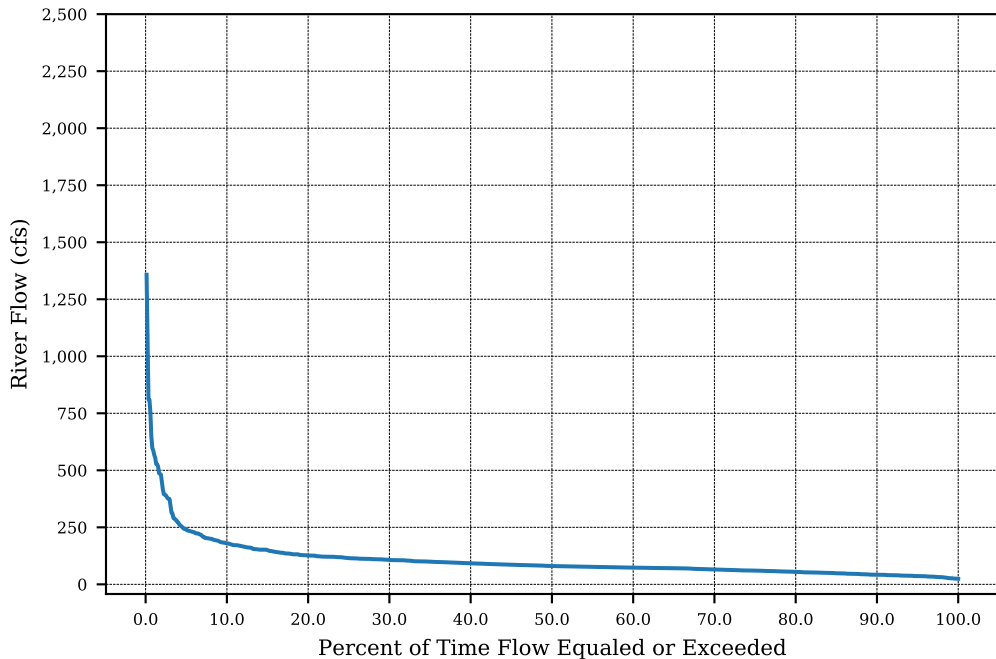
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Period of Record 1991 to 2020



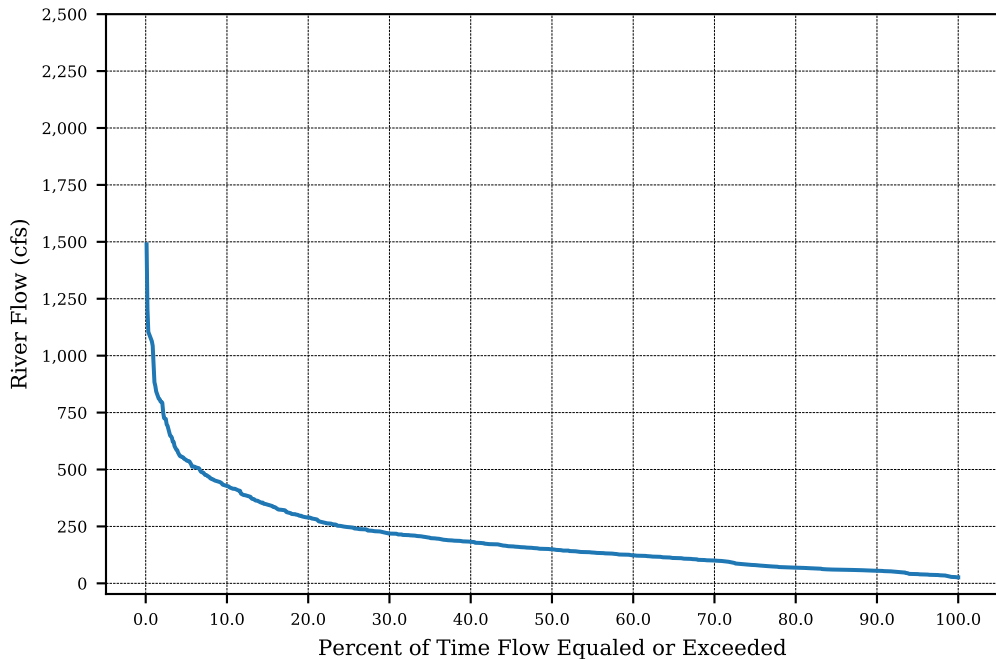
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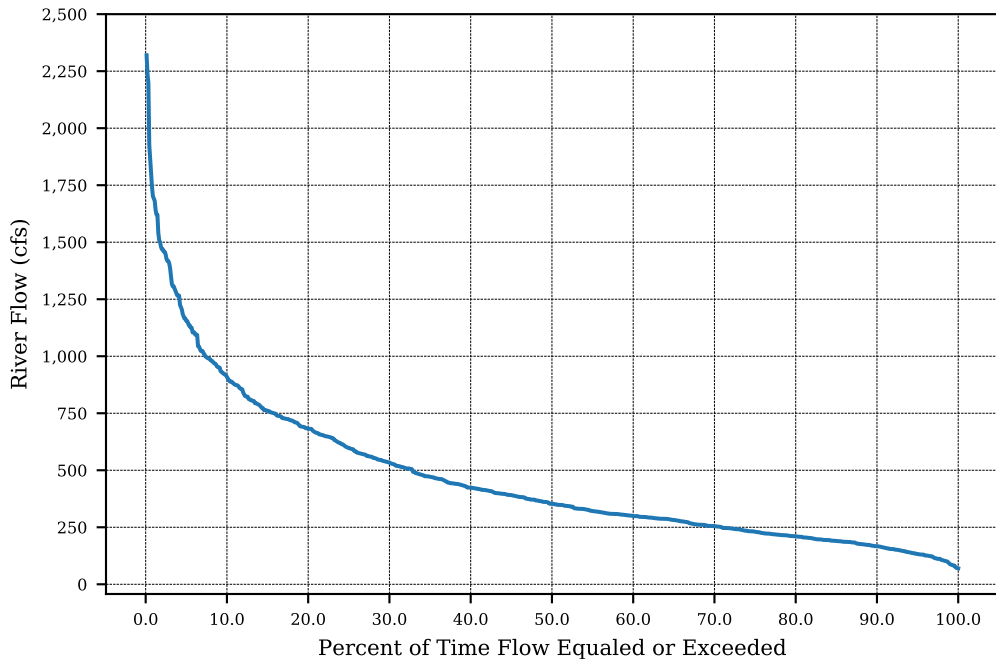
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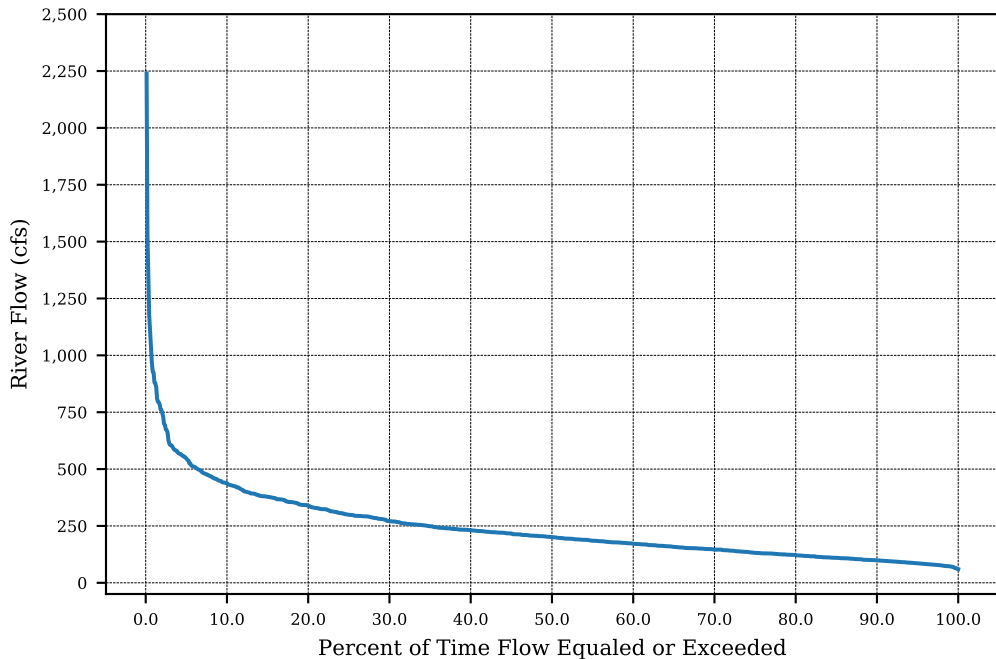
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Period of Record 1991 to 2020



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Period of Record 1991 to 2020

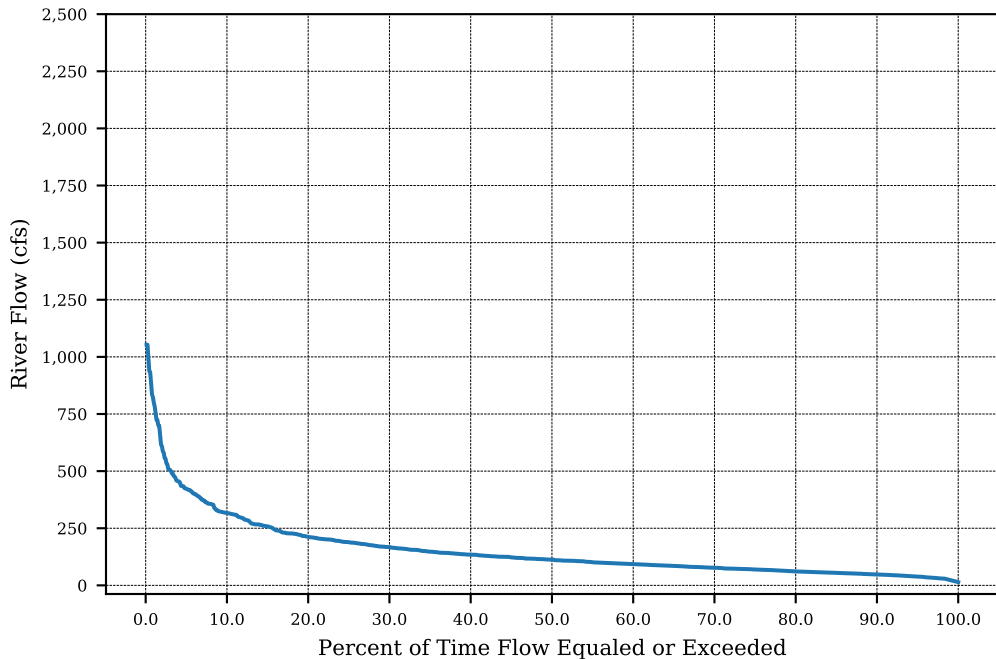


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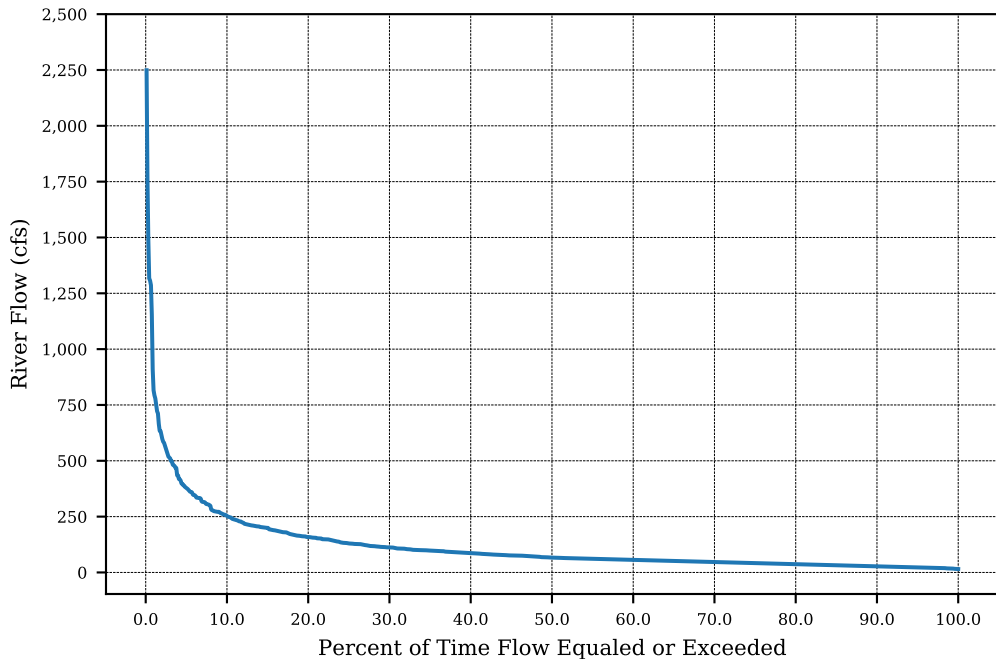




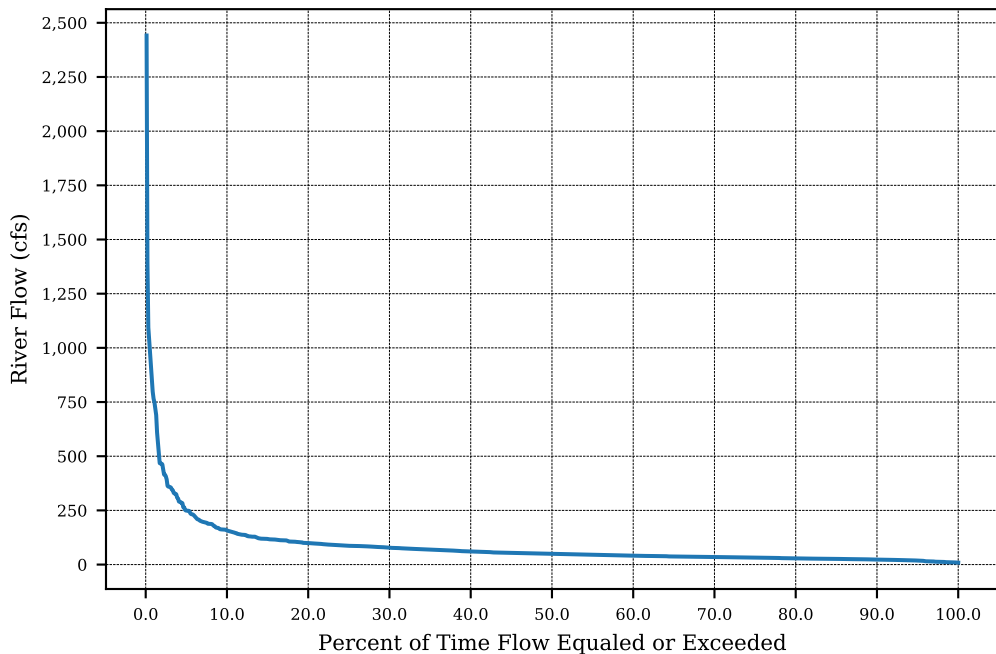
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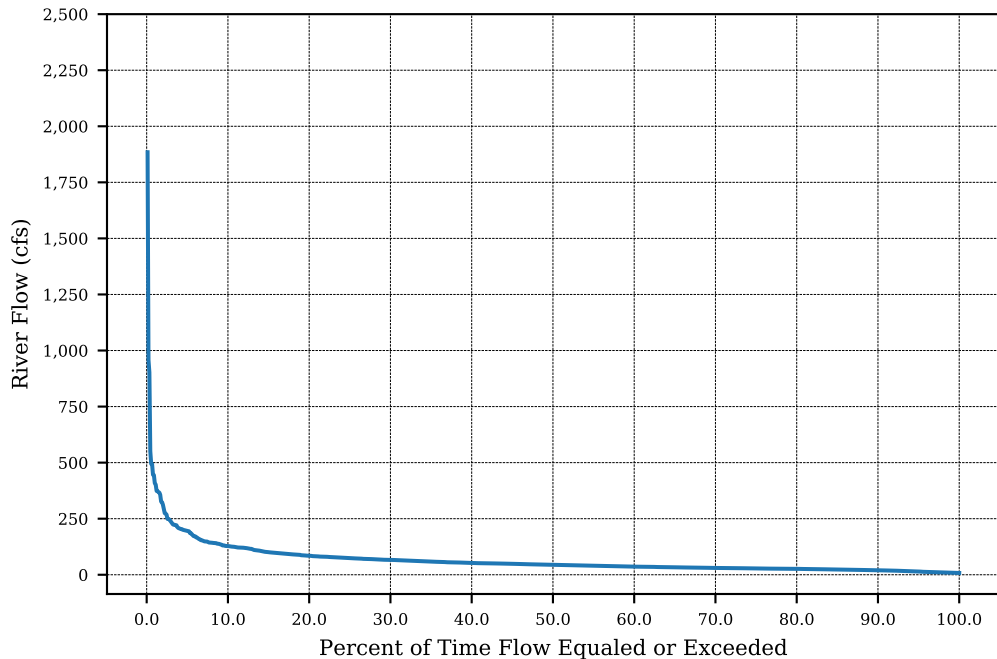
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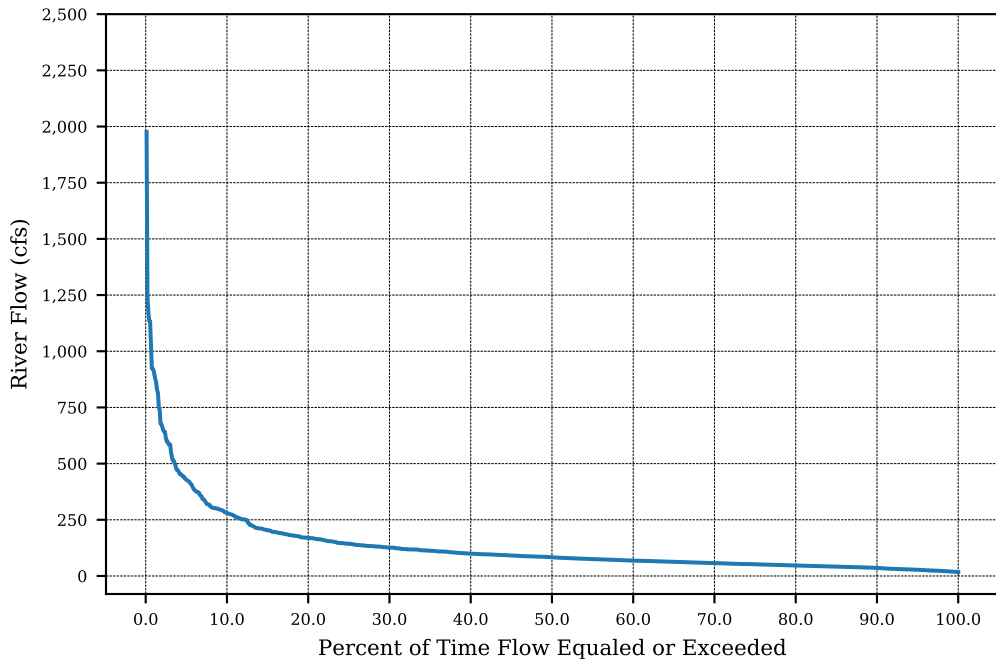
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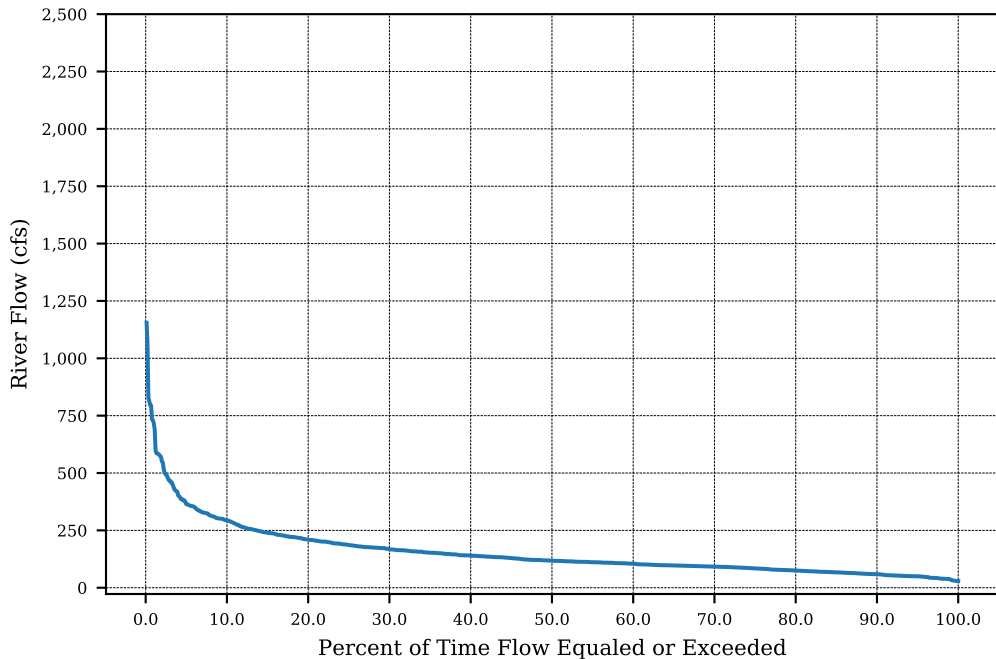
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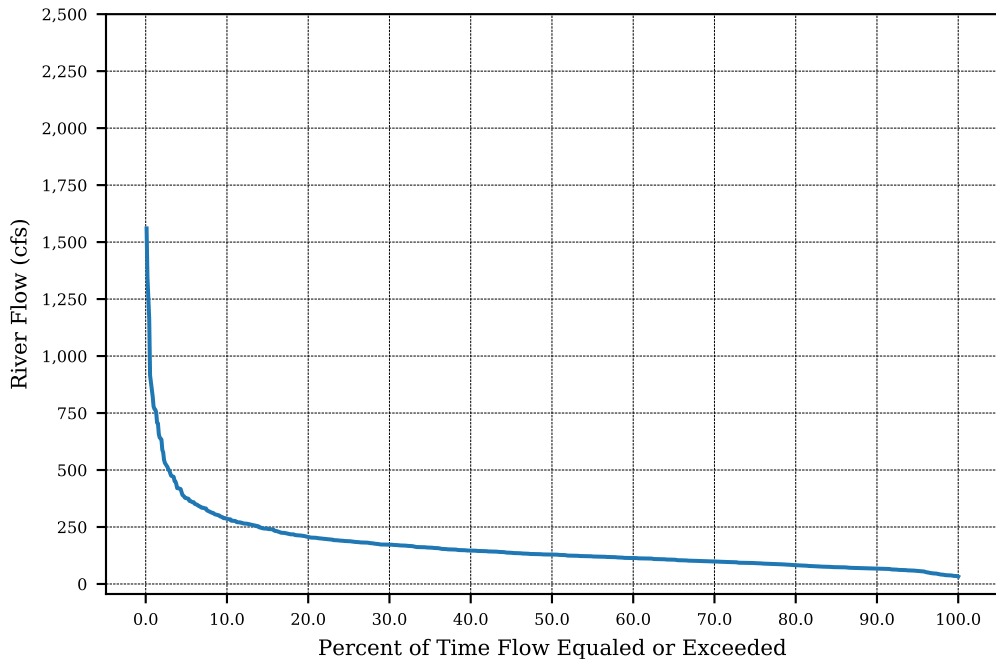
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Period of Record 1991 to 2020



November Flow Duration Curve - Newbury Project  
Prorated (x1.013) data from USGS Gage 01139000 Wells River at Wells River, VT  
Period of Record 1991 to 2020



December Flow Duration Curve - Newbury Project  
Prorated (x1.013) data from USGS Gage 01139000 Wells River at Wells River, VT  
Period of Record 1991 to 2020





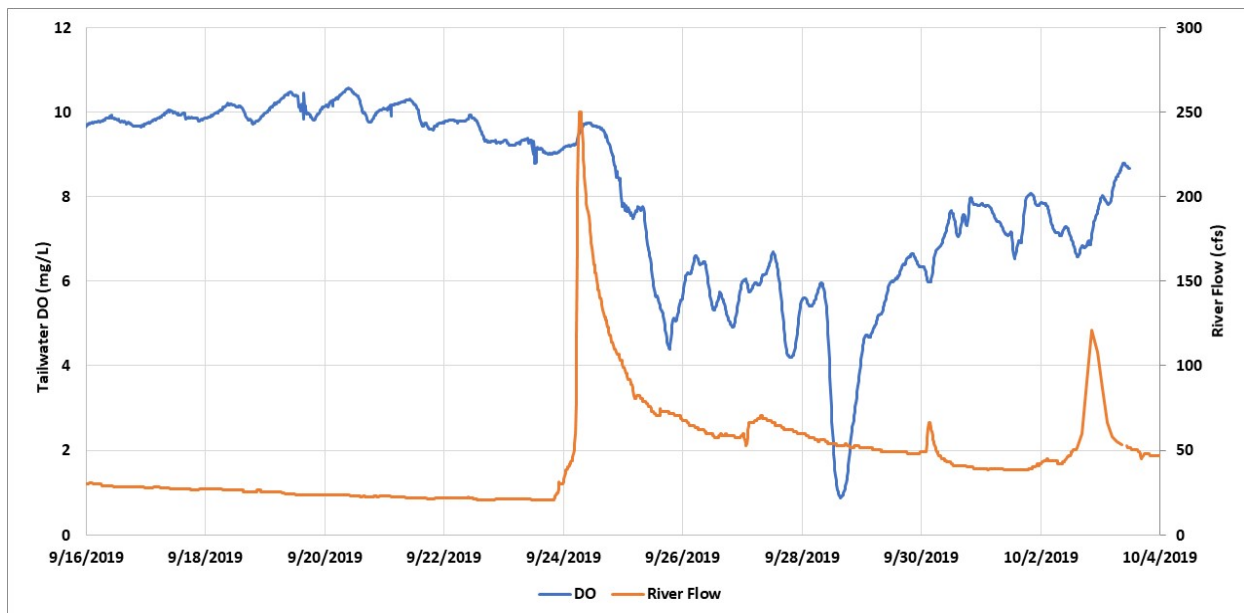
## **APPENDIX E**

### **WATER QUALITY STUDY REPORT RESPONSE TO AGENCY COMMENTS**

The DEC reviewed GMP's 2019 Water Quality Study Report and provided specific comments on the report in their June 23, 2020 comment letter. DEC's specific comments and GMP's responses to those comments are included below.

- *Page 2-5. The caption of Figure 2-2, notes that "the data sonde [in the tailwater] was found buried in sand when equipment was uninstalled on October 3, 2019". Please provide the last time the loggers were checked/downloaded before this site visit and describe how long this condition may have persisted, if it can be determined from the data.*

The data logger in the tailwater had previously been checked and downloaded on September 10. Based on review of the DO data from the tailwater and river flow, DO drops rapidly following the peak in river flow on September 24 (see Figure E-1). It is likely that the high river flows caused sediment movement and sand to cover the data logger.



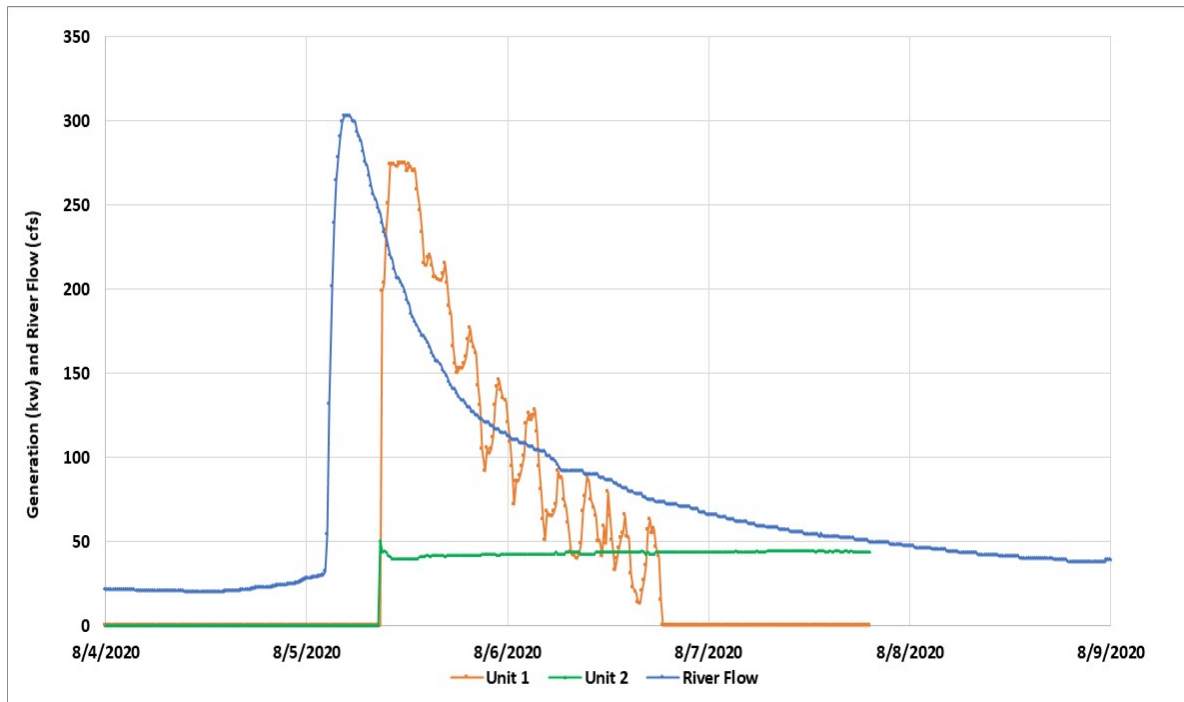
**Figure E-1 DO (mg/L) in the Newbury tailwater and river flow (cfs) from September 16 to October 3, 2019. Source: USGS gage No. 01139000 (Wells River at Wells River, Vermont)**

- *Page 3-3. The report states that "Unit 1 was not operational throughout the 2019 study period because of a programming error in the Programmable Logic Controller (PLC) that controls the unit. The Unit 2 minimum flow unit was operational throughout the study period". Given that Unit 1 was not operable, it is likely that there was more spillage over the course of the study than there would be under a*

*new license. Please determine what time periods Unit 1 would have operated if it were operable and whether these time periods overlapped with when low DO conditions at the intake were documented (i.e. if more water were diverted through the penstock at this time, is there potential for low DO conditions to persist downstream?). Dependent upon the final certification and license conditions, it may be necessary to conduct limited DO monitoring post license issuance.*

As discussed in Section 3-2, Page 3-3 of the report, Unit No. 1 can operate between 20 cfs and 134 cfs; Unit No. 2 operates at its maximum hydraulic capacity of 30 cfs. Unit No. 1 is typically not run at its low range of 20 cfs because it is difficult to balance the water level, minimum flow requirements, and to keep the unit online during low flow periods. The minimum flow unit (Unit No. 2) is the preferred unit during low flow periods.

In order to characterize the river flow conditions when Unit No. 1 may operate during the summer low flow period, GMP reviewed additional river flow and operations data from August 1 to September 22, 2020. Both Unit No. 1 and Unit No. 2 only generated for a short time following an increase in river flow on August 5-6, 2020 (Figure E-2). Unit No. 1 operated between flows of approximately 75 cfs to 230 cfs; Unit No. 2 operated between approximately 50 cfs and 230 cfs. Assuming that Unit No. 1 would have operated when flows were approximately 75 cfs or above in 2019, Unit 1 *may* have operated on July 12-14, July 29, August 18-19, September 2-4, and September 24-25. Though feedback from the Project operator notes that Unit 1 operations during those timeframes would have been unlikely due to the limited amount of water present. Regardless, none of these dates coincided with times when the DO concentration was below 6 mg/L at the Newbury intake.



**Figure E-2 Unit 1 and Unit 2 generation (kw) and river flow (cfs) from August 4-8, 2020 at the Newbury Project. River flow prorated from USGS gage No. 01139000 (Wells River at Wells River, Vermont)**

- Page 3-5. The report states, “water temperature was consistent among the six monitoring sites throughout the Newbury Project study area and demonstrated similar temporal variations”. While the relationship between water temperatures generally demonstrated similar temporal variations through the study period, there were also periods where water temperatures in the impoundment and below the project increased by more than one degree Fahrenheit in comparison to the upstream location. This may be due to the greater surface area of the impoundment facilitating warming. Alternatives to mitigate temperature impacts should be explored.

Comment noted.

- Page 3-7. After describing the periods when DO concentrations were below standards, the report states, “the data sonde at Site 3 (Intake) needed to have sediment cleaned from it during the data downloads; thus, sedimentation on the data sonde probe may have contributed to the low DO readings observed at this site”. Please provide the dates for when this logger was checked/downloaded and the occasions when it needed to be cleaned.

All data loggers were checked and downloaded on July 24, August 7, August 19, September 10, and October 3. The logger at the intake was cleaned and calibrated on July 24, August 7, and September 10.

- *Page 3-7. The report describes DO at the tailrace as "below the Class B(2) standard for 45 minutes on August 27 (5.72 mg/L to 5.97 mg/L; 63.2 percent to 66.4 percent)". Please confirm that all flows were being spilled at the dam during this period.*

As stated in the report, Unit No. 1 was not operational all summer, and the minimum flow unit (Unit No. 2) was not operated on August 27. All flows were spilled over the dam during the 45 minutes on August 27 when DO dropped below the standard at the tailrace.

- *Page 4-1. The report states that "water quality conditions met state standards for Class B(2) waters throughout the study period". As described in the preceding comments, there are instances of both temperature and DO not meeting standards during the study period. As the relicensing process moves forward, it is possible that operational alternatives are likely to address these conditions, limited additional monitoring may be necessary, or that other alternatives to mitigate impacts should be explored.*

Comment noted.

## **APPENDIX F**

### **FINAL INSTREAM HABITAT AND AESTHETIC FLOW STUDY REPORT**

# FINAL INSTREAM HABITAT AND AESTHETIC FLOW STUDY REPORT

NEWBURY HYDROELECTRIC PROJECT

FERC No. 5261



Prepared for:

**Green Mountain Power**

Prepared by:

**Kleinschmidt Associates**

March 2021

***Kleinschmidt***



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## LIST OF ATTACHMENTS

- Attachment 1 Study Consultation Record
- Attachment 2 Habitat Suitability Curves
- Attachment 3 Completed Aesthetic Flow Rating Forms

\\Kleinschmidtusa.com\Condor\Jobs\012\203\Docs\Studies\Instream Flow\2020 Study\Report\012203\_001RP Newbury Project - Final Instream Flow and Aesthetic Flow Study Report Final March 2021.docx

## 1.0 INTRODUCTION

---

Green Mountain Power (GMP) completed an instream habitat and an aesthetics flow study at the Newbury Hydroelectric Project (FERC No. 5261) in 2020 and 2021 as part of the ongoing hydropower relicensing process. The Newbury Project is on the Wells River in central Vermont. GMP completed the flow studies in accordance with the Proposed Study Plan, which was distributed to resource agencies and stakeholders for review and comment on May 15, 2019, except that two additional flows (leakage and 10 cfs) were evaluated to add more variability to the aesthetics study. The Vermont Agency of Natural Resources (VANR) and Connecticut River Conservancy (CRC) provided comments on the proposed study plan on June 14, 2019, which were incorporated into the study methods. Additional consultation regarding transect location, river flow releases, and data analysis for the bypass habitat study was completed with VANR staff in 2019 and 2020 by phone and email (Attachment 1).

The objectives of the aquatic habitat and aesthetic flow studies were to determine the conservation and aesthetic flows necessary to meet Vermont's Water Quality Standards in the small reach of the Wells River bypassed by operations of the Newbury Project.

### 1.1 Newbury Project Overview

GMP operates the Newbury Project as a run-of-river facility, which maintains a stable headpond water surface elevation and returns river flow at the powerhouse that matches inflow. Approximately 590 feet of the Wells River between the dam and powerhouse is bypassed during normal operations. GMP provides a minimum flow to the reach of at least 50 cubic feet per second (cfs) from April 15 to June 10 and at least 25 cfs during the remainder of the year.<sup>1</sup> Minimum flows are provided via a combination of discharge from a minimum flow unit, spill, and the downstream fishway when it is seasonally installed. GMP also maintains a year-round aesthetic flow of 5 cfs over the dam when the minimum flow unit is in use. When the minimum flow unit is shutdown, GMP maintains minimum flow and aesthetic flow requirements via spillage over the dam by partially lowering a section of the pneumatic crest gates. The 5 cfs aesthetic flow turns to ice in the winter, which can prevent deflation of the pneumatic crest bladder at the dam. This is a safety and operational concern for GMP.

---

<sup>1</sup> Or inflow to the reservoir, whichever is less.

The maximum capacity of the Newbury Project is 164 cfs. The main turbine (Unit No. 1) can generate with up to 134 cfs; the minimum flow turbine (Unit No. 2) operates with 30 cfs in an “on” or “off” state. When operational, the minimum flow turbine discharges a continuous river flow of 30 cfs into the reach between the dam and powerhouse (Photo 1). When river flow is too low to operate the minimum flow turbine (<30 cfs) or exceeds 164 cfs, water spills over the dam into the bypassed reach (Photo 1). Additionally, when the minimum flow unit is in use, the 5 cfs aesthetics flow is provided, therefore providing at least 35 cfs to the bypassed reach during those times.



**Photo 1      Newbury Dam, Minimum Flow Turbine, Plunge Pool, and Upper Section of the Bypassed Reach**

The Wells River is designated by VANR as a Class B(2) water for aquatic habitat and coldwater fish habitat. Class B(2) waters are managed by VANR to achieve and maintain high quality aquatic habitat characterized by physical habitat structure, stream processes, and flow characteristics of rivers and streams. The Wells River supports a fishery for anglers that targets wild brook trout, brown trout, and rainbow trout that are stocked annually by the Vermont Fish and Wildlife Department. GMP understands that white sucker may inhabit the Wells River near the project and may use the river for spawning and rearing. Good aesthetic values are also a management objective and designated use of Class B(2) waters in Vermont.

## 2.0 METHODS

---

### 2.1 Habitat Mapping

Biologists mapped riverine habitat in the bypassed reach by wading the river or walking along the shoreline from the tailwater to the dam to classify each mesohabitat (e.g., run, riffle, pool). Biologists took photographs; measured length, width, and water depth; and classified the dominant substrates and instream cover for fish and aquatic organisms in each habitat unit.

### 2.2 Aquatic Habitat Study

Biologists established three representative habitat transects in the reach based on consultation with the VANR. Transect lines were erected from bank to bank. GMP adjusted generation and headpond elevation to provide four flows over the dam: ~15 cfs, 25 cfs, 35 cfs, and 50 cfs. During each flow release, biologists measured water depth and water velocity at approximately 10 to 15 stations across each transect, measured wetted stream width, and took photographs. Substrates were classified during the low flow release using standard substrate classification guidance (Table 1). River discharge was verified using velocity and depth data collected at Transect 1 (closest to the dam) because there was uniform, non-turbulent flow.

**Table 1 Substrate Classification used for Newbury Instream Flow Study**

Code	Description
1	Roots, Snags, Undercut Banks, Overhead Cover
2	Clay
3	Silt
4	Sand
5	Small Gravel (< 2" or 5 cm)
6	Gravel (2"-4" or 5-10 cm)
7	Cobble (4"-10" or 10-25 cm)
8	Small Boulder (10"-24" or 25-61 cm)
9	Large Boulder (>24" or 61cm)
10	Ledge
11	Detritus, Vegetation

Field data were entered into MS Excel and compared to habitat suitability curves (HSC; Attachment 2)<sup>2</sup> that describe water depth, water velocity, and substrate preferences of the following species of management interest or typical game and non-game aquatic species in Vermont river systems:

- Juvenile and adult brook trout,
- Adult rainbow trout,
- Adult longnose dace,
- Spawning white sucker,
- Juvenile white sucker and adult white sucker, and
- Benthic macroinvertebrates.

Habitat suitability values ranging from 0.0 (unsuitable) to 1.0 (optimal) were assigned to each water depth, water velocity, and substrate measurement at each transect for each species/lifestage using a look-up equation in Microsoft (MS) Excel based on the slope of the HSC. The product of the depth, velocity, and substrate suitability was used to determine an overall composite suitability value at each position along each transect for each species/lifestages. Composite values were summed for each transect to compare habitat suitability at the four flow releases for all species/lifestages. Table 2 provides an example of the calculated composite suitability value for adult trout at Transect 1 with a river flow of 25 cfs.

**Table 2      Example Habitat Suitability Analysis for Adult Trout, Newbury Project  
Bypassed Reach Instream Flow Study, Transect 1 (25 cfs)**

Field Data				Brook trout (adult)				Rainbow trout (adult)			
Distance	Substrate	Depth (ft)	Velocity (fps)	Depth SI	Velocity SI	Substrate SI	Composite SI*	Depth SI	Velocity SI	Substrate SI	Composite SI*
21.5	Large Boulder	1.4	1	0.73	1.00	1.00	0.73	0.90	1.00	1.00	0.90
23.5	Small Boulder	1.45	2	0.77	0.78	1.00	0.60	0.95	1.00	1.00	0.95
25.5	Small Boulder	1.5	2.26	0.80	0.67	1.00	0.53	1.00	1.00	1.00	1.00
27.5	Large Boulder	0.8	2.15	0.32	0.72	1.00	0.23	0.30	1.00	1.00	0.30
29.6	Large Boulder	0.9	2.15	0.39	0.72	1.00	0.28	0.40	1.00	1.00	0.40
31.5	Large Boulder	0.6	1.95	0.18	0.80	1.00	0.15	0.10	1.00	1.00	0.10
33.5	Small Boulder	0.35	1.35	0.01	1.00	1.00	0.01	0.00	1.00	1.00	0.00
35.3	Small Boulder	0.4	0.05	0.05	0.46	1.00	0.02	0.00	0.28	1.00	0.00
36.9	Cobble	0.2	0.25	0.00	0.81	1.00	0.00	0.00	0.60	1.00	0.00
39.5	Small Boulder	0	0	0.00	0.210	1.00	0.00	0.00	0.20	1.00	0.00
<b>Composite Suitability</b>							<b>2.56</b>				<b>3.65</b>

\* Product of depth suitability, velocity suitability, and substrate suitability; abundant velocity refugia HSC used for trout species.

<sup>2</sup> Approved by VANR on December 14, 2020 (see Attachment 1).

The percent of maximum habitat suitability was calculated by dividing the composite suitability of a given flow by the maximum suitability observed during the study. Percent increase or decrease in habitat suitability was calculated for each flow release for each species/lifestages.

## **2.3 Aesthetic Flow Evaluation**

GMP released five aesthetic flows (leakage, 5 cfs, 10 cfs, 15 cfs, and 25 cfs) by adjusting generation to increase or decrease head pond elevation, which resulted in spill over the dam. Biologists measured discharge during each release at Transect 1. Still photos and videos of each release were collected. An in-person aesthetics flow demonstration study with stakeholders was not feasible in 2020 due to drought conditions in the northeast and concerns with safety surrounding the COVID-19 pandemic. GMP instead hosted a virtual meeting with stakeholders on March 4, 2021, to evaluate the aesthetic flow release videos and photos. Representatives from the VANR, the CRC, Kleinschmidt, and GMP took part in the evaluation via MS Teams. Participants used an aesthetics flow evaluation form (Attachment 3) to individually score each flow release based on aesthetic quality, water character, flows, water level, bed, and channel characteristics, and flowing and falling water to determine which flows provided good aesthetic value. Rating options included Poor, Fair, Good, Very Good, or Excellent. Each release was compared to the preceding flow with qualitative rankings of Significantly Worse, Worse, Same, Better, or Significantly Better. After reviewing videos and photos of each flow over the dam, the participants discussed their individual rankings for each release collaboratively to reach a consensus.



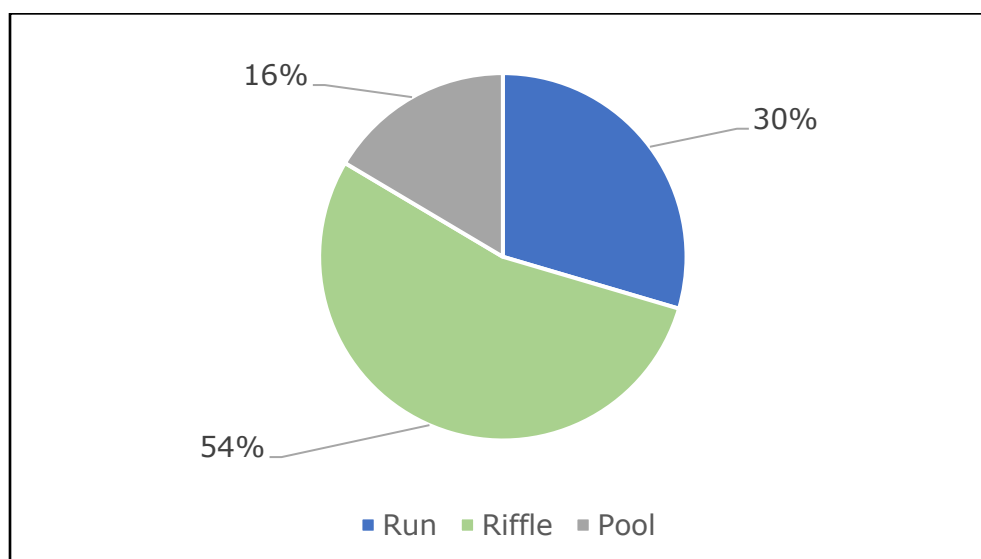
## 3.0 RESULTS

### 3.1 Bypassed Reach Habitat Mapping

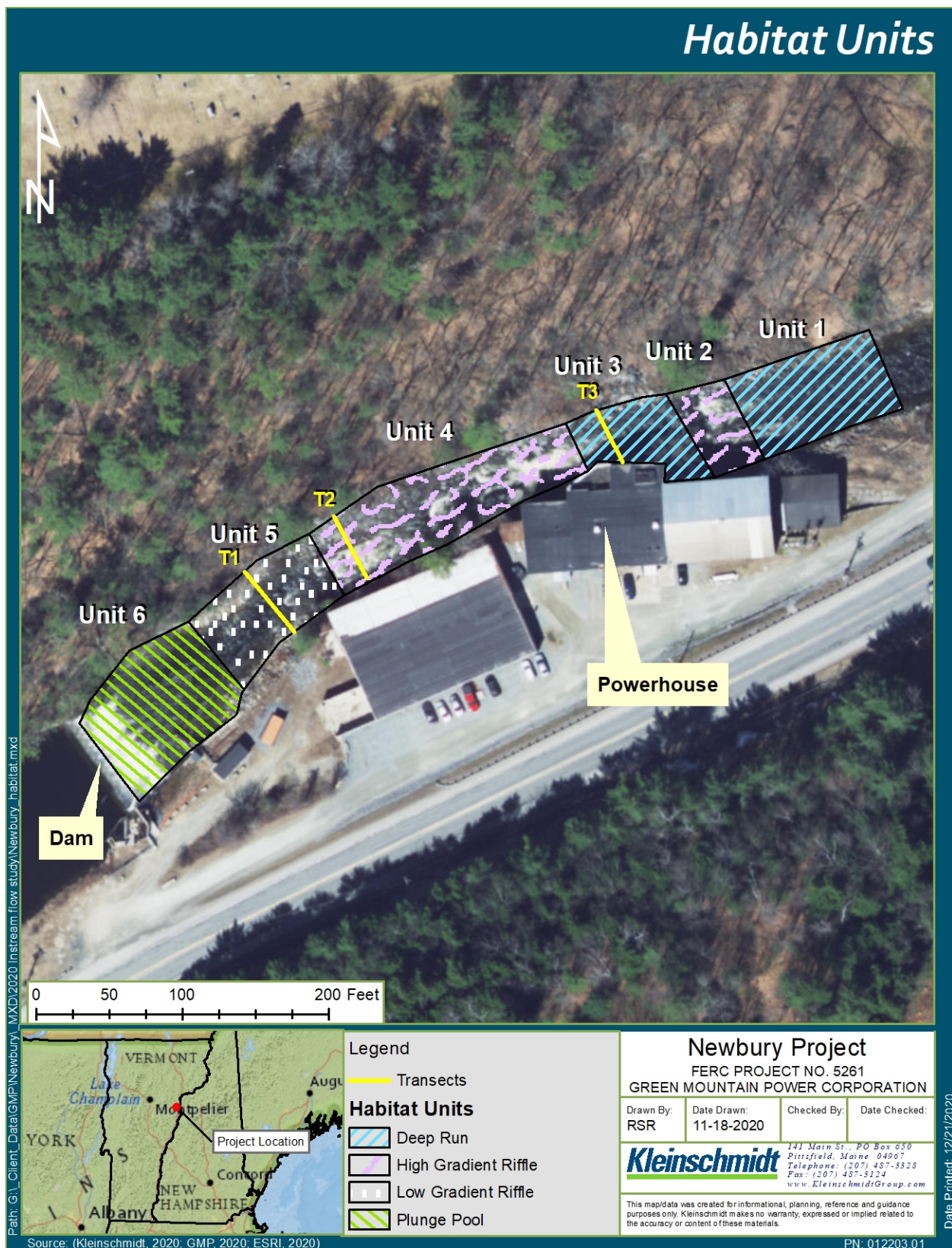
The reach of the Wells River between the dam and tailwater is 592-feet-long with high and low gradient riffle habitat (54 percent), deep runs (30 percent), and deep pool habitat (16 percent) (Table 3, Figure 1, Figure 2, and Photo 2 – Photo 7). Downstream of the large plunge pool at the base of the dam, the channel is steep and narrow, with swift, deep water or slower, deep runs. Much of the stream bank is composed of vertical ledge and large boulders. Substrate is mostly large boulder and instream cover for fish is available from water depth, turbulence, and large boulders (Photo 2 – Photo 7).

**Table 3 Habitat Mapping Data from the Newbury Project Bypassed Reach**

Habitat Unit #	Habitat Type	Length (ft)	Percent of Reach (%)	Average Width (ft)	Average Depth (ft)	Dominant Substrate
1	Deep Run	106	17.9	24	3.0	Large Boulder
2	High Gradient Riffle	40.5	6.8	18	2.5	Large Boulder
3	Deep Run	69	11.7	30	4.0	Large Boulder
4	High Gradient Riffle	180	30.4	18	1.5	Large Boulder
5	Low Gradient Riffle	99	16.7	17	1.0	Large Boulder
6	Plunge Pool at Dam	97.5	16.5	50	> 10 feet	Large Boulder
	<b>Total</b>	<b>592</b>	<b>100.0</b>	-	-	-



**Figure 1 Percentage of Aquatic Habitat Types in the 592-ft-long Reach of the Wells River between the Newbury Dam and Powerhouse**



**Figure 2 Mesohabitats and Transect Locations, Newbury Project**





**Photo 2      Deep Run at Tailwater Confluence (Habitat Unit 1)**



**Photo 3      High Gradient Riffle (Habitat Unit 2)**





**Photo 4**      **Deep Slow Run (Habitat Unit 3; location of Transect 3)**



**Photo 5**      **High Gradient Riffle (Habitat Unit 4; location of Transect 2)**





**Photo 6      Low Gradient Riffle (Habitat Unit 5; location of Transect 1)**



**Photo 7      Plunge Pool (Habitat Unit 6)**

### 3.2 Habitat Suitability Analysis

As higher flows were released into the channel, the river became deeper and swifter, but remained essentially confined to its channel given the steep banks. All flow releases provided suitable habitat and the river channel remained connected. In summary:

- The largest increase in habitat suitability for juvenile brook trout (12 percent), adult brook trout (20 percent), rainbow trout (26 percent), longnose dace (11 percent), and spawning white sucker (14 percent) occurred between 15 cfs and 25 cfs as more of the channel became wetted, deeper, and faster (Table 4 and Figure 3).
- Habitat suitability continued to increase moderately for adult brook trout (13 percent), adult rainbow trout (20 percent), and juvenile and adult white sucker (14 percent) between 25 cfs and 35 cfs (Table 4 and Figure 3); lesser increases in suitability occurred for juvenile brook trout (5 percent), longnose dace (7 percent), and benthic macroinvertebrates (6 percent) between 25 cfs and 35 cfs; white sucker spawning suitability decreased by 33 percent (Table 4 and Figure 3).
- A limited increase in habitat suitability for juvenile brook trout (5 percent), adult brook trout (7 percent), adult rainbow trout (2 percent), and spawning white sucker (8 percent) occurred between 35 cfs to 50 cfs; habitat suitability decreased for juvenile white sucker and adult white sucker (-3 percent) and remained unchanged for longnose dace (Table 4 and Figure 3).
- Habitat suitability for benthic macroinvertebrates continued to increase (25 percent) at a release of 50 cfs because of their high tolerance for deep, fast water, and as more substrates became wetted (Table 4 and Figure 3).

**Table 4      Percent Increase or Decrease in Habitat Suitability Across Range of Flows Released from Newbury Dam**

Incremental Percent Increase/Decrease in Suitability				
Species/Lifestage	15 cfs	25 cfs	35 cfs	50 cfs
Brook trout (adult)	-	20%	13%	7%
Brook trout (juvenile)	-	12%	5%	5%
Rainbow trout (adult)	-	26%	20%	2%
Longnose Dace (adult)	-	11%	7%	0%
Benthic Macroinvertebrates	-	23%	6%	25%
White Sucker (Spawning)	-	14%	-33%	8%
White Sucker (Juvenile and Adult)	-	9%	14%	-3%

- A release of 15 cfs provided 46 to 60 percent of the suitable habitat in the reach for benthic macroinvertebrates, adult rainbow trout, and adult brook trout, and 77



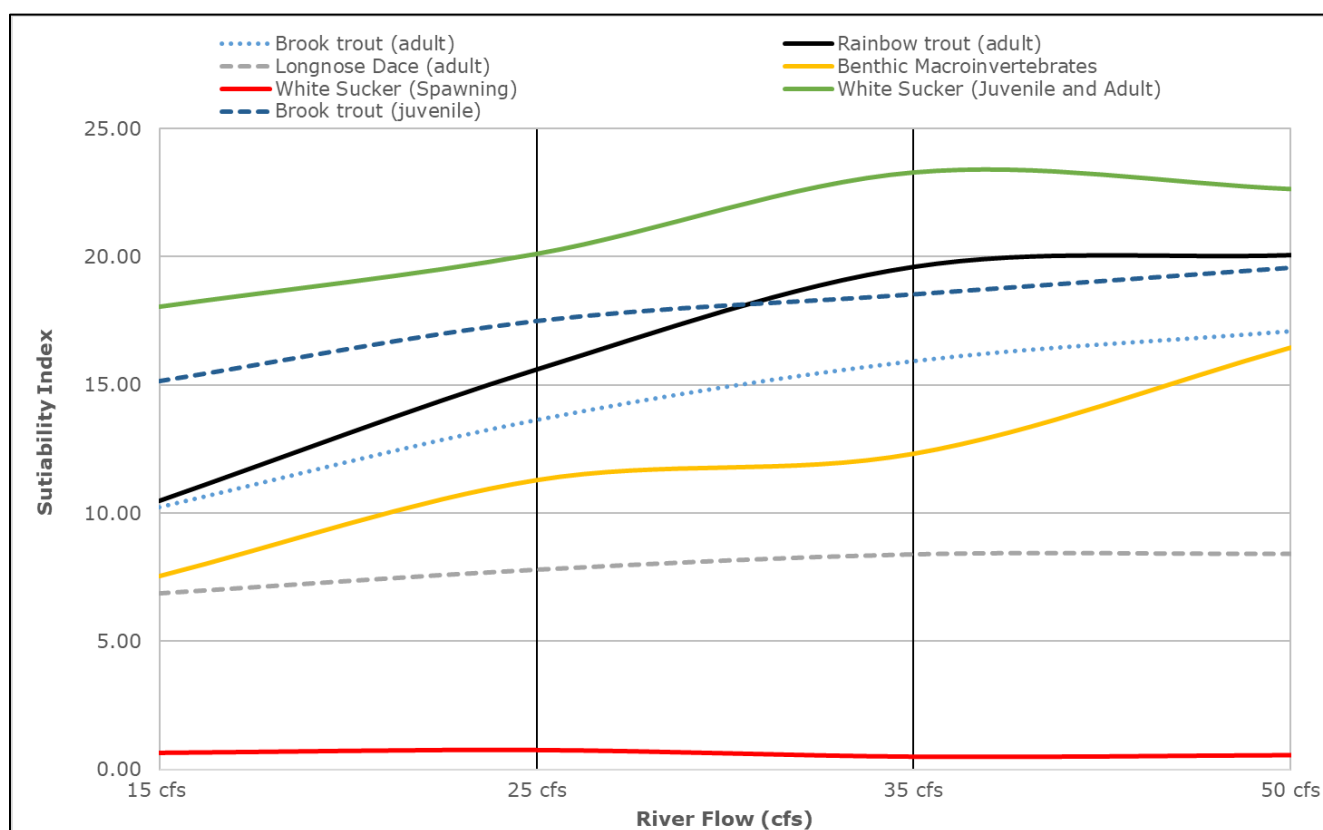
to 86 percent for juvenile/adult/spawning white sucker, juvenile brook trout, and longnose dace (Table 5 and Figure 3).

- A release of 25 cfs provided 78 to 86 percent of the suitable habitat for adult rainbow trout and juvenile/adult white sucker habitat, 80 to 93 percent for adult brook trout, juvenile brook trout, and longnose dace, 70 percent for benthic macroinvertebrate habitat, and maximized the suitability of spawning sucker habitat (Table 5 and Figure 3).
- A release of 35 cfs decreased white sucker spawning habitat suitability to 67 percent, provided 75 percent for benthic macroinvertebrates, 100 percent for longnose dace, juvenile white sucker, and adult white sucker, and 93 to 98 percent for adult rainbow and brook trout (Table 5 and Figure 3).
- A release of 50 cfs provided 75 percent habitat suitability for spawning white sucker, reduced the suitability of juvenile/adult white sucker habitat by 3 percent, and maximized habitat suitability for trout and benthic macroinvertebrates (Table 5 and Figure 3).
- Habitat suitability for spawning white suckers peaked at 25 cfs, although in general the habitat is not suitable for spawning because of the boulder substrates; white suckers use smaller substrates like sand and small gravel to spawn (Table 5 and Figure 3).
- The largest increase in stream wetted width occurred at Transect 1 between a release of 25 and 35 cfs as channel width increased from 15.8 to 23.2 feet (Table 6); all other changes in wetted width were limited (i.e., less than 5 percent) because the channel is confined in the bedrock and large boulder substrate.

**Table 5      Percent of Maximum Habitat Suitability Across Range of Flows Released from the Newbury Dam**

Percent of Maximum Suitability				
Species/Lifestage	15 cfs	25 cfs	35 cfs	50 cfs
Brook trout (adult)	60%	80%	93%	100%
Brook trout (juvenile)	78%	89%	95%	100%
Rainbow trout (adult)	52%	78%	98%	100%
Longnose Dace (adult)	82%	93%	100%	100%
Benthic Macroinvertebrates	46%	69%	75%	100%
White Sucker (Spawning)	86%	100%	67%	75%
White Sucker (Juvenile and Adult)	77%	86%	100%	97%





**Figure 3** Change in Habitat Suitability for Target Freshwater Fish Species and Benthic Macroinvertebrates at Four Flow Releases from Newbury Dam

**Table 6** Change in Wetted Stream Width Across Range of Flows Released from the Newbury Dam

Transect #	Release (cfs)	Wetted Width (ft)	Change in Wetted Width (ft)	Percent Change in Wetted Width
Transect 1	15	15.8	0.0	-
	25	15.8	0.0	0.0%
	35	23.2	7.4	46.8%
	50	24.2	1.0	4.3%
Transect 2	15	18.5	0.0	-
	25	18.5	0.0	0.0%
	35	19.3	0.8	4.3%
	50	19.7	0.4	2.1%
Transect 3	15	28.7	0.0	-
	25	29.6	0.9	3.0%
	35	31	1.4	4.7%
	50	32	1.0	3.2%

### 3.3 Aesthetic Flow Evaluation

The parties generally agreed that leakage and 5 cfs were Poor to Fair with considerable improvements occurring at 10 cfs in terms of aesthetic quality. Several parties noted that 10 cfs was significantly better than 5 cfs. Several participants rated 15 and 25 cfs as Very Good, while other participants indicated that there was a loss of aesthetic quality at the higher flow thresholds or they provided the same quality. Based on the collaborative discussion and ranking of aesthetics flows, the participants agreed that an aesthetic flow release of 10 cfs provided Good aesthetic value, and as such would meet Vermont's Class B(2) water quality standards for aesthetic flows. The parties agreed that 10 cfs provided a full veil across the dam, a good level of noise from falling water, mixing and flow of water in the pool below the dam, and wetted bedrock areas on the river margin that enhanced overall aesthetics.

GMP noted during the call that there is limited access or vantage for the public to observe an aesthetic flow over the dam. The project site is commercial with several large warehouses blocking views of the river (Photo 8). A veiling flow over the dam can potentially be seen by the public as they drive by on Route 302, which is a major two-lane thoroughfare. There is an informal pull-off located on private property at the Newbury Project just upstream of the dam (Photo 8). There are no formal recreation facilities at the Project site, although there are no formal restrictions in place that would prevent the public from walking down to the river upstream or downstream of the dam. The dam and surrounding non-power generation facilities are not owned by GMP, but by a private landowner who operates a commercial business on site. Because Route 302 does not allow standing room to view the dam and because there are no good views of the dam from the property parking area, the photos and videos for the study were taken from an area that is not publicly accessible.

GMP also noted during the March 4, 2021, meeting that it is considering a seasonal aesthetic flow proposal due to operational and dam safety concerns that occur in the winter because of ice accumulation on the pneumatic bladder during the current aesthetic flow release (Photo 9) and the limited availability for the public to view the dam. The parties agreed that the habitat flow and aesthetic flow would need to be considered holistically prior to deciding about a seasonal aesthetic flow. GMP noted that FERC classifies the dam as a Significant-Hazard structure so GMP's ability to safely manage water and prevent ice build-up is of high importance.

Photo 10 through Photo 14 show the veiling flow releases evaluated during the study.



**Photo 8      The Newbury Project, Commercial Buildings, Route 302 Pull-off Area, and Video Vantage Point during the Aesthetics Study**



**Photo 9      Ice Accumulation at the Newbury Dam, February 2021**





**Photo 10      Flow Release 1 (Leakage)**



**Photo 11      Flow Release 2 (5 cfs [present aesthetic flow release])**





**Photo 12      Flow Release 3 (10 cfs)**



**Photo 13      Flow Release 4 (15 cfs)**



**Photo 14      Flow Release 5 (25 cfs)**



## 4.0 SUMMARY

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### 4.1 Aquatic Habitat

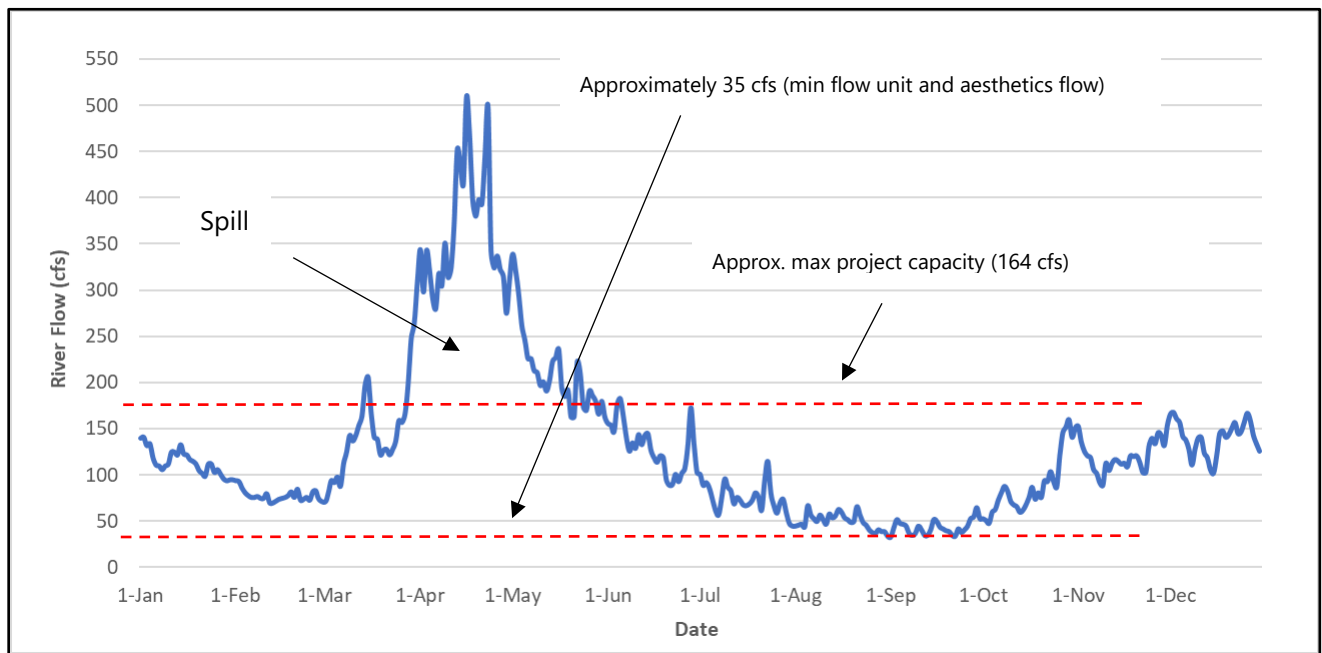
The aquatic habitat study demonstrated that the existing minimum flow regime and flows between 25 and 50 cfs maintain high levels of suitable aquatic habitat for game and non-game fish species in the reach of the Wells River between the dam and the powerhouse. When the minimum flow turbine is operational, GMP provides at least 35 cfs to the bypassed reach (i.e., the minimum flow turbine discharge of 30 cfs plus the required aesthetic flow of 5 cfs over the dam), which improves habitat suitability for all species and lifestages, except spawning white sucker. Between 35 and 50 cfs, although habitat suitability improves or is maximized for some species and lifestages, the gains are generally minor, except for benthic macroinvertebrates, which can tolerate deep, fast water. At 50 cfs, there are pockets of very fast water that are unsuitable for fish as well as anglers (i.e., too fast for safe wading).

Like most New England rivers, flows in the Wells River peaks in the spring, followed by lower flows in the summer and fall and increased discharge in the winter (Figure 3). In April and May, the capacity of the Newbury Project (164 cfs) is typically exceeded, which results in the spill of water over the dam and into the bypassed reach (Figure 3). During much of the summer, there is only enough water to generate with the minimum flow unit or the project is shut down, which results in the provision of river inflow over the dam and into the bypassed reach.

At VANR's request, GMP monitored dissolved oxygen (DO) in the reach between the dam and powerhouse from July 8 to September 30, 2019, to assess the effects of project operation on water quality. The DO concentration in the bypassed reach was above the Class B(2) standard (6 mg/L or 70 percent saturation) throughout the entire monitoring period, demonstrating that the existing minimum flow schedule adequately maintains suitable conditions for aquatic organisms in the reach.

Aquatic habitat in the reach is of high quality, characterized by complex physical habitat structure, instream cover, stream processes, high DO levels, shading from tree canopy, and typical flow characteristics of rivers and streams. The minimum flow regime provides deep water throughout the main portion of the channel to provide for volitional movements of fish through the reach. There are no intermittent sub-reaches; the entire channel is connected hydrologically from the dam to the powerhouse tailrace.





**Figure 4 Hydrograph for the Wells River based on median daily river flow data from January 1, 2000, through December 30, 2019 (source data: USGS #01139000 Wells River at Wells River, VT)**

## 4.2 Aesthetic Flows

The parties agreed that 10 cfs would support the aesthetics designated use pursuant to the Vermont Class B(2) Water Quality Standards, which states that waters shall be of a quality that consistently exhibits good aesthetic values, including water characteristics, flows, water level, bed, and channel characteristics.

**ATTACHMENT 1**

**STUDY CONSULTATION RECORD**

**From:** [Crocker, Jeff](#)  
**To:** [Jesse Wechsler](#)  
**Cc:** [Harris, Hannah](#); [Katie Sellers](#)  
**Subject:** RE: Newbury Project (Wells River) habitat-flow evaluation  
**Date:** Monday, December 14, 2020 2:40:15 PM  
**Attachments:** [image006.png](#)

---

Jesse,

Hope you and your family are doing well and staying healthy during this crazy time.

Thank you for providing the update on the habitat flow evaluation for the Newbury Project bypass reach and sending the proposed HSC to be used for the analysis. The HSC are acceptable to the Agency. Additionally, using Excel as proposed for the analysis is acceptable to us. When submitting the report please include the Excel file with the analysis.

Also, setting up a conference call in early 2021 to review the videos of the spillage for aesthetics make sense to me. I will likely have Betsy Simard and Eric Davis who work with me join us for this meeting.

Thanks again,

Jeff

*Due to the coronavirus (COVID-19) we are taking additional safety measures to protect our employees and customers and are now working remotely while focusing on keeping our normal business processes fully functional. Please communicate with our staff electronically or via phone to the greatest extent possible since our processing of postal mail may be slowed during this period.*

*Division staff contact information can be found online here: <https://dec.vermont.gov/watershed/contacts>.*

*Thank you for your patience during this challenging time. We wish you and your family the best.*

**Jeff Crocker**, *Supervising River Ecologist*

1 National Life Drive, Davis 3

Montpelier, VT 05620-3522

802-490-6151 / [Jeff.Crocker@vermont.gov](mailto:Jeff.Crocker@vermont.gov)

[www.watershedmanagement.vt.gov](http://www.watershedmanagement.vt.gov)



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ENVIRONMENTAL CONSERVATION  
**WATERSHED  
MANAGEMENT DIVISION**  
RIVERS PROGRAM

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**From:** Jesse Wechsler <[Jesse.Wechsler@KleinschmidtGroup.com](mailto:Jesse.Wechsler@KleinschmidtGroup.com)>

**Sent:** Wednesday, December 2, 2020 4:57 PM

**To:** Crocker, Jeff <[Jeff.Crocker@vermont.gov](mailto:Jeff.Crocker@vermont.gov)>

**Cc:** Harris, Hannah <[Hannah.Harris@vermont.gov](mailto:Hannah.Harris@vermont.gov)>; Katie Sellers  
<[Katie.Sellers@KleinschmidtGroup.com](mailto:Katie.Sellers@KleinschmidtGroup.com)>

**Subject:** RE: Newbury Project (Wells River) habitat-flow evaluation

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

Hi Jeff and Hannah,

It's been quite a while, so I wanted to touch base with you about the instream habitat and aesthetic flow studies at GMP's Newbury Project (Wells River). We were able to get the field data collected for the habitat study in late May, and we also video-taped 5 releases over the dam for the aesthetics component. There were not many (if any) opportunities for GMP to manage the project to provide study flow again this summer and fall as a result of the drought-like conditions and maintenance outages so I am glad we got the opportunity to complete the work in May. Thank you for the quick turnaround on your recommendations prior to us embarking on the field work this spring.

I am moving into the report writing and data analysis phase and plan to use ANR's brook trout (adult & juvenile), rainbow trout (adult), longnose dace, and benthic macroinvertebrates habitat suitability curves that we used a few years ago on the Passumpsic River (Great Falls; Lyndonville) plus the USFWS's (Twomey) white sucker curves (spawning, juvenile, adult) since it sounded like white sucker may be in the reach or of interest. These files are attached.

For the analysis, we plan to use Excel to evaluate habitat suitability by inputting the curve data and creating a look up function based on the slope of the HS curves to determine suitability of the field data across the 3 transects for all species and life stages. I am hoping this method falls in line with your expectations for a semi-quantitative approach for the habitat analysis; it is a method we use frequently to evaluate the suitability of incremental flow releases without modeling/PHABSIM.

Also, because we have the aesthetics flows video-taped, would it be sensible to plan to a conference call in early 2021 to review?

Please let me know your thoughts when you get a few minutes.

I hope you and your families are all faring well these days.

Thank you!

Jesse

**Jesse Wechsler**  
**Senior Environmental Scientist and Project Manager**  
**Office: 207-416-1278**

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

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**From:** Crocker, Jeff <[Jeff.Crocker@vermont.gov](mailto:Jeff.Crocker@vermont.gov)>

**Sent:** Monday, May 25, 2020 12:56 PM

**To:** Jesse Wechsler <[Jesse.Wechsler@KleinschmidtGroup.com](mailto:Jesse.Wechsler@KleinschmidtGroup.com)>

**Cc:** Harris, Hannah <[Hannah.Harris@vermont.gov](mailto:Hannah.Harris@vermont.gov)>

**Subject:** RE: Newbury Project (Wells River) habitat-flow evaluation

Hi Jesse,

**From:** [Crocker, Jeff](#)  
**To:** [Jesse Wechsler](#)  
**Cc:** [Harris, Hannah](#)  
**Subject:** RE: Newbury Project (Wells River) habitat-flow evaluation  
**Date:** Monday, May 25, 2020 12:56:30 PM  
**Attachments:** [image003.png](#)  
[Newbury Hydroelectric Project - Bypass.pdf](#)

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Hi Jesse,

I discussed the habitat-flow evaluation at the Newbury Hydroelectric Project bypass reach with Hannah Harris, the new Streamflow Biologist, and she pointed out there may still be some white sucker spawning or incubation occurring. Therefore, the Agency would request not dropping the bypass flow to 5 cfs and add a flow of 35 cfs. So I believe the four flows that would be measured are 15, 25, 35, and 50 cfs.

Additionally, we were not able to get out to the site to mark transects but have attached a map marking three general area where we would like transect. If the bottom of the reach and middle of the reach are similar habitat please feel free to conduct the habitat flow evaluation at one of the locations.

Please call if you have any questions.

Thanks,

Jeff

*Due to the coronavirus (COVID-19) we are taking additional safety measures to protect our employees and customers and are now working remotely while focusing on keeping our normal business processes fully functional. Please communicate with our staff electronically or via phone to the greatest extent possible since our processing of postal mail may be slowed during this period.*

Division staff contact information can be found online here: <https://dec.vermont.gov/watershed/contacts>.

*Thank you for your patience during this challenging time. We wish you and your family the best.*

**Jeff Crocker**, Supervising River Ecologist

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**WATERSHED  
MANAGEMENT DIVISION**  
RIVERS PROGRAM

---

**From:** Jesse Wechsler <[Jesse.Wechsler@KleinschmidtGroup.com](mailto:Jesse.Wechsler@KleinschmidtGroup.com)>

**Sent:** Wednesday, May 20, 2020 10:50 AM

**To:** Crocker, Jeff <[Jeff.Crocker@vermont.gov](mailto:Jeff.Crocker@vermont.gov)>

**Subject:** Newbury Project (Wells River) habitat-flow evaluation

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

Hi Jeff,

As you might imagine we have quite a few habitat studies on the books this summer!

Because we were not able to get Newbury done last year, I am planning to get that one completed asap. With the dry weather forecast, it looks like we may have an opportunity to do the habitat study next week. I wanted to let you know in case you or your crew is interested in taking part in transect selection. We are tentatively planning to do the study Wednesday 5/27 and Thursday 5/28.

The reach is about 400-ft-long, mostly low to mid gradient riffle/pool.

We plan to schedule the aesthetic flow study component later in the season although I will likely video tape the habitat flow releases just in case.

Newbury reach:



Thank you!

**Jesse Wechsler**  
**Senior Fisheries Scientist and Project Manager**  
**207.416.1278**





## LEGEND

### Hazard Class

- ◆ High Hazard Potential
- ◆ Significant Hazard Potential
- ◆ Low Hazard Potential
- ◆ Undetermined Hazard Potential
- ◆ Historical Dam Location
- Parcels (non-standardized)



1: 967

May 22, 2020



49.0 0 24.00 49.0 Meters

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere

© Vermont Agency of Natural Resources

1" = 81 Ft. 1cm = 10 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

## NOTES

Newbury bypass reach with potential locations for flow habitat transects (blue dash lines).

## **ATTACHMENT 2**

### **HABITAT SUITABILITY CURVES**

Species: **Rainbow Trout**

Life stage: **Juvenile**

Source: Raleigh et al. (1984) with subsequent modification for Clyde (1991) and Lamoille (2000) flow studies

Variables: Velocity (ft/s), depth (ft), substrate (score); also abundance of velocity refugia

Notes: Different velocity HSC for sites with few (FVR) vs abundant velocity refugia (AVR)

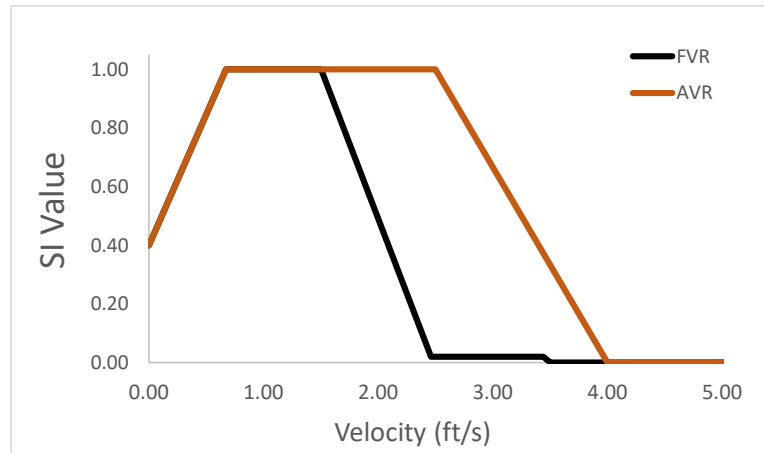
### Input 1: Velocity (ft/s)

#### Few velocity refugia

Velocity (ft/s)	SI value
0.00	0.40
0.67	1.00
1.50	1.00
2.46	0.02
3.44	0.02
3.50	0.00
4.00	0.00
100.00	0.00

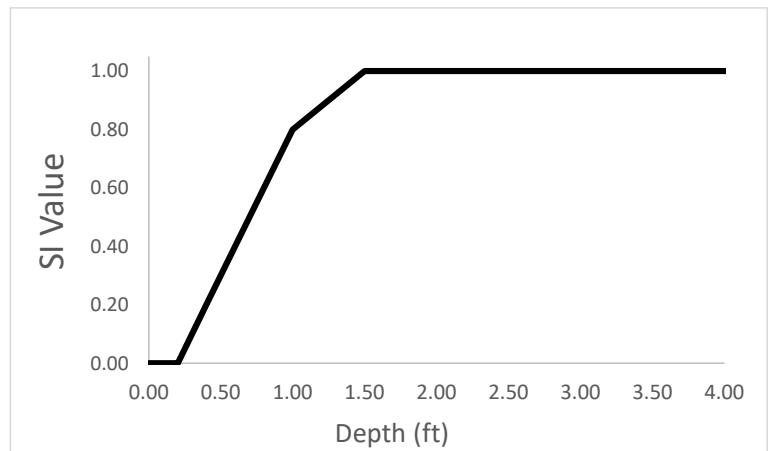
#### Abund. velocity refugia

Velocity (ft/s)	SI value
0.00	0.40
0.67	1.00
2.50	1.00
4.00	0.00
100.00	0.00



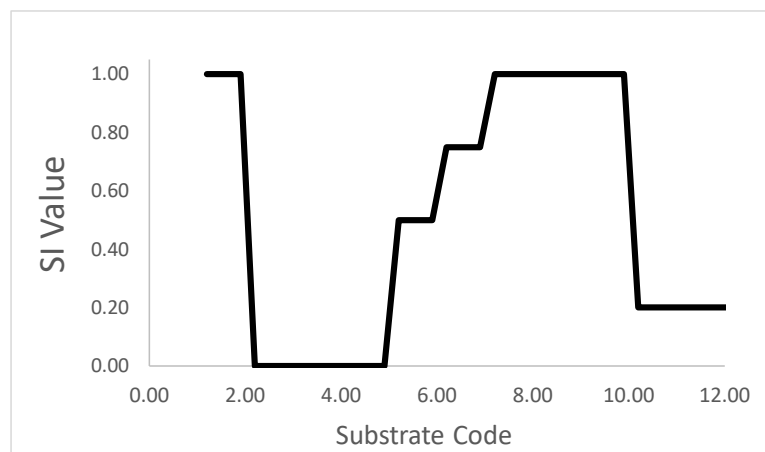
### Input 2: Depth (ft)

Depth (ft)	SI value
0.00	0.00
0.20	0.00
0.40	0.20
1.00	0.80
1.50	1.00
100.00	1.00



### Input 3: Substrate code

Code	SI value
1.20	1.00
1.90	1.00
2.20	0.00
4.90	0.00
5.20	0.50
5.90	0.50
6.20	0.75
6.90	0.75
7.20	1.00
9.90	1.00
10.20	0.20
100.00	0.20



Species: **Rainbow Trout**

Life stage: **Adult**

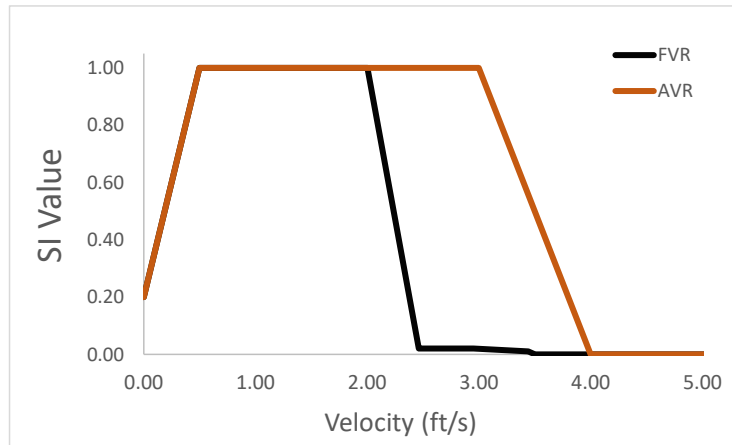
Source: Raleigh et al. (1984) with subsequent modification for Clyde (1991) and Lamoille (2000) flow studies

Variables: Velocity (ft/s), depth (ft), substrate (score); also abundance of velocity refugia

Notes: Different velocity HSC for sites with few (FVR) vs abundant velocity refugia (AVR)

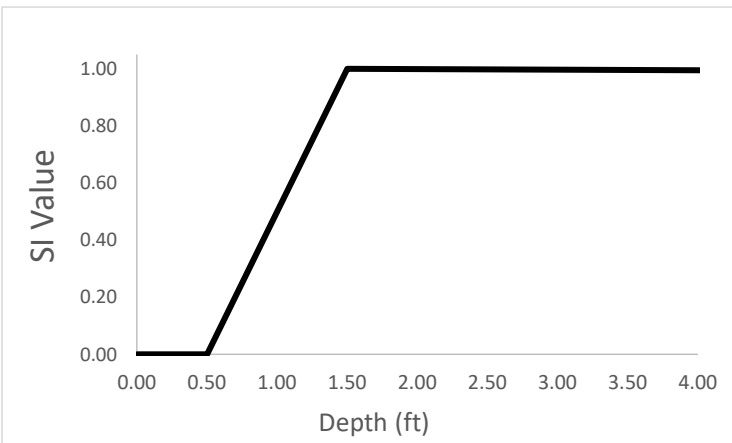
### Input 1: Velocity (ft/s)

Few velocity refugia		Abund. velocity refugia	
Velocity (ft/s)	SI value	Velocity (ft/s)	SI value
0.00	0.20	0.00	0.20
0.50	1.00	0.50	1.00
2.00	1.00	3.00	1.00
2.46	0.02	4.00	0.00
2.95	0.02	100.00	0.00
3.44	0.01		
3.50	0.00		
100.00	0.00		



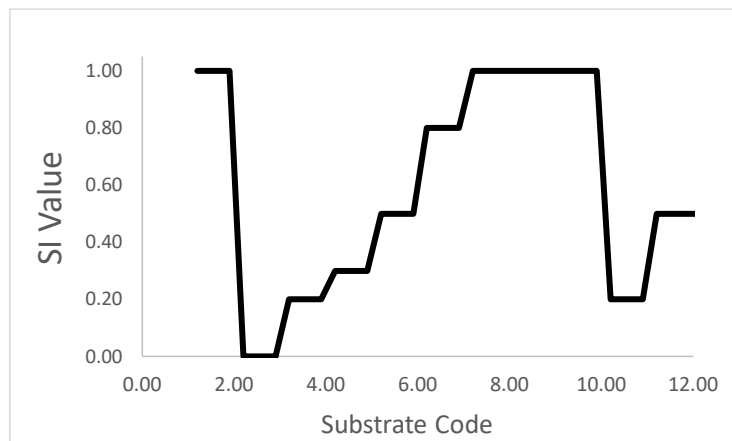
### Input 2: Depth (ft)

Depth (ft)	SI value
0.00	0.00
0.50	0.00
1.50	1.00
100.00	0.80



### Input 3: Substrate code

Code	SI value
1.20	1.00
1.90	1.00
2.20	0.00
2.90	0.00
3.20	0.20
3.90	0.20
4.20	0.30
4.90	0.30
5.20	0.50
5.90	0.50
6.20	0.80
6.90	0.80
7.20	1.00
9.90	1.00
10.20	0.20
10.90	0.20
11.20	0.50
100.00	0.50



Species: **Brook Trout**

Life stage: **Juvenile**

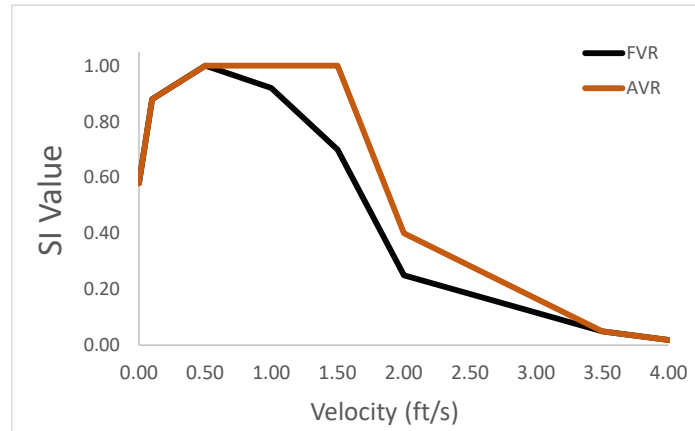
Source: Raleigh et al. (1986) with subsequent modification for Deerfield flow studies (Stetson-Harza 1991)

Variables: Velocity (ft/s), depth (ft), substrate (score); also abundance of velocity refugia

Notes: Different velocity HSC for sites with few (FVR) vs abundant velocity refugia (AVR)

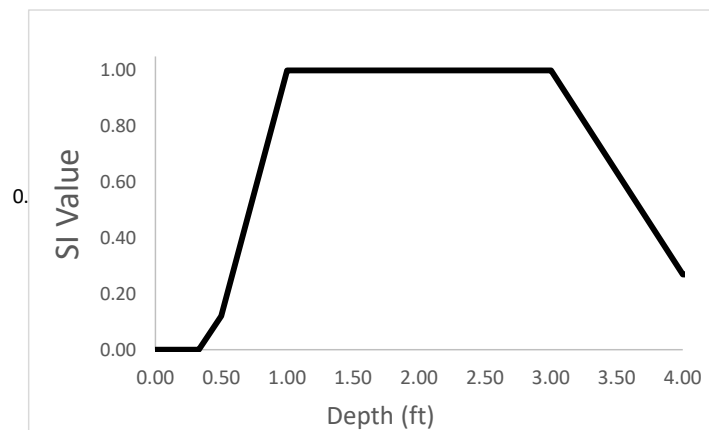
### Input 1: Velocity (ft/s)

Few velocity refugia		Abund. velocity refugia	
Velocity (ft/s)	SI value	Velocity (ft/s)	SI value
0.00	0.58	0.00	0.58
0.10	0.88	0.10	0.88
0.50	1.00	0.50	1.00
1.00	0.92	1.00	1.00
1.50	0.70	1.50	1.00
2.00	0.25	2.00	0.40
3.50	0.05	3.50	0.05
4.30	0.00	4.30	0.00
100.00	0.00	100.00	0.00



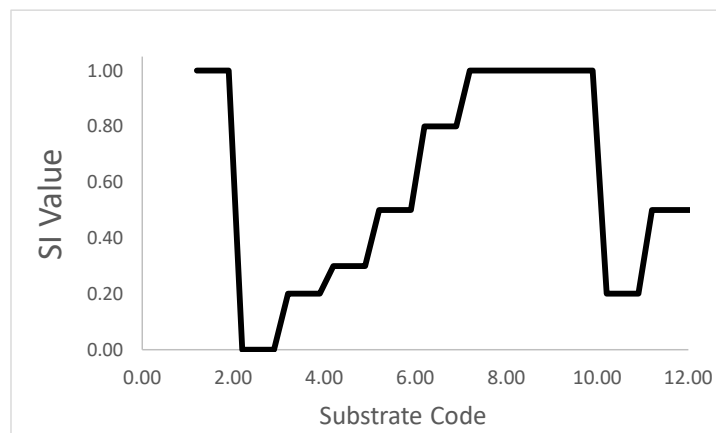
### Input 2: Depth (ft)

Depth (ft)	SI value
0.00	0.00
0.33	0.00
0.50	0.12
1.00	1.00
3.00	1.00
4.00	0.27
7.00	0.24
8.00	0.08
100.00	0.08



### Input 3: Substrate code

Code	SI value
1.20	1.00
1.90	1.00
2.20	0.00
2.90	0.00
3.20	0.20
3.90	0.20
4.20	0.30
4.90	0.30
5.20	0.50
5.90	0.50
6.20	0.80
6.90	0.80
7.20	1.00
9.90	1.00
10.20	0.20
10.90	0.20
11.20	0.50
100.00	0.50



Species: **Brook Trout**

Life stage: **Adult**

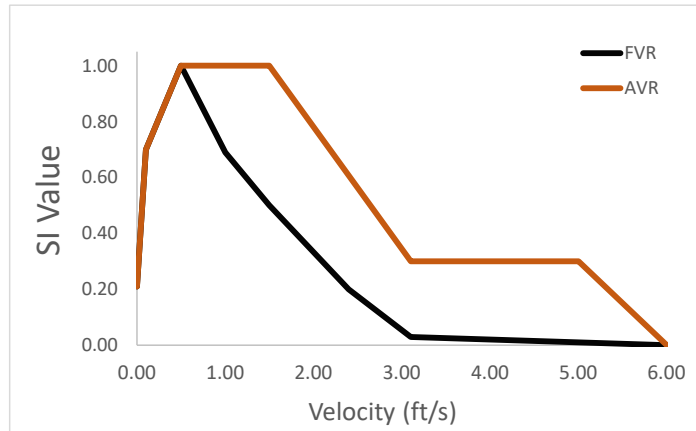
Source: Raleigh et al. (1986) with subsequent modification for Deerfield flow studies (Stetson-Harza 1991)

Variables: Velocity (ft/s), depth (ft), substrate (score); also abundance of velocity refugia

Notes: Different velocity HSC for sites with few (FVR) vs abundant velocity refugia (AVR)

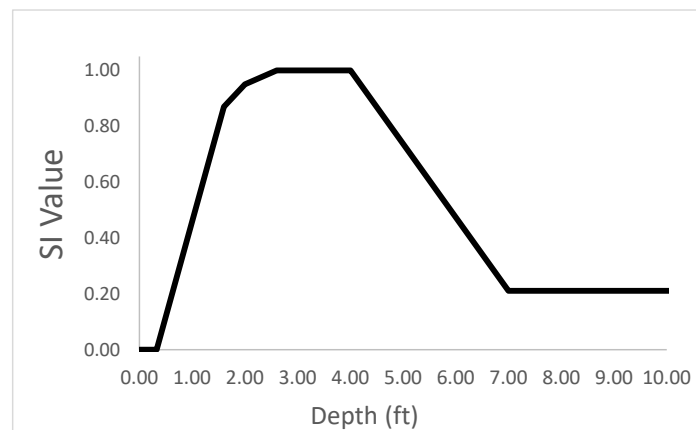
### Input 1: Velocity (ft/s)

Few velocity refugia		Abund. velocity refugia	
Velocity (ft/s)	SI value	Velocity (ft/s)	SI value
0.00	0.21	0.00	0.21
0.10	0.70	0.10	0.70
0.50	1.00	0.50	1.00
1.00	0.69	1.50	1.00
1.50	0.50	3.10	0.30
2.40	0.20	5.00	0.30
3.10	0.03	6.00	0.00
6.00	0.00	100.00	0.00
100.00	0.00		



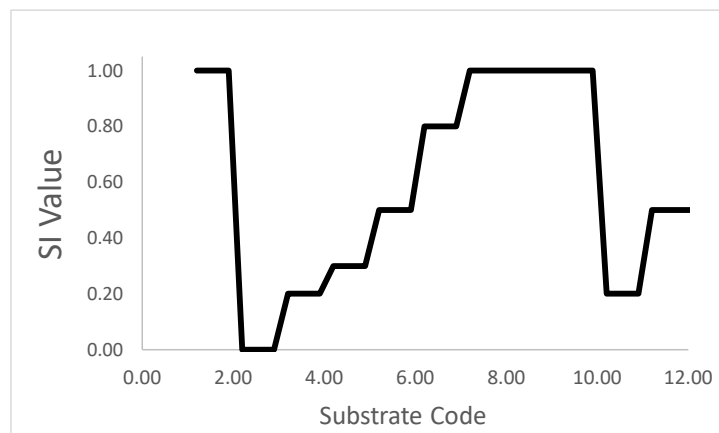
### Input 2: Depth (ft)

Depth (ft)	SI value
0.00	0.00
0.33	0.00
1.60	0.87
2.00	0.95
2.60	1.00
4.00	1.00
7.00	0.21
100.00	0.21



### Input 3: Substrate code

Code	SI value
1.20	1.00
1.90	1.00
2.20	0.00
2.90	0.00
3.20	0.20
3.90	0.20
4.20	0.30
4.90	0.30
5.20	0.50
5.90	0.50
6.20	0.80
6.90	0.80
7.20	1.00
9.90	1.00
10.20	0.20
10.90	0.20
11.20	0.50
100.00	0.50





Species: Longnose Dace

Life stage: Adult

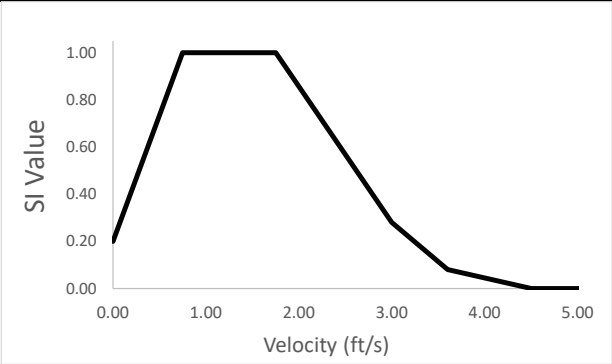
Source: Midcontinent Ecological Science Center (MESCC) Library File R0070, with conversion to common substrate scale (1997 memo 'Little River flow study LND HSC.pdf')

Variables: Velocity (ft/s), depth (ft), substrate (score)

Notes: No consideration of velocity refugia abundance for LND

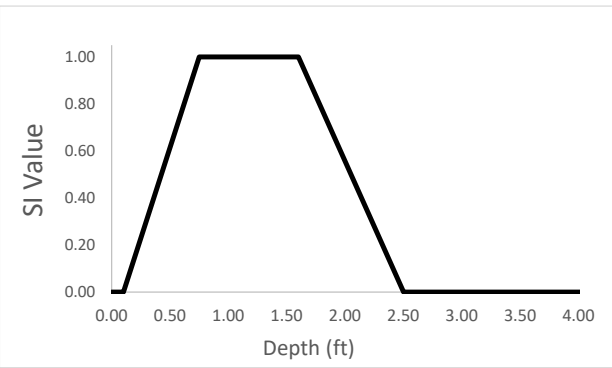
Input 1: Velocity (ft/s)

Velocity (ft/s)	SI value
0.00	0.20
0.75	1.00
1.75	1.00
3.00	0.28
3.60	0.08
4.50	0.00
100.00	0.00



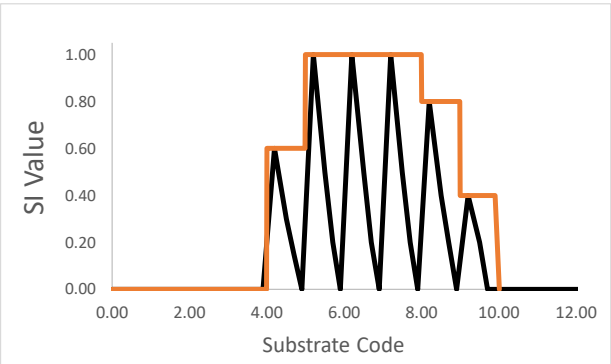
Input 2: Depth (ft)

Depth (ft)	SI value
0.00	0.00
0.10	0.00
0.75	1.00
1.60	1.00
2.50	0.00
100.00	0.00



Input 3: Substrate code

w/ Emb.	w/ Emb.	w/o Emb.	w/o Emb.
Code	SI value	Code	SI value
0.00	0.00	0.00	0.00
3.90	0.00	3.99	0.00
4.20	0.60	4.00	0.60
4.50	0.30	4.50	0.60
4.70	0.15	4.70	0.60
4.90	0.00	4.99	0.60
5.20	1.00	5.00	1.00
5.50	0.50	5.50	1.00
5.70	0.20	5.70	1.00
5.90	0.00	5.90	1.00
6.20	1.00	6.00	1.00
6.50	0.50	6.50	1.00
6.70	0.20	6.70	1.00
6.90	0.00	6.90	1.00
7.20	1.00	7.00	1.00
7.50	0.50	7.50	1.00
7.70	0.20	7.70	1.00
7.90	0.00	7.99	1.00
8.20	0.80	8.00	0.80
8.50	0.40	8.50	0.80
8.70	0.20	8.70	0.80
8.90	0.00	8.99	0.80
9.20	0.40	9.00	0.40
9.50	0.20	9.50	0.40
9.70	0.00	9.70	0.40
10.00	0.00	9.90	0.40
100.00	0.00	10.01	0.00



Species: **Aquatic Macroinvertebrates**

Life stage: *n/a (multiple present)*

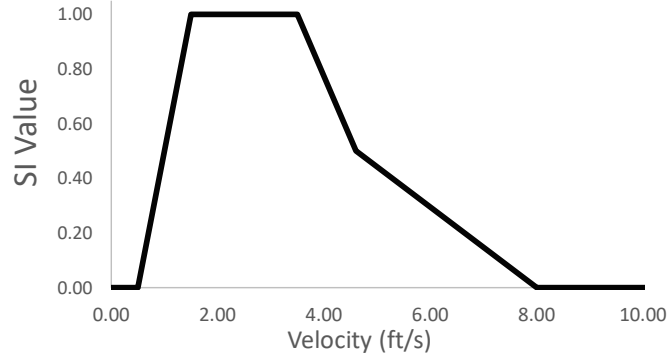
Source: Niagara Mohawk Power Company (Depth, Velocity) and VANR (Velocity); see Wentworth (1997) unpub'd memo ('Lamoille invert anal memo

Variables: Velocity (ft/s), depth (ft), substrate (score)

Notes:

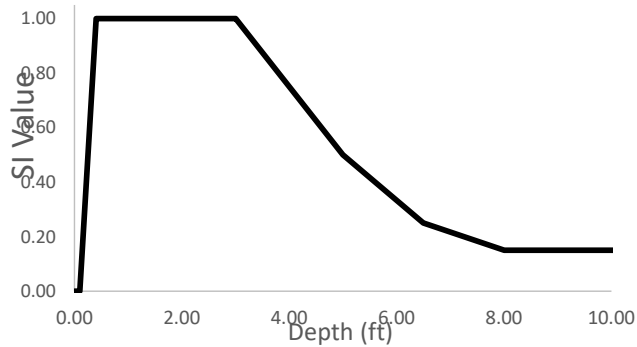
### Input 1: Velocity (ft/s)

Velocity (ft/s)	SI value
0.00	0.00
0.50	0.00
1.50	1.00
3.50	1.00
4.60	0.50
8.00	0.00
100.00	0.00



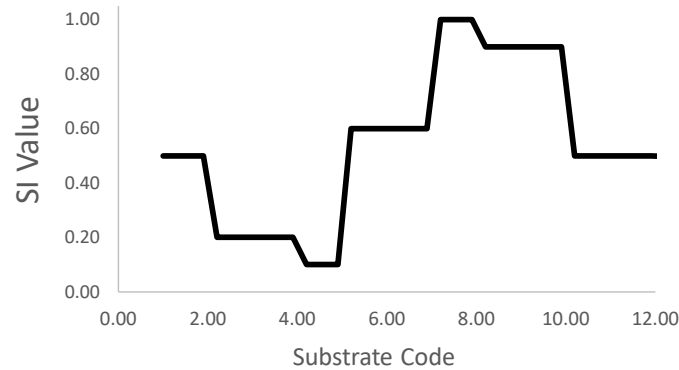
### Input 2: Depth (ft)

Depth (ft)	SI value
0.00	0.00
0.10	0.00
0.40	1.00
3.00	1.00
5.00	0.50
6.50	0.25
8.00	0.15
10.00	0.15
100.00	0.00



### Input 3: Substrate code

Code	SI value
1.00	0.50
1.20	0.50
1.90	0.50
2.20	0.20
3.90	0.20
4.20	0.10
4.90	0.10
5.20	0.60
6.90	0.60
7.20	1.00
7.90	1.00
8.20	0.90
9.90	0.90
10.20	0.50
11.90	0.50
100.00	0.00



**Base Substrate Code**

<b>Code</b>	<b>Description</b>
1	Roots, Snags, Undercut Banks, Overhead Cover
2	Clay
3	Silt
4	Sand
5	Small Gravel (< 2" or 5 cm)
6	Gravel (2"-4" or 5-10 cm)
7	Cobble (4"-10" or 10-25 cm)
8	Small Boulder (10"-24" or 25-61 cm)
9	Large Boulder (>24" or 61 cm)
10	Ledge
11	Detritus, Vegetation

**% Embeddedness Code (gets added to Base Code, if assessed)**

<b>Code</b>	<b>Description</b>
0.2	0-25% embedded
0.5	26-50% embedded
0.7	51-75% embedded
0.9	>75% embedded

**Velocity as Cover Code (gets added to Base Code if assessed)**

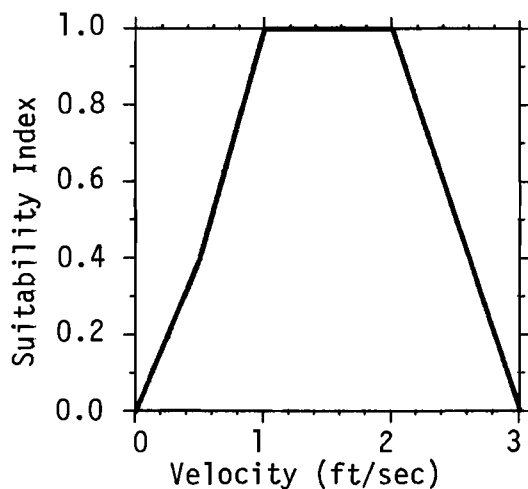
<b>Code</b>	<b>Description</b>
0.03	Cover-few velocity refugia
0.06	Cover-abundance velocity refugia

**\* Abundance velocity refugia is defined as:**

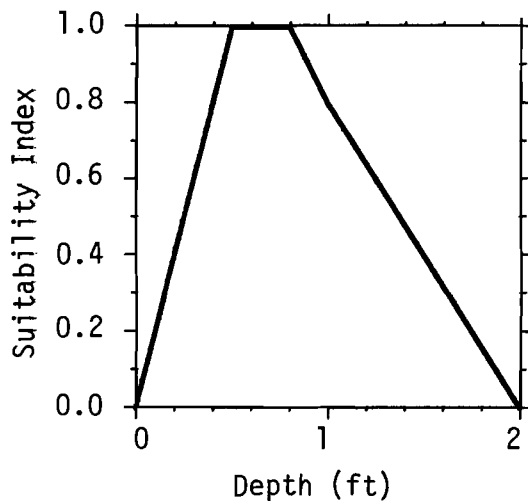
Large boulder >25% or,  
Small boulder >75% or,  
Instream structural cover >50%

# Coordinates

<u>x</u>	<u>y</u>
0.0	0.0
0.5	0.4
1.0	1.0
2.0	1.0
3.0	0.0
100.0	0.0



<u>x</u>	<u>y</u>
0.0	0.0
0.5	1.0
0.8	1.0
1.0	0.8
2.0	0.0
100.0	0.0



<u>x</u>	<u>y</u>
0.000	0.00
0.001	0.00
0.002	0.05
0.009	0.05
0.010	0.80
0.039	0.80
0.040	1.00
0.078	1.00
0.079	0.90
0.156	0.90
0.157	0.50
0.629	0.50
0.630	0.05
100.000	0.05

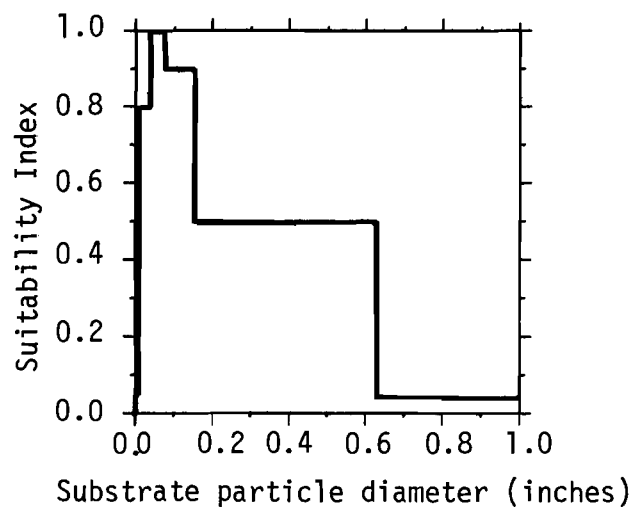
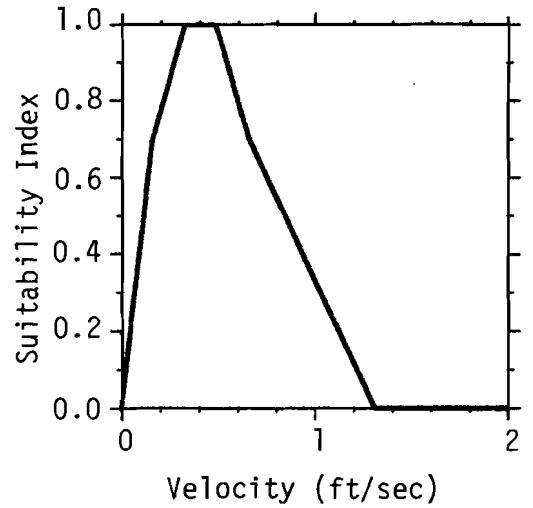
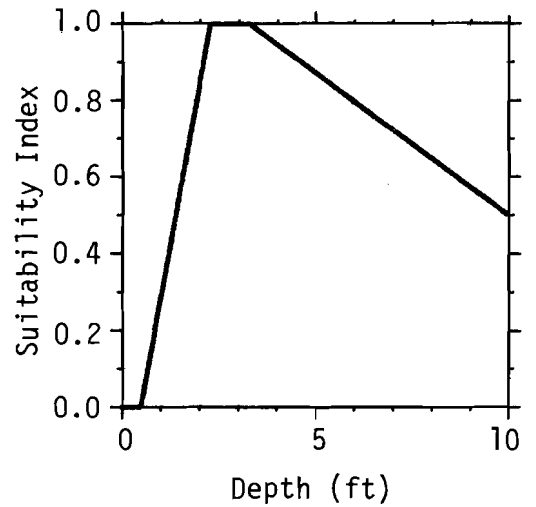


Figure 4. SI curves for white sucker spawning velocity, depth, substrate, cover, and temperature.

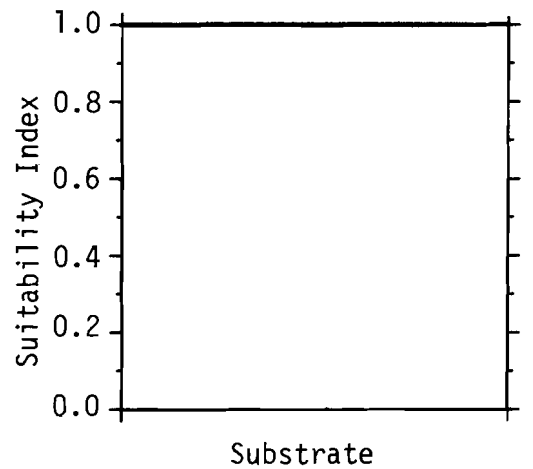
Coordinates	
<u>x</u>	<u>y</u>
0.00	0.0
0.16	0.7
0.33	1.0
0.49	1.0
0.66	0.7
1.31	0.0
100.00	0.0



<u>x</u>	<u>y</u>
0.0	0.0
0.5	0.0
2.3	1.0
3.3	1.0
9.8	0.5
16.4	0.0
100.0	0.0



<u>x</u>	<u>y</u>
0.0	1.0
100.0	1.0

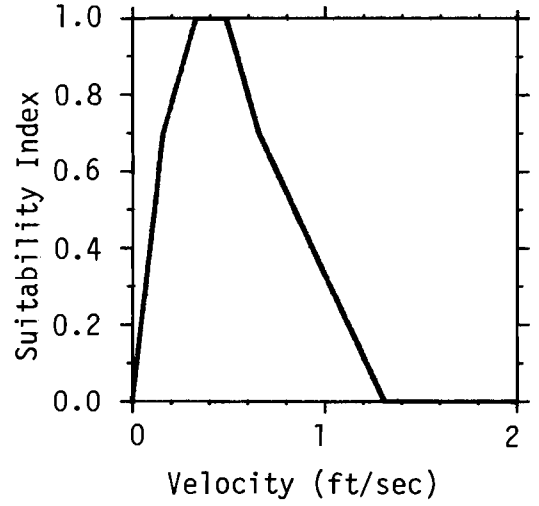


Based on assumption that all substrate types are suitable.

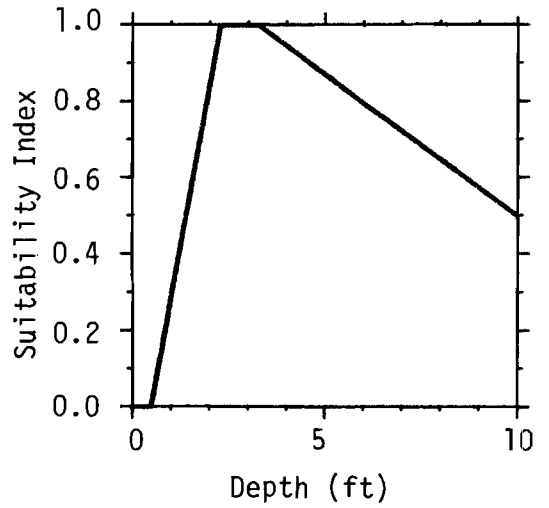
Figure 7. SI curves for white sucker juvenile velocity, depth, substrate, cover, and temperature.

# Coordinates

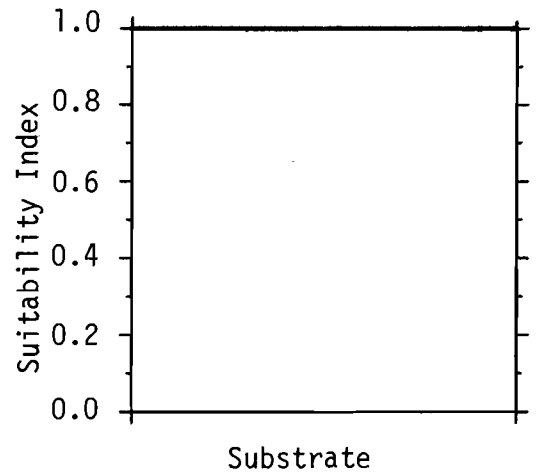
<u>x</u>	<u>y</u>
0.00	0.0
0.16	0.7
0.33	1.0
0.49	1.0
0.66	0.7
1.31	0.0
100.00	0.0



<u>x</u>	<u>y</u>
0.0	0.0
0.5	0.0
2.3	1.0
3.3	1.0
9.8	0.5
16.4	0.0
100.0	0.0



<u>x</u>	<u>y</u>
0.0	1.0
100.0	1.0



Based on assumption that all substrate types are suitable.

Figure 8. SI curves for white sucker adult velocity, depth, substrate, cover, and temperature.



### **ATTACHMENT 3**

### **COMPLETED AESTHETIC FLOW RATING FORMS**

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 3/4/2021      **Observer:** Jeff Crocker      **Organization:** VT DEC

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	P	-	Only minimal flow over the dam. Much of the dam exposed
5 cfs	F	B	Spillage mostly across the entire dam, but the veil is thin and uneven in spots.
10 cfs	G	B	Spillage across the entire dam. Veil is pretty uniform across the dam. Cascade formed on river left. Good sound quality.
15 cfs	G+	S/B	Spillage and veil are thicker across the entire dam. Cascade/falls on river left is got slightly more pronounced. Good sound quality.
25 cfs	VG	B	Thick veil across the entire dam. Spray from the cascade on river left. Good sound quality.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 4 Mar 21      **Observer:** John Greenan      **Organization:** GMP

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	F-/P	N/A	<i>Some spillage at crest split. Plunge pool is flat. Rock outcrop below left abutment appears wet.</i>
5 cfs	G	B	Min flow on. Non uniform spill highlights dam features and highlights how water spills. (dynamic). Left abut & crest spill has more flow. Water kicks at 90- off left abut bedrock. Some plunge pool ripples. Note vantage point
10 cfs	G+	SB	Min flow on. More uniform spill over crest but some features lost. More Q. Some whitewater at toe of dam plus ripples in plunge pool.
15 cfs	G	S-	Min flow. Full white veil. Still some distinction between sections. Whitewater extends downstream.
25 cfs	G-	SW	Min flow. First section full white. Not totally laminar flow. Distinct disruption at the split. Rock outcrop downstream of left abutment obscured.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

From ED - Aesthetics Use Criteria: Water character, flows, water level, bed and channel characteristics, and flowing and falling water of good aesthetic value.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 3/4/2021      **Observer:** Eric      **Organization:** VT DEC

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	P	-	No Veil. Aesthetics of spillage is poor. Some water movement on river right, but lots of stagnant water. Flow patterns in channel are poor.
5 cfs	F	SB	Some veil in parts, but uneven and incomplete. Where spillage is occurring, the aesthetics of the falling water appears acceptable. Aesthetics of spillage component is fair. Good broken water surface at base of most of dam, but not in center. Flow in river left portion of channel still appears somewhat stagnant.
10 cfs	F-G	SB	Veil is complete across the dam, though still uneven. Bedrock ledge on river left becomes active, which is aesthetically pleasing. Aesthetics of spillage component is good. Falling water complete across base of dam and active flowing water through the right side of channel, but lighter on the left. Aesthetics in channel are fair to good. Good auditory quality.
15 cfs	G	B	Veil is very good. It is complete across the dam and though still uneven in portions, veil is thicker and fuller than previous flow. Aesthetics of spillage component is Very Good. Falling water on ledge on river left is more full. Falling water complete across base of dam and active flowing water throughout the channel. Aesthetics in channel are Good. Very good auditory quality.
25 cfs	VG - E	B	Veil is complete across the dam. Though still uneven, the unevenness is noticeably less apparent. Veil is very good and falling water excellent. Flow patterns in the channel are excellent.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 3/4/2021 **Observer:** Hannah Harris **Organization:** Vermont Fish and Wildlife

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	P		Dam very visible, only a small portion with water, good sound of falling water, little broken water surface or movement
5 cfs	F	SB	More coverage of dam, water movement missing in middle portion, more broken water surface and circulation, good sound of falling water
10 cfs	G	B	Falling water covering entire dam including middle portion, fuller veil, more broken water surface and better circulation, good sound of falling water, water falling on river left from rocks
15 cfs	G-VG	S	Seems similar to 10 cfs over dam, a bit louder and more flow coming off wall on river left, but otherwise similar
25 cfs	VG-E	B	Louder than 15 cfs, very good water circulation and movement, full veil of water over dam, dam less visible

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 3/4/21    **Observer:** A. Qua    **Organization:** Kleinschmidt

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	P		Little flow at bladder 1&2; outcrop on right is dry
5 cfs	F	SB	Vailing across all but 3 <sup>rd</sup> section; outcrop wetted w/ whitewater
10 cfs	G+	B	More flow over 3 <sup>rd</sup> section – slightly higher section?; more whitewater/mixing/ noticeable noise; right shore bedrock good coverage.
15 cfs	G+	S	More flow but similar to prior flow; more spray/“activity” on the right shoreline outcrop; still not as uniform over 3 <sup>rd</sup> section but fuller
25 cfs	G	S/B	Notable increase in noise, more mixing, whiter vail, full vail but washing out right outcrop?

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.



**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 4MAR2021      **Observer:** John Tedesco      **Organization:** GMP

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	P		<i>Leakage through a seam. Entire dam face visible.</i>
5 cfs	G	SB	Thin veil of flow across the entire dam, dam is highly visible through the flow, right side “fall”
10 cfs	VG	B	Slightly more flow, thicker flow across the dam, Right side flow increased. Very good lamination over the top of the crest. Dam is slightly visible through the flow. Fairly even flow over the entire crest
15 cfs	G	S	The increased flow did not add to the aesthetic characteristics. Reduced visibility of the dam through the flow.
25 cfs	G	S	Thicker flow and cascading water. Visual impact from the support beams on the left side of the dam is not appealing. Boulders on river left are fully covered and less appealing.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 3/4/21 **Observer:** Kathy Urffer **Organization:** Connecticut River Conservancy

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
<b>Leakage</b>	<b>P</b>		Looks like the dam is broken or something is wrong when flow is not consistent over the whole length of the dam. Dark industrial feel seeing face of dam. No sound of flowing water.
<b>5 cfs</b> (plus 30 cfs from min flow turbine)	<b>F</b>	<b>B</b>	
<b>10 cfs</b> “	<b>G</b>	<b>B</b>	Better sound – satisfying flowing water sound. Better flow – seems more like a satisfying waterfall than 5 cfs.
<b>15 cfs</b> “	<b>VG</b>	<b>B</b>	Good veiling across top of dam. Great sound and nice spray from falling water. Better flow – better waterfall. Good flow at bedrock outcrop.
<b>25 cfs</b> “	<b>VG</b>	<b>S</b>	Great sound and nice spray from falling water. Better flow – better waterfall, but flow seems to be broken up and not quite uniform. Good flow at bedrock outcrop. Flow in channel is best.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** \_\_\_\_\_ **Observer:** Jesse Wechsler **Organization:** Sr. Fisheries Scientist (Kleinschmidt)

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
Leakage	P	NA	Limited to no flowing or falling water over dam; deep pool habitat maintained; no mixing of water at toe of dam.
5 cfs	F	B	Limited veiling, but better coverage on dam; no notable change in pool characteristics, wetting of bedrock on river right apparent. Able to see much concrete. Mixing of water at toe of dam apparent.
10 cfs	VG	SB	Improved veiling across the dam, uniform coverage. No notable changes in pool habitat (size, depth, velocity); some additional coverage and falling water on river left bedrock. Mixing of water at toe of dam apparent. <b>Preferred flow (or less given no public access). Seasonal flow preferred.</b>
15 cfs	VG	S	Minor differences from last flow. Pool habitat maintained. Noise from falling water more notable. Slight increase in coverage of rock outcrop on river left. Mixing of water at toe of dam apparent.
25 cfs	VG	S	Hard to decipher any differences from last flow. Pool habitat maintained. Slight increase in coverage of rock outcrop on river left. Mixing of water at toe of dam apparent.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

**Newbury Hydroelectric Project (FERC No. 5261)**  
**Aesthetic Flow Evaluation Form**  
**Video Review via MS Teams**  
**March 4, 2021**

**Date:** 3/4/2021 **Observer:** B. Simard **Organization:** VTDEC

Flow Release	Aesthetic Rating (P, F, G, VG, E) *	Comparative Rating (SW, W, S, B, SB^)	Overall Comments
<b>Leakage</b>	P		30 cfs in the bypass. Very little flow coming over the dam appears to only be from a vertical location where two pillows meet. Inconsistent across dam face. Sounds seemed OK hard to tell if it all from the dam or from other locations. Only could see plunge pool in bypass but appeared wetted.
<b>5 cfs</b>	F	B	35 cfs in the bypass. Water flowing over entire crest although patchy in some locations. Sound from falling water appears good. Some water spilling on rocks on river left. Could only see plunge pool area in bypass, channel seemed wetted, hard to see movement just at base of dam.
<b>10 cfs</b>	G	SB	40 cfs in the bypass. Seems like a lot more water coming over the dam, water spilling nicely over the rocks on river left, although water still appears somewhat patchy over the crest much fuller than 5 cfs. Can only see plunge pool area of bypass, channel was wetted, hard to tell but maybe more movement at base of the dam before min flow unit.
<b>15 cfs</b>	VG	B	45 cfs in the bypass. There was more water flowing over the rocks on river left. Certainly, fuller flow particularly in areas where the 'pillows' has appeared uneven in the previous video. Sound was loud. Plunge pool area of the bypass wetted, and movement was apparent.
<b>25 cfs</b>	E	S	50 cfs in the bypass. Lots of water can no longer see the boulders on RL because of flow covering them. Full veil over crest in all locations. Sound was louder. From plunge pool vantage can see water movement at base of dam, channel appeared wetted.

\* Aesthetic suitability ratings are **Poor (P)**, **Fair (F)**, **Good (G)**, **Very Good (VG)**, or **Excellent (E)**. Intermediate ratings may be used as well (e.g., G+ or E-).

^ **Comparative** ratings relative to the previous flow are **Significantly Worse (SW)**, **Worse (W)**, the **Same (S)**, **Better (B)**, or **Significantly Better (SB)**.

## **APPENDIX G**

### **POTENTIAL WILDLIFE AND PLANT SPECIES LIST**

**Table G-1 Common Mammals Potentially  
Occurring in the Newbury Project Vicinity**

Common Name	Scientific Name
House Mouse	* <i>Mus musculus</i>
Brown Rat	* <i>Rattus norvegicus</i>
Eastern Cottontail	* <i>Sylvilagus floridanus</i>
Moose	<i>Alces americanus</i>
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>
Coyote	<i>Canis latrans</i>
American Beaver	<i>Castor canadensis</i>
Star-nosed Mole	<i>Condylura cristata</i>
Virginia Opossum	<i>Didelphis virginiana</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
North American Porcupine	<i>Erethizon dorsatum</i>
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>
Southern Flying Squirrel	<i>Glaucomys volans</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>
Eastern Red Bat	<i>Lasiurus borealis</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Snowshoe Hare	<i>Lepus americanus</i>
North American River Otter	<i>Lontra canadensis</i>
Bobcat	<i>Lynx rufus</i>
Woodchuck	<i>Marmota monax</i>
Striped Skunk	<i>Mephitis</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>
Woodland Vole	<i>Microtus pinetorum</i>
Ermine	<i>Mustela erminea</i>
Long-tailed Weasel	<i>Mustela frenata</i>
Southern Red-backed Vole	<i>Myodes gapperi</i>
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>
American Mink	<i>Neovison vison</i>

Common Name	Scientific Name
White-tailed Deer	<i>Odocoileus virginianus</i>
Common Muskrat	<i>Ondatra zibethicus</i>
Hairy-tailed Mole	<i>Parascalops breweri</i>
Fisher	<i>Pekania pennanti</i>
White-footed Deermouse	<i>Peromyscus leucopus</i>
North American Deermouse	<i>Peromyscus maniculatus</i>
Raccoon	<i>Procyon lotor</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Cinereus or Masked Shrew	<i>Sorex cinereus</i>
Smoky Shrew	<i>Sorex fumeus</i>
American Pygmy Shrew	<i>Sorex hoyi</i>
American Water Shrew	<i>Sorex palustris</i>
Southern Bog Lemming	<i>Synaptomys cooperi</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
American Black Bear	<i>Ursus americanus</i>
Red Fox	<i>Vulpes</i>
Meadow Jumping Mouse	<i>Zapus hudsonius</i>

Source: VTFWD 2017a

\*Indicates species that is not native to Vermont

**Table G-2 Vermont Herptile Species**

Common Name	Scientific Name
Snapping Turtle	<i>Chelydra serpentina</i>
Painted Turtle	<i>Chrysemys picta</i>
Ring-necked Snake	<i>Diadophis punctatus</i>
Milksnake	<i>Lampropeltis triangulum</i>
Common Watersnake	<i>Nerodia sipedon</i>
Smooth Greensnake	<i>Opheodrys vernalis</i>
DeKay's Brownsnake	<i>Storeria dekayi</i>



Common Name	Scientific Name
Red-bellied Snake	<i>Storeria occipitomaculata</i>
Common Gartersnake	<i>Thamnophis sirtalis</i>
American Toad	<i>Anaxyrus americanus</i>
Gray Treefrog	<i>Hyla versicolor</i>
Spring Peeper	<i>Pseudacris crucifer</i>
American Bullfrog	<i>Lithobates catesbeianus</i>
Green Frog	<i>Lithobates clamitans</i>
Pickerel Frog	<i>Lithobates palustris</i>
Northern Leopard Frog	<i>Lithobates pipiens</i>
Mink Frog	<i>Lithobates septentrionalis</i>
Wood Frog	<i>Lithobates sylvaticus</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Northern Dusky Salamander	<i>Desmognathus fuscus</i>
Northern Two-lined Salamander	<i>Eurycea bislineata</i>
Spring Salamander	<i>Gyrinophilus porphyriticus</i>
Eastern Red-backed Salamander	<i>Plethodon cinereus</i>
Eastern Newt	<i>Notophthalmus viridescens</i>

Source: VTFWD 2017b

**Table G-3 Bird Species Identified to Occur within Orange County, VT**

Common Name	Scientific Name
Cooper's Hawk	<i>Accipiter cooperii</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Spotted Sandpiper	<i>Actitis macularius</i>
Northern Saw-whet Owl	<i>Aegolius acadicus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Wood Duck	<i>Aix sponsa</i>
Blue-winged Teal	<i>Anas discors</i>
Mallard	<i>Anas platyrhynchos</i>
American Black Duck	<i>Anas rubripes</i>
unid. Mexican / Eastern Whip-poor-will	<i>Antrostomus vociferus</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Great Blue Heron	<i>Ardea herodias</i>
Tufted Titmouse	<i>Baeolophus bicolor</i>

Common Name	Scientific Name
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
American Bittern	<i>Botaurus lentiginosus</i>
Canada Goose	<i>Branta canadensis</i>
Great Horned Owl	<i>Bubo virginianus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Broad-winged Hawk	<i>Buteo platypterus</i>
Green Heron	<i>Butorides virescens</i>
Wilson's Warbler	<i>Cardellina pusilla</i>
Northern Cardinal	<i>Cardinalis</i>
Pine Siskin	<i>Carduelis pinus</i>
House Finch	<i>Carpodacus mexicanus</i>
Purple Finch	<i>Carpodacus purpureus</i>
Turkey Vulture	<i>Cathartes aura</i>
Bicknell's Thrush	<i>Catharus bicknelli</i>
Veery	<i>Catharus fuscescens</i>
Hermit Thrush	<i>Catharus guttatus</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Brown Creeper	<i>Certhia americana</i>
Chimney Swift	<i>Chaetura pelagica</i>
Killdeer	<i>Charadrius vociferus</i>
Black Tern	<i>Chlidonias niger</i>
Common Nighthawk	<i>Chordeiles minor</i>
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>
Northern Harrier	<i>Circus hudsonius</i>
Marsh Wren	<i>Cistothorus palustris</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
(Yellow-shafted Flicker) Northern Flicker	<i>Colaptes auratus</i>
Northern Bobwhite	<i>Colinus virginianus</i>
Rock Pigeon	<i>Columba livia</i>
Olive-sided Flycatcher	<i>Contopus cooperi</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
American Crow	<i>Corvus brachyrhynchos</i>

Common Name	Scientific Name
Common Raven	<i>Corvus corax</i>
Blue Jay	<i>Cyanocitta cristata</i>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>
(unid. Myrtle/Audubon's) Yellow-rumped Warbler	<i>Dendroica coronate</i>
Prairie Warbler	<i>Dendroica discolor</i>
Blackburnian Warbler	<i>Dendroica fusca</i>
Magnolia Warbler	<i>Dendroica magnolia</i>
Yellow Warbler	<i>Dendroica petechia</i>
Pine Warbler	<i>Dendroica pinus</i>
Black-throated Green Warbler	<i>Dendroica virens</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Alder Flycatcher	<i>Empidonax alnorum</i>
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>
Least Flycatcher	<i>Empidonax minimus</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Merlin	<i>Falco columbarius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
American Kestrel	<i>Falco sparverius</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Common Loon	<i>Gavia immer</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Barn Swallow	<i>Hirundo rustica</i>
Wood Thrush	<i>Hylocichla mustelina</i>
Baltimore Oriole	<i>Icterus galbula</i>
(Slate-colored Junco) Dark- eyed Junco	<i>Junco hyemalis</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Belted Kingfisher	<i>Megasceryle alcyon</i>
Eastern Screech-Owl	<i>Megascops asio</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Lincoln's Sparrow	<i>Melospiza lincolnii</i>

Common Name	Scientific Name
Song Sparrow	<i>Melospiza melodia</i>
Common Merganser	<i>Mergus merganser</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Black-and-white Warbler	<i>Mniotilta varia</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Mourning Warbler	<i>Oporornis philadelphia</i>
Nashville Warbler	<i>Oreothlypis ruficapilla</i>
Osprey	<i>Pandion haliaetus</i>
Louisiana Waterthrush	<i>Parkesia motacilla</i>
Northern Waterthrush	<i>Parkesia noveboracensis</i>
Northern Parula	<i>Parula americana</i>
House Sparrow	<i>Passer domesticus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Indigo Bunting	<i>Passerina cyanea</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Scarlet Tanager	<i>Piranga olivacea</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Sora	<i>Porzana carolina</i>
Common Grackle	<i>Quiscalus quiscula</i>
Virginia Rail	<i>Rallus limicola</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Bank Swallow	<i>Riparia</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
American Woodcock	<i>Scolopax minor</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>
American Redstart	<i>Setophaga ruticilla</i>
Eastern Bluebird	<i>Sialia sialis</i>

Common Name	Scientific Name
Red-breasted Nuthatch	<i>Sitta canadensis</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
American Goldfinch	<i>Spinus tristis</i>
Chipping Sparrow	<i>Spizella passerina</i>
Field Sparrow	<i>Spizella pusilla</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Barred Owl	<i>Strix varia</i>
Eastern Meadowlark	<i>Sturnella magna</i>
European Starling	<i>Sturnus vulgaris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Brown Thrasher	<i>Toxostoma rufum</i>
House Wren	<i>Troglodytes aedon</i>
unid. Pacific Wren / Winter Wren	<i>Troglodytes hiemalis</i>
American Robin	<i>Turdus migratorius</i>
Eastern Kingbird	<i>Tyrannus</i>
Blue-winged Warbler	<i>Vermivora cyanoptera</i>
Yellow-throated Vireo	<i>Vireo flavifrons</i>
Warbling Vireo	<i>Vireo gilvus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Canada Warbler	<i>Wilsonia canadensis</i>
Mourning Dove	<i>Zenaida macroura</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>

Source: BBAE 2018

**Table G-4 Vermont Noxious Plant List**

Common Name	Scientific Name <sup>1</sup>	Class	Species Not Currently Known to VT
Goutweed	<i>Aegopodium podagraria</i>	B	
Tree-of-Heaven	<i>Ailanthus altissima</i>	B	
Garlic Mustard	<i>Alliaria petiolata</i>	B	
Flowering Rush	<i>Butomus umbellatus</i>	B	
Fanwort	<i>Cabomba caroliniana</i>	A	X
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	B	
Brazilian Elodea	<i>Egeria densa</i>	A	X
Japanese Knotweed	<i>Fallopia japonica</i>	B	
Hydrilla	<i>Hydrilla verticillata</i>	A	X
Frogbit	<i>Hydrocharis morsus-ranae</i>	B	
E. Indian Hygrophila	<i>Hygrophila polysperma</i>	A	X
Japanese Honeysuckle	<i>Lonicera japonica</i>	B	
Amur Honeysuckle	<i>Lonicera maackii</i>	B	
Morrow Honeysuckle	<i>Lonicera morrowii</i>	B	
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	B	
Bell Honeysuckle	<i>Lonicera x bella</i>	B	
Purple Loosestrife	<i>Lythrum salicaria</i>	B	
Parrot Feather	<i>Myriophyllum aquaticum</i>	A	X
Variable-Leavedmilfoil	<i>Myriophyllum heterophyllum</i>	A	X
Eurasian Watermilfoil	<i>Myriophyllum spicatum</i>	B	
Yellow Floating Heart	<i>Nymphoides peltata</i>	B	
Common Reed	<i>Phragmites australis</i>	B	
Curly Leaf Pondweed	<i>Potamogeton crispus</i>	B	
Common Buckthorn	<i>Rhamnus cathartica</i>	B	
Glossy Buckthorn	<i>Rhamnus frangula</i>	B	
Giant Salvinia	<i>Salvinia auriculata</i>	A	X
Water Chestnut	<i>Trapa natans</i>	B	
Swallow-wort	<i>Vincetoxicum hirundinaria</i>	A	
Black Swallow-wort	<i>Vincetoxicum nigrum</i>	B	

Source: VTFWD 2005

<sup>1</sup> All weeds listed in 7 C.F.R. 360.200 as amended, which is hereby incorporated by reference including subsequent amendments and editions.

**NEWBURY HYDROELECTRIC PROJECT**

**FERC No. 5261**

**EXHIBIT F**

**GENERAL DESIGN DRAWINGS**

**THIS MATERIAL IS CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION (CEII).**

Members of the Public may Obtain Nonpublic or Privileged Information  
by Submitting a Freedom of Information Act (FOIA) Request.



**NEWBURY HYDROELECTRIC PROJECT**

**FERC No. 5261**

**EXHIBIT G**

**PROJECT MAP**

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Table 1-1 Newbury Project Boundary Map ..... 1

**LIST OF ATTACHMENTS**

Attachment 1 Exhibit G Map

## 1.0 PROJECT MAP

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The attached Exhibit G map denotes the Newbury Hydroelectric Project (Project or Newbury Project) boundary. Table 1.1 provides a summary of the drawing number and title for the Exhibit G map. The Project Boundary Map shows the Project vicinity, location, and boundary in sufficient detail to provide a full understanding of the Project. The Exhibit G map was prepared in accordance with the requirements of 18 Code of Federal Regulations (C.F.R.) § 4.51(h).

**Table 1.1 Newbury Project Boundary Map**

Drawing Number	Title
Exhibit G - Sheet 1 of 1	Project Boundary Map

Please note that the Project boundary elevation is set at 464 feet mean sea level (msl) because that is the lowest contour elevation captured by LiDAR imagery that continuously spans the shoreline of the river where the Project boundary is described. This does not change the normal impoundment elevation of 463.9 feet msl.

GMP's proposed hand carry access area has been incorporated into the Project boundary. GMP will consult with FERC upon completion of the proposed hand carry access area to finalize the Project boundary line in that area as necessary.

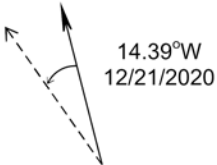
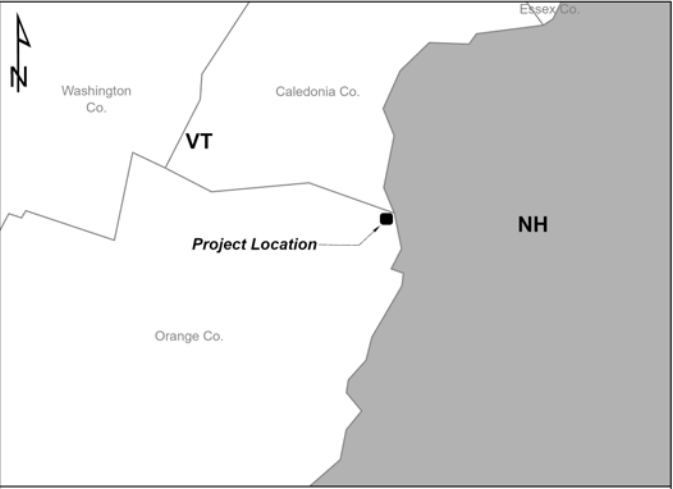
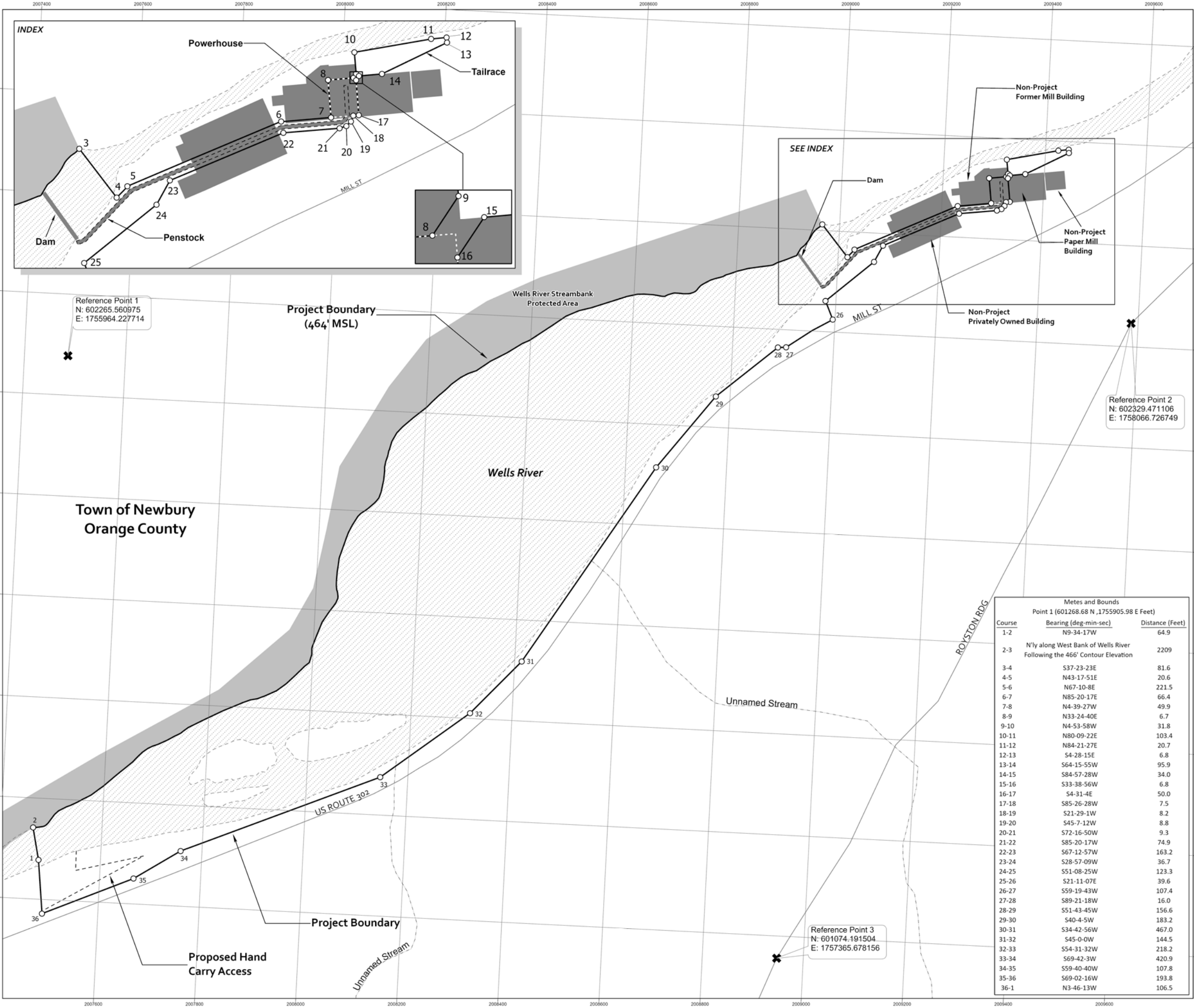
## 2.0 FEDERAL LANDS

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There are no public lands or reservations of the United States within the Newbury Project boundary.

## **ATTACHMENT 1**

### **EXHIBIT G MAP**



- Project Boundary
- Project Features
- Penstock (Underground)
- Turbine Hall
- Proposed Hand Carry Access
- Streams
- Waterbody
- Roads
- Reference Points
- Protected Lands

**Map notes:**

1. The Newbury Hydroelectric Project is located in Vermont in Orange County.
2. Reference Point coordinates are shown in NAD 1983 2011 StatePlane Vermont FIPS 4400 Ft US.
3. Elevations shown are referenced in MSL, where NAVD = MSL - 0.203 ft. Conversion factor was determined from NOAA tidal benchmark at Lyme Highway Bridge Connecticut River, CT, Station ID 8462764.
4. The Project Boundary follows the water's edge on the western shore of Wells River. The Project Boundary was digitized from contour elevations from the Vermont Open Geodata Portal, derived from 2013-2017 LiDAR data (water surface elevation 466 ft. NAVD 88).
5. Licensee has acquired all flowage rights and title in fee or the right to use in perpetuity all lands necessary or appropriate for the construction, maintenance, and operation of the Project. All property records are kept on file with the licensee.
6. There are no federal lands within the Project boundary.
7. Protected lands from the Vermont Protected Lands Database (VPLD) is described as "parcels that are currently protected from development through public ownership, private ownership, or protection mechanisms such as easements. The Wells River Streambank was adjusted to follow the shoreline at normal water surface elevation (466 ft. NAVD 88).
8. The Project boundary description, as required by 18 CFR 4.41, is represented here by a grid of Northings and Eastings around, and graticules within, the map frame. Any position in Northings and Eastings along the Project boundary can be determined using these references.
9. The Project boundary was derived from the following sources:  
Green Mountain Power Company

**SURVEYORS STATEMENT**

I HEREBY CERTIFY TO THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) THAT THIS PLAN MEETS THE CONDITIONS SET FORTH BY FERC FOR ITS EXPRESSED PURPOSE. THE PURPOSE OF THIS MAP IS TO PROVIDE A GEOREFERENCED VISUAL DEPICTION OF THE LOCATION OF PROJECT FEATURES AND BOUNDARIES BASED ON THE BEST AVAILABLE HISTORICAL DRAWINGS AND DIGITAL REFERENCE SOURCES INCORPORATED INTO THE GEOGRAPHIC INFORMATION SYSTEM (GIS). LOCATIONS HAVE NOT BEEN VERIFIED BY PHYSICAL FIELD SURVEYS AND THIS DRAWING SHOULD NOT BE USED FOR PURPOSES OF DEVELOPING PROPERTY BOUNDARY DESCRIPTIONS.



**GREEN MOUNTAIN POWER COMPANY**

**NEWBURY HYDROELECTRIC PROJECT**

**FERC NO. 5261**

**PROJECT BOUNDARY MAP**

**EXHIBIT G**

**SCALE: 1" = 93'**

**SHEET NO. 1 OF 1**

0 70 140 280 420 560 Feet

**ENVIRONMENTAL ASSESSMENT  
FOR  
HYDROPOWER LICENSE**

Newbury Hydroelectric Project

FERC Project No. 5261-023

Vermont

Federal Energy Regulatory Commission  
Office of Energy Projects  
Division of Hydropower Licensing  
888 First Street, NE  
Washington, DC 20426

September 2023

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## ACRONYMS AND ABBREVIATIONS

APE	area of potential effect
BMP	best management practices
°C	degrees Celsius
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
CEQ	Council on Environmental Quality
DO	dissolved oxygen
EA	environmental assessment
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	degrees Fahrenheit
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
fps	feet per second
FWS	U.S. Fish and Wildlife Service
GMP	Green Mountain Power Corporation
HPMP	Historic Properties Management Plan
Interior	U.S. Department of the Interior
IPaC	Information for Planning and Consultation
kV	kilovolt
kWh	kilowatt-hours
MW	megawatt
MWh	megawatt-hours
mg/L	milligrams per liter
NEPA	National Environmental Policy Act
National Register	National Register of Historic Places
Newbury Project	Newbury Hydroelectric Project
NHPA	National Historic Preservation Act
NPCC-New England	Northeast Power Coordinating Council's New England region
NLEB	Northern long-eared bat
O&M	operation and maintenance
PA	Programmatic Agreement
RM	river mile
SD1	Scoping Document 1
USGS	U.S. Geological Survey
Vermont ANR	Vermont Agency of Natural Resources
Vermont DEC	Vermont Department of Environmental Conservation
Vermont DHP	Vermont Division for Historic Preservation
Vermont FWD	Vermont Fish and Wildlife Department
Vermont SHPO	Vermont State Historic Preservation Office
WQC	Clean Water Act section 401 water quality certification

## **ENVIRONMENTAL ASSESSMENT**

### **Federal Energy Regulatory Commission Office of Energy Projects Division of Hydropower Licensing Washington, DC**

### **NEWBURY HYDROELECTRIC PROJECT Project No. 5261-023–Vermont**

## **1.0 INTRODUCTION**

### **1.1 APPLICATION**

On August 27, 2021, Green Mountain Power Corporation (GMP) filed an application for a subsequent license with the Federal Energy Regulatory Commission (Commission) to continue to operate and maintain the Newbury Hydroelectric Project No. 5261-023 (Newbury Project or project).<sup>1</sup> The 0.365-megawatt (MW) project is located on the Wells River, in Orange County, Vermont (figure 1). The project does not occupy federal land. The project generates 1,076 megawatt-hours (MWh) annually. GMP proposes no changes to the project's capacity.

### **1.2 PURPOSE OF ACTION AND NEED FOR POWER**

#### **1.2.1 Purpose of Action**

The purpose of the Newbury Project is to provide hydroelectric power. Therefore, under the provisions of the Federal Power Act (FPA), the Commission must decide whether to issue a subsequent license to GMP for the Newbury Project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, or water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection of, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

Issuing a subsequent license for the project would allow GMP to continue to generate electricity at the project for the term of the license, making electric power from a renewable resource available to the regional electric grid.

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<sup>1</sup> The current license for the project was issued on September 8, 1983, for a term of 40 years, and will expire August 31, 2023. *See* 24 FERC ¶ 62,275 (1983).

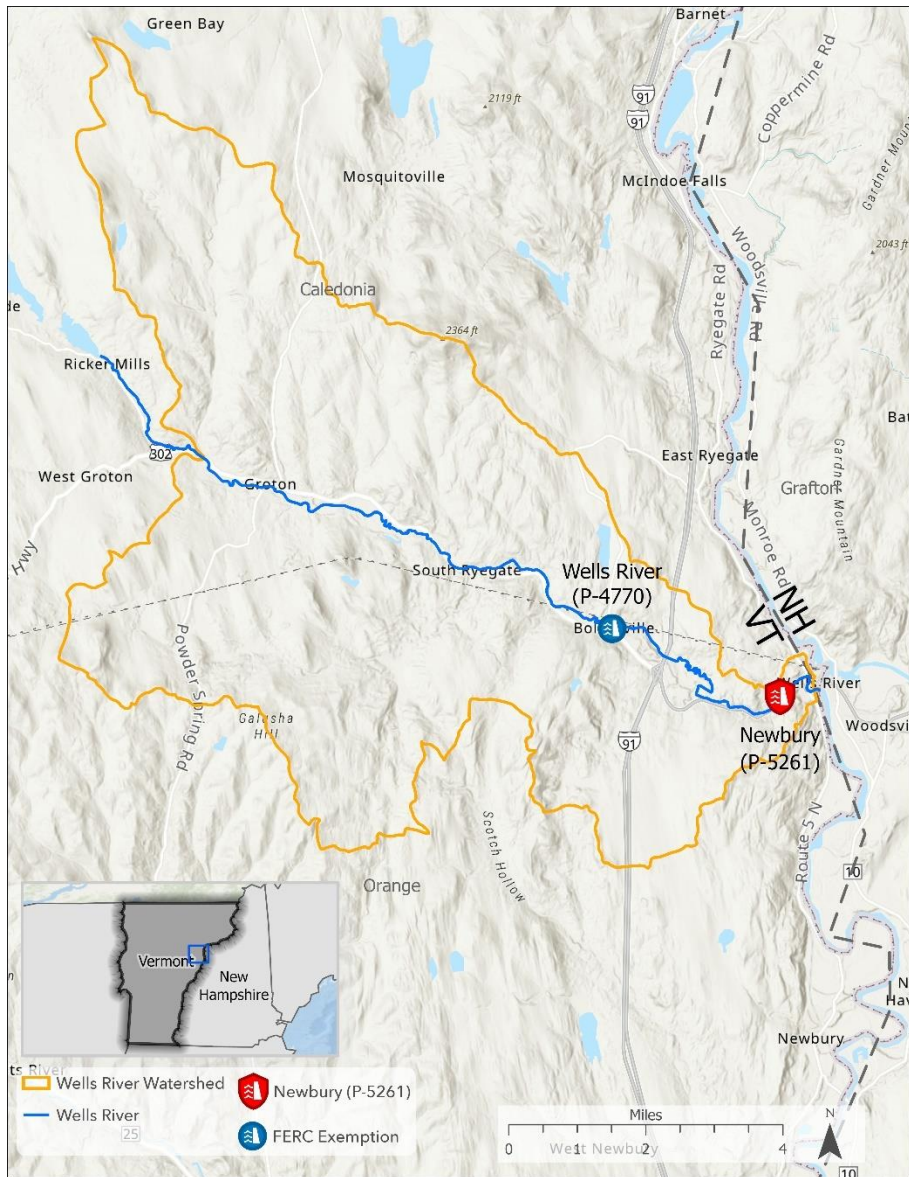


Figure 1. Newbury Project location (Source: Staff).

This environmental assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA)<sup>2</sup> of 1969 to assess the environmental and economic effects associated with continued operation of the project and identified alternatives. The EA includes recommendations to the Commission on whether to issue a subsequent license, and if so, recommends terms and conditions to become a part of any license issued.

In this EA, we assess the environmental and economic effects of the following alternatives: (1) operating and maintaining the project as proposed by GMP; (2) operating and maintaining the project as proposed by GMP, with additional staff recommended measures (staff alternative); and (3) the staff alternative including any mandatory conditions that have been filed to date. We also consider the effects of no action. Under the no-action alternative, the project would continue to operate as it does under the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. The primary issues associated with relicensing the project are the effects of project operation and maintenance on: (1) water quality; (2) fish passage; and (3) recreation access.

### **1.2.2 Need for Power**

The Newbury Project provides hydroelectric generation to meet part of the region's power requirements, resource diversity, and capacity needs. The project has an authorized installed capacity of 0.365 megawatt (MW) and generates approximately 1,076 megawatt-hours (MWh) per year.

To assess the need for power, we looked at the needs in the operating region in which the project is located. The North American Electric Reliability Corporation (NERC) annually forecasts electric supply and demand nationally and regionally for a 10-year period. The Newbury Project is located within the Northeast Power Coordinating Council's New England region (NPCC-New England) of the NERC. According to NERC's 2022 Long-Term Reliability Assessment, the net internal demand for this region is projected to increase by about 0.1% from 2022 to 2031.

Power generated at the Newbury Project would continue to help meet the power demand in the NPCC region in the short- and long-term. The project provides power that can displace non-renewable, fossil fuel-fired generation and contributes to a diversified generation mix. Displacing the operation of non-renewable facilities may avoid some power plant emissions and create an environmental benefit.

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<sup>2</sup> The Council on Environmental Quality (CEQ) issued a final rule on April 20, 2022, revising its regulations for implementing NEPA (see National Environmental Policy Act Implementing Regulations Revisions, 87 Fed. Reg. 23,453-70). The rule became effective on May 20, 2022. This EA was prepared in accordance with CEQ's 2022 regulations.



### **1.3 STATUTORY AND REGULATORY REQUIREMENTS**

The licensing process for the project is subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described in Appendix A.

### **1.4 PUBLIC REVIEW AND COMMENT**

The Commission's regulations (18 CFR § 16.8) require applicants to consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and other federal statutes. Pre-filing consultation must be completed and documented according to the Commission's regulations.

#### **1.4.1 Scoping**

Before preparing this EA, we conducted scoping to determine what issues and alternatives should be addressed. We distributed a scoping document to interested agencies and others on December 8, 2021, which was noticed in the *Federal Register* on December 15, 2021.<sup>3</sup> GMP filed comments on January 6, 2022.

#### **1.4.2 Interventions**

On November 10, 2021, the Commission issued a public notice accepting the license application and setting January 9, 2022, as the deadline for filing protests and motions to intervene. The notice was published in the *Federal Register* on November 17, 2021.<sup>4</sup> The Vermont Agency of Natural Resources (Vermont ANR) filed a motion of intervention on January 7, 2022. The Connecticut River Conservancy filed a late motion to intervene on January 11, 2022, which was granted.<sup>5</sup> American Whitewater filed a late motion to intervene on June 3, 2022, which was also granted.<sup>6</sup> None of the interventions oppose the relicensing of the project.

#### **1.4.3 Comments on the Application**

On April 6, 2022, the Commission issued a ready for environmental analysis notice setting June 5, 2022, as the deadline for filing comments, recommendations, terms and conditions, and fishway prescriptions. The notice also established a deadline of July 20, 2022, for GMP to file reply comments. The U.S. Department of Interior, Vermont State Historic Preservation Office (Vermont SHPO), and American Whitewater filed comments on June 3,

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<sup>3</sup> 86 Fed. Reg. 71,262 (December 15, 2021).

<sup>4</sup> 86 Fed. Reg. 64,193-64,194 (November 17, 2021).

<sup>5</sup> See January 31, 2022, Notice Granting Late Motion to Intervene.

<sup>6</sup> See August 4, 2022, Notice Granting Late Motion to Intervene.

2022. Vermont ANR filed comments on June 6, 2022. GMP filed reply comments on June 29, 2022.

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

### **2.1 NO ACTION ALTERNATIVE**

Under the no-action alternative, the project would continue to operate under the terms and conditions of the current license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives, and to judge the benefits and costs of any measures that might be required under a new license.

#### **2.1.1 Current Project Facilities**

The Newbury Project includes an 11.4-acre impoundment at a normal water surface elevation of 463.9 feet National Geodetic Vertical Datum of 1929 (NGVD 29). The impoundment is formed by a 26-foot-high by 90-foot-long concrete gravity dam that includes a 73.3-foot-long spillway with a crest elevation of 458.9 feet, topped with two 5-foot-high pneumatic crest gates with a top elevation of 463.9 feet. A 4-foot-wide, 8-foot-long steel sluice box, on the south side of the spillway and adjacent to the crest gates, provides seasonal flows for downstream fish passage past the project dam. Water from the spillway and sluice box passes into a 590-foot-long bypassed reach, which then connects to the project tailrace, and finally the Wells River.

Water can be released from the impoundment via the spillway, sluice box, or an 11.2-foot-wide, 9-foot-long intake structure, located on the south end of the dam. In front of the intake structure is an 18-foot-wide, 6-foot-deep baffle and a 10-foot-wide, 18.5-foot-high angled trash rack with 1-inch clear bar spacing. The intake leads to a 5-foot diameter, 435-foot-long underground penstock. Flows through the penstock are regulated by a 6-foot-wide by 6-foot-high slide gate which is automatically operated based on the impoundment elevation. Water in the penstock passes to a 0.05-MW minimum flow turbine, located about 75 feet downstream of the dam, and to a powerhouse, located about 435 feet downstream of the dam. The minimum flow turbine is manually<sup>7</sup> operated full-on or full-off and passes 30 cubic feet per second (cfs) into the bypassed reach. When flows in the penstock exceed 30 cfs, water in the penstock passes to a 0.315-MW horizontal Ossberger turbine (main turbine), located in the brick-masonry

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<sup>7</sup> In a letter filed on June 22, 2023, GMP indicated that the minimum flow unit is primarily put on- and taken off-line manually, but it can be taken off-line automatically if the impoundment surface elevation drops to about 2.4 inches below the normal impoundment elevation of 463.9 feet.

powerhouse.<sup>8,9</sup> The main turbine has a minimum hydraulic capacity of 20 cfs and a maximum hydraulic capacity of 134 cfs. Flows from the main turbine are passed to a 125-foot-long tailrace canal which then joins the downstream end of the bypassed reach of the Wells River.

The project also includes a 410-foot-long, 480-volt underground transmission line extending from the minimum flow turbine unit to a pole-mounted step-up transformer bank located adjacent to the main turbine unit powerhouse. A 130-foot-long, 480-volt underground line extends from the main powerhouse to the pole-mounted transformer bank. A 7-foot-long, above-ground line extends from the transformer bank to a utility pole, and the grid.

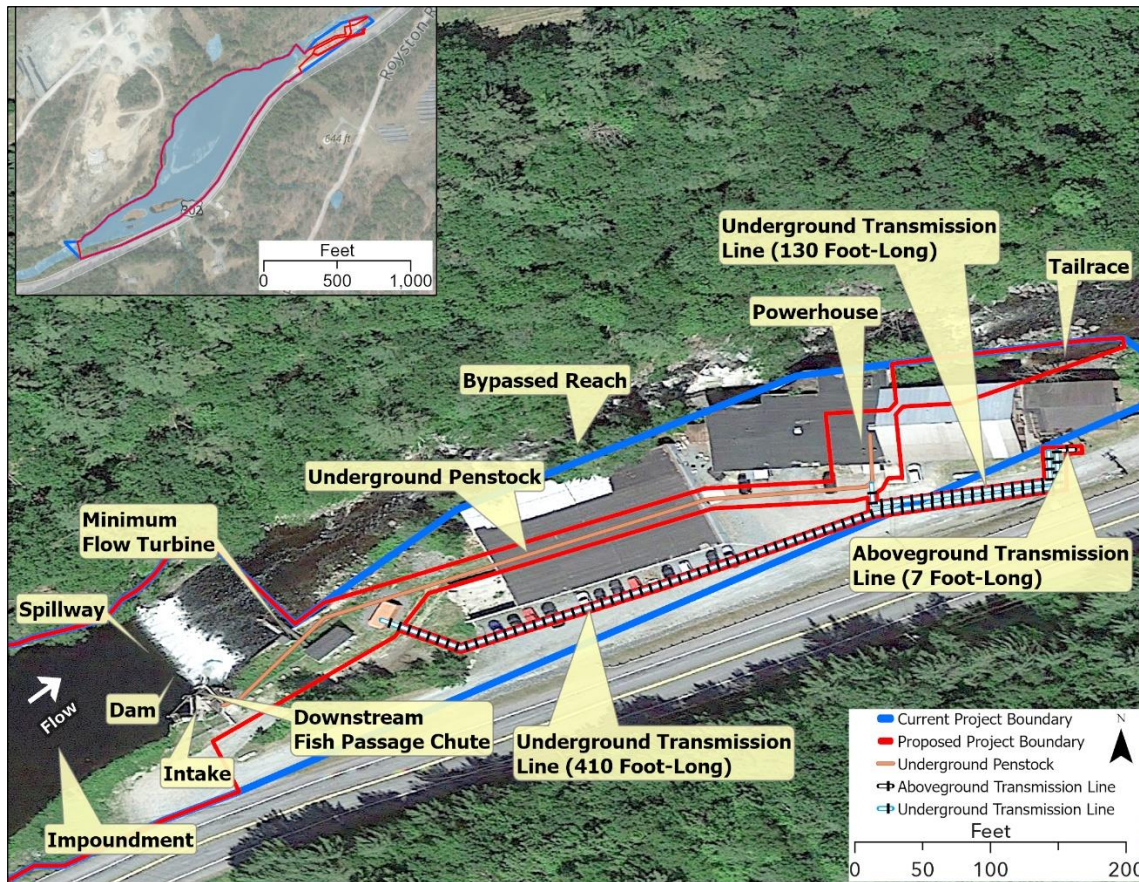


Figure 2. Newbury Project facilities and the approximate current and proposed project boundaries (Source: staff).

<sup>8</sup> The project powerhouse is located on the lower level of the non-project former Adams Paper Company Mill building. GMP leases a 32-foot by 36-foot section of the lower level of the mill building to house the main turbine unit, and a 32-foot by 36-foot section of the upper level to house switch gear for the main turbine unit and provide office space.

<sup>9</sup> The controls for the minimum flow turbine switchgear and for the pneumatic crest gates on the dam are located in an 8-foot by 24-foot building adjacent to the minimum flow turbine and owned by GMP. A 5-foot by-4-foot gatehouse building, also adjacent to the minimum flow unit, houses controls for the minimum flow turbine gate.

### **2.1.2 Project Boundary**

The current project boundary includes a total of 14.44 acres and follows a contour elevation of 464 feet NGVD 29.<sup>10</sup> The current boundary encloses the project works, impoundment, tailrace, and most of the transmission lines (figure 2). GMP leases from GRE, LLC, the project land, dam, and a mill building that encloses generating equipment.

### **2.1.3 Project Safety**

The Newbury Project has been operating under the existing license that was issued in 1983. During this time, Commission staff has conducted operational inspections focusing on the continued safety of the structures, identification of unauthorized modifications, efficiency and safety of operations, compliance with the terms of the license, and proper maintenance.

As part of the relicensing process, Commission staff evaluate the continued adequacy of the project's facilities under a subsequent license. Special articles are included in any license issued, as appropriate. Commission staff will continue to inspect the project during the term of any subsequent license to ensure continued adherence to Commission-approved plans and specifications, special license articles relating to construction (if any), operation and maintenance, and accepted engineering practices and procedures.

### **2.1.4 Current Project Operation and Environmental Measures**

The project operates in run-of-river mode such that outflow from the project approximates inflow on a continuous basis.<sup>11</sup> GMP meets this requirement by maintaining a stable impoundment elevation at about 463.9 feet. During normal operation, water released from the main powerhouse bypasses a 590-foot-long section of the Wells River between the dam and the powerhouse. GMP provides a minimum flow to the bypassed reach of at least 50 cfs from

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<sup>10</sup> In the final license application, GMP indicates that the proposed project boundary includes 13.63 acres of land. Compared to the existing project boundary, the proposed project boundary removes 1.04 acres associated with non-project buildings and adds 0.23 acres associated with a impoundment boating access area (as indicated in a letter filed by GMP on February 2, 2022). Thus, staff calculated the acres of land within the existing project as: 13.63 acres + 1.04 acres - 0.23 acres = 14.44 acres.

<sup>11</sup> The current license does not include an article requiring run-of-river operation. However, on December 14, 1982, the Vermont Department of Water Resources and Environmental Engineering issued a water quality certificate that required the project to be operated in run-of-river mode, such that instantaneous outflows below the tailrace equal instantaneous inflows to the project. *See* Vermont Department of Water Resources and Environmental Engineering water quality certificate filed on December 20, 2014. Although the project is not capable of operating in an instantaneous run-of-river mode, GMP currently operates the project in run-of-river mode, where outflow from the project approximates inflow.

April 15 to June 10, and at least 25 cfs during the remainder of the year (or inflow to the impoundment, whichever is less).<sup>12</sup> Minimum flows in the bypassed reach are provided via a combination of discharge from the minimum flow turbine, spill over the pneumatic crest gate on the spillway, and discharge through the downstream fish passage chute. GMP also provides a year-round aesthetic flow of at least 5 cfs over the spillway.<sup>13</sup>

The fish passage chute is seasonally installed and operated by passing flows of 20 cfs during the spring (April 1 to June 1) and fall (September 1 to November 15).<sup>14</sup> The chute is installed by removing a 2-foot by 4-foot section of the pneumatic crest gate and attaching an 8-foot-long by 4-foot-wide sluice box that extends to the plunge pool. The impoundment is drawn down four times a year by 2.6 feet to seasonally install and remove the fish passage chute. These drawdowns last about 6 hours and minimum flows to the bypassed reach are provided through the minimum flow turbine during these maintenance drawdowns.

The minimum flow turbine is used to discharge a river flow of 30 cfs into the bypassed reach when inflows are available. When the river flow is too low to operate the minimum flow turbine (less than 30 cfs) or exceeds the hydraulic capacity of the main turbine (134 cfs), GMP maintains the minimum flow in the bypassed reach by raising impoundment elevations to spill flow over the spillway. When the minimum flow turbine is not operating, GMP can also use the downstream fish passage chute to provide minimum flows.

GMP monitors operation using a Supervisory Control and Data Acquisition system (SCADA) that collects and records impoundment elevation, tailrace elevation, and turbine output in 15-minute intervals. By monitoring this data, GMP is able to adjust generation to maintain stable impoundment elevations and provide the required minimum flows.

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<sup>12</sup> The existing minimum flows are required by Article 25 of the current license. *See Newbury Hydro Company*, 24 FERC ¶ 62,275 (1983).

<sup>13</sup> The current license does not include an article requiring a year-round aesthetic flow of 5 cfs over the spillway. However, on July 21, 1988, the Vermont Department of Environmental Conservation issued a water quality certificate that required a minimum spillage flow of 5 cfs over the spillway at all times. *See* Appendix A of GMP's final license application filed on August 27, 2021.

<sup>14</sup> The current license does not include an article requiring fish passage. However, on July 21, 1988, the Vermont Department of Environmental Conservation issued a water quality certificate that required the downstream fish passage facilities pass flows of 20 cfs from April 1 to June 1 and 10 cfs from September 1 to November 15. *See* Appendix A of GMP's final license application filed on August 27, 2021. In a letter filed on April 28, 2023, GMP indicates that they currently pass 20 cfs through the fish passage chute during both the spring and fall periods.

## **2.2 APPLICANT’S PROPOSAL**

### **2.2.1 Proposed Project Facilities**

GMP proposes no modifications to the project’s facilities.

### **2.2.2 Proposed Project Boundary**

GMP proposes to modify the project boundary to remove portions of the mill building that do not include generating equipment and to fully enclose the project transmission lines. Staff estimates that the change would result in the removal of 0.98 acres from the project boundary.<sup>15</sup> The project boundary would then include a total of 13.46 acres.

### **2.2.3 Proposed Operation and Environmental Measures**

GMP proposes to:

- Continue operating the project in run-of-river mode, such that outflow from the project approximates inflow on a continuous basis.
- Consult with Vermont ANR prior to conducting maintenance and repair work that has the potential to adversely affect water quality.
- Consult with Vermont ANR regarding the timing and duration of periodic maintenance drawdowns of the impoundment and maintain minimum flow requirements to the bypassed reach during any maintenance drawdowns.
- Continue providing minimum flows to the bypassed reach via a combination of discharge from the minimum flow turbine, spill over the pneumatic crest gate on the spillway of the dam, and/or discharge through a downstream fish passage chute.
- Decrease the minimum flow to the bypassed reach from 50 cfs to 37 cfs from April 15 to June 10 and increase the minimum flow from 25 cfs to 37 cfs during the remainder of the year.
- Continue to seasonally install and operate the downstream fish passage chute during the spring (April 1 to June 1) and fall (September 1 to November 15).

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<sup>15</sup> On March 25, 2022, GMP filed revised Exhibit G maps that fully encompass the project transmission lines within the project boundary. These maps included 0.23 acres of land associated with a potential location for the proposed impoundment boating access. This land was previously identified as unfeasible for development of the impoundment boating access area in GMP’s February 2, 2022, additional information response. GMP did not include an estimate of total acres of land within the project boundary in their March 25, 2022, filing. Therefore, using Geographic Information Systems, staff estimated that the project boundary included in the March 25, 2022, Exhibit G maps encompassed 13.69 acres. Accounting for the removal of land associated with the impoundment boating access area (0.23 acres), staff estimates that the proposed project boundary encompasses 13.46 acres.

- Decrease flows through the downstream fish passage chute from 20 cfs to 10 cfs during the spring and fall.
- Develop an operation compliance monitoring plan, in consultation with the Vermont ANR, detailing how GMP will operate in run-of-river mode and comply with minimum flow and aesthetic flow requirements.<sup>16</sup>
- Limit the removal of trees at the project greater than or equal to 4 inches in diameter at breast height (dbh) to the period of November 1 through April 14 for protection of rare, threatened, and endangered terrestrial species.<sup>17</sup>
- Increase the aesthetic flow over the spillway from 5 cfs to 10 cfs.
- Construct an impoundment boating access area for recreational boaters upstream of the project dam, if feasible, at a location to be determined after any subsequent license is issued.
- Develop a Historic Properties Management Plan for the historic properties at the project.

## **2.2.4 Modifications to the Applicant’s Proposal – Mandatory Conditions**

Vermont ANR filed 12 conditions pursuant to section 401 of the Clean Water Act (CWA), which can be found in Appendix E.

## **2.3 STAFF ALTERNATIVE**

The staff alternative includes most of GMP’s proposed measures, most of the mandatory conditions contained in Vermont ANR’s water quality certification and the following recommended modifications or additions:

- Modify the proposed operation compliance monitoring plan to include provisions for monitoring and reporting compliance with all operating requirements of the license (e.g., run-of-river operation, minimum flows, aesthetic flows, fish passage flows, impoundment water levels, timing of planned maintenance), and reporting deviations from operating requirements to the Commission and Vermont ANR (Certification condition C);

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<sup>16</sup> In a letter filed on August 18, 2022, GMP proposes to develop a flow management and monitoring plan. Staff refers to the flow management and monitoring plan as an operation compliance monitoring plan. GMP indicates that the plan would detail how they will operate in run-of-river mode and comply with “conservation flows” and “spillage flows.” Staff understands “conservation flows” to be minimum flows and “spillage flows” to be aesthetic flows.

<sup>17</sup> GMP’s proposal references four inches diameter at base height. Staff understands the intended reference to be 4 inches diameter at breast height (dbh).



- Develop a plan, within one year of American eel passage being installed at the Wilder Project,<sup>18</sup> to provide upstream and downstream American eel passage at the Newbury Project (Certification condition E);
- Develop a debris disposal plan (Certification condition G);
- Discontinue seasonal installation and operation of the downstream fish passage chute;
- Develop an upstream impoundment boating access plan that includes: (1) provisions to consult on boating access design (Certification condition F) and site selection with the Vermont ANR and U.S. Fish and Wildlife Service (FWS) before any construction activities occur; (2) an implementation and construction schedule that does not exceed four years (Certification condition F); (3) a design plan, including the estimated length, width, and composition of the proposed access area, parking area, trail and stairway; (4) best management practices (BMPs) that include, siltation and sedimentation controls and revegetating areas disturbed during construction using native species; (5) methods for preventing the establishment of invasive plants; and (6) guidelines for detecting and treating invasive plant populations.
- Restrict the removal of trees<sup>19</sup> greater than or equal to 3 inches dbh to the period between November 1 and April 14 for the protection of northern long-eared bats (NLEB) (Certification condition I).

### **Water Quality Certification Conditions Not Recommended**

The staff alternative does not include the following water quality certification conditions because, pursuant to sections 4(e) and 10(a) of the FPA, the condition is not operationally feasible and has no added benefit, or the benefits would not justify the costs: (1) operate the project so that outflow always equals (rather than approximates) inflow on an instantaneous basis (Certification condition B); and (2) continue to install and maintain downstream fish passage from April 1 to June 1 and September 1 to November 15 (Certification condition D).

## **2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

Certain alternatives to GMP's proposal were considered but eliminated from further analysis because they are not reasonable in this case. These alternatives are presented in Appendix B.

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<sup>18</sup> The Wilder Project (FERC No. 1892) is the first dam downstream of the Newbury Project and about 49 river miles away on the Connecticut River

<sup>19</sup> Tree removal is defined herein as cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation.

### 3.0 ENVIRONMENTAL ANALYSIS

In this section, we present: (1) a general description of the project vicinity; (2) an explanation of the scope of our cumulative effects analysis; and (3) our analysis of the proposed action and recommended environmental measures. Sections are organized by resource area (aquatics, recreation, etc.). Historic and current conditions are described first under each resource area. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed protection, mitigation, and enhancement measures, and any potential cumulative effects of the proposed action and alternatives. Staff conclusions and recommended measures are discussed in section 5.1, *Comprehensive Development and Recommended Alternative*, of this EA.<sup>20</sup>

#### 3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Wells River is a 22-mile-long tributary of the Connecticut River located in northern Vermont (Redstart, 2009). The Wells River drains an area of about 102 square miles and flows southeast from Osmore Pond in Peachum, Vermont to the Village of Wells River, Vermont where it joins the Connecticut River.

Land cover in the Wells River watershed includes forest (81%), agriculture (6%), and developed land (4%). The remainder of the watershed is composed of open water, barren land,<sup>21</sup> and wetlands.

Historically, the Wells River was used for log drives and hydroelectric power generation for mills (*i.e.*, paper mills, sawmills, fulling mills, grist mills) in the late 1800s and early 1900s (Redstart, 2009). At least 13 dams were once located throughout the watershed (Redstart, 2009). Many of the dams were used to store water and energy for the milling industry (Restart, 2009). More than half the dams have since been breached or removed and thus today there are only six active dams. Current uses of the Wells River include recreation and hydroelectric generation. In addition to the Newbury Project, the Wells River Project (FERC Exemption No. 4770; also known as the Boltonville Dam), located approximately 4.2 river miles upstream of the Newbury Project, is used for hydroelectric generation. Four other dams regulated by Vermont DEC are used for recreation.

The project region experiences mild summers and cold, snowy winters. The average total annual precipitation is 40 inches. Total average annual snowfall is 85.9 inches.

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<sup>20</sup> Unless otherwise indicated, the sources of our information are the final license application filed by GMP on August 27, 2021 (GMP, 2021), and the responses to requests for additional information filed on February 2, 2022 (GMP, 2022a), March 25, 2022 (GMP, 2022b), and August 18, 2022 (GMP, 2022c).

<sup>21</sup> Barren land includes unvegetated river banks, bare/exposed rock, and sand or gravel covered land.

## **3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS**

According to the Council on Environmental Quality's regulations that implement NEPA, 40 C.F.R. § 1508.7, a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other development activities.

Based on our review of the license application, we have determined that aquatic resources could be cumulatively affected by the continued operation and maintenance of the Newbury Project, in combination with other hydroelectric projects, and other past, present, and foreseeable future activities in the Wells River Basin such as operation of the Wells River Project, agricultural activities, and landfill leachate from the Newbury landfill.<sup>22</sup> We discuss these cumulative effects at the end of section 3.3.1, *Aquatic Resources, Environmental Effects*.

### **3.2.1 Geographic Scope**

The geographic scope of the cumulative analysis defines the physical limits or boundaries of the proposed action's effects on the resource and contributing effects from other hydropower and non-hydropower activities within the Wells River Basin. We have identified the geographic scope for water quantity, water quality, and resident fish species to include the Wells River Basin from its headwaters at Osmore Pond in Peacham, Vermont to its confluence with the Connecticut River. We chose this geographic scope because operation and maintenance of the Newbury Project, in combination with other upstream uses of the river basin, including the Wells River Project, the Newbury landfill, land development, and agriculture could contribute to cumulative effects on these resources. Contributors to cumulative effects on water quality in the basin include urban development, agriculture, and landfill leachate.

### **3.2.1 Temporal Scope**

The temporal scope of our cumulative effects analysis includes a discussion of past, present, and reasonably foreseeable future actions and their effects on each resource that could be cumulatively affected. Based on the potential term of a subsequent license, the temporal scope looks 30 to 50 years into the future, concentrating on the effects on the resources from reasonably foreseeable future actions. The historical discussion is limited, by necessity, to the amount of available information. The quality and quantity of information, however, diminishes as we analyze resources further away in time from the present. We identified the present resource conditions based on the license application, agency comments, and comprehensive plans.

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<sup>22</sup> The Newbury landfill is located about 3.5 river miles upstream of the Newbury Project.

### **3.3 PROPOSED ACTION AND ACTION ALTERNATIVES**

In this section, we discuss the effects of the proposed action and project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the site-specific environmental effects.

Only the resources that would be affected, or about which comments have been received, are addressed in detail in this EA. Based on this, we have determined that geologic and soil resources, aquatic resources, terrestrial resources, threatened and endangered species, recreation and land use resources, cultural resources, and environmental justice communities may be affected by the proposed action and action alternatives. We have not identified any substantive issues related to socioeconomics associated with the proposed action; therefore, this resource is not assessed in this EA. We present our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative*.

#### **3.3.1 Geologic and Soil Resources**

##### **3.3.1.1 Affected Environment**

The Newbury Project is located within the Vermont Piedmont biophysical region. The Vermont Piedmont is the largest physiographic region in the state and consists of rolling hills and valleys located at the foot of the Green Mountains. The region consists of a number of isolated granite mountains that rise above the surrounding landscape and contains many lakes originally formed by glaciers. The Wells River watershed lies between two bedrock formations - the Silurian-Devonian and Ordovician bedrock units found to the west and east, respectively (Redstart, 2009). Gile Mountain and Waits River formations dominate these bedrock units, consisting primarily of metamorphic schists and phyllites, with lesser amounts of slate, limestone, quartzite, greenstone, amphibolite, and other minerals.

##### **Soils**

The most common soil mapped within the Newbury Project area is the Turnbridge-Woodstock complex, which is a fine sandy loam. The Turnbridge series consists of moderately deep, well drained soils on glaciated uplands and the Woodstock series consists of somewhat excessively drained soils that formed in loamy till on bedrock controlled, glaciated uplands. The Turnbridge-Woodstock complex has a soil erodibility factor (K) of 0.32, which indicates the soil is moderately susceptible to detachment and has moderate runoff potential (IWR, 2002). The second most common soil series within the project area is the Merrimac fine sandy loam which consists of very deep, somewhat excessively drained soils in broad areas on plains and terraces that commonly follow major stream valleys. The Merrimac fine sandy loam has an erodibility factor of 0.28, and like the Turnbridge-Woodstock complex is moderately susceptible to detachment and has moderate runoff potential (IWR, 2002).

##### **Impoundment**

The shorelines along the impoundment are a mix of steep rock outcrops and vegetated banks with soils ranging from 0 to 60 percent slopes (NRCS, 2021). The majority of the

northern shoreline is forested, and the southern shoreline is dominated by a vegetated and rip-rap bank associated with the U.S. Route 302 right-of-way.

### **Bypassed Reach**

The bypassed reach has fairly steep rock ledges creating a channel environment. Downstream of the bypassed is a naturalized river channel with both woody and non-woody vegetation along both shorelines.

#### **3.3.1.2 Environmental Effects**

##### **Impoundment Boating Access Construction**

GMP proposes to construct an impoundment boating access area upstream of the project dam at a location to be determined.

Vermont ANR's certification condition F requires that the location for the proposed impoundment boating access area be located upstream of the dam pending private landowner approval and cultural resource consultation, and that the access area be constructed within four years of the effective date an issued license.

##### *Our Analysis*

Although the specifics regarding the location and scope of construction have not been determined constructing this facility could disturb upland areas and potentially lead to erosion and sediment inputs to the river, which could negatively affect water quality and aquatic resources. However, any erosion that occurs would be minimized by implementing BMPs that include controls such as silt fencing and revegetation. Such measures could be included in a conceptual plan for the facility, to be filed for Commission approval prior to the start of ground-disturbing activities.

##### **Operation and Maintenance Drawdowns**

GMP proposes to continue operating the project in run-of-river mode using the automatic impoundment level control on the main turbine unit to maintain stable impoundment levels at about 463.9 feet. GMP also proposes to continue four planned drawdowns each year to install and remove the downstream fish passage chute, by lowering the impoundment by about 2.6 feet (461.3 feet msl).<sup>23</sup>

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<sup>23</sup> GMP proposes to continue to install the downstream fish passage chute from April 1 to June 1 and from September 1 to November 15, which would require a one drawdown for installation and one drawdown for removal during each fish passage season, for a total of four drawdowns.

GMP proposes to consult with the Vermont Department of Environmental Conservation (Vermont DEC) on the timing and duration of maintenance drawdowns so as to conduct the drawdowns in a manner that protects nearshore terrestrial and aquatic habitat and maintain minimum flows to the bypassed reach.<sup>24</sup>

Vermont ANR's certification condition H requires GMP to file plans with Vermont DEC for review and approval of any project maintenance or repair work, including drawdowns below the normal operating level, if the work may result in a discharge, have a material adverse effect on water quality, or cause less-than-full support of an existing use or beneficial values or use of State waters.

### *Our Analysis*

#### Project Operation

Impoundment fluctuations during normal operation have the potential to affect bank stability in the impoundment and in downstream reaches by exposing areas to periodic inundation and dewatering resulting in erosion of the moderately susceptible soils. Soil and sediment erosion from streambanks and shorelines of impoundments can adversely affect riparian and terrestrial habitat and historic properties that may be in the project area, and cause turbidity and siltation in the impoundment and downstream habitat, which can adversely affect water quality and aquatic resources. Operating the project in run-of-river mode by maintaining stable impoundment elevations would continue to limit shoreline erosion, turbidity, and siltation in the impoundment and have little effect on shoreline erosion downstream of the project. Nonetheless, project operation could cause adverse effects, due to ongoing erosion, on the historic Wells River Electric Light Plant and Pumping Station powerhouse foundation and penstock (see section 3.3.7.1, *Cultural Resources, Affected Environment*). As discussed in section 3.3.7.2, *Cultural Resources, Environmental Effects*, developing and implementing an Historic Properties Management Plan (HPMP), in consultation with the Vermont SHPO, would ensure that mitigation measures are in place to protect historic properties within the APE from adverse effects of erosion related to the operation.

#### Maintenance Drawdowns

Drawing down and refilling an impoundment during maintenance can affect bank stability in an impoundment and can also affect resources in ways that are similar to those discussed above for project operation. GMP proposes to continue to draw down the impoundment four times each year for installation and removal of the downstream fish passage chute by lowering the impoundment about 2.6 feet below the pneumatic crest gates. As

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<sup>24</sup> In a letter filed on March 25, 2022, GMP stated that the only planned drawdowns that occur at the project are for installation and removal of the fish passage chute, and any other drawdowns would be for emergencies or unplanned maintenance and repair or inspection activity.

discussed above, there is ongoing erosion on the historic Wells River Electric Light Plant and Pumping Station powerhouse foundation and penstock that is potentially caused by project operation and maintenance. Developing and implementing the HPMP discussed above would ensure that mitigation measures are put in place if needed to protect historic properties from any erosion related to maintenance drawdowns.

For planned and unplanned drawdowns, GMP proposes to consult with Vermont DEC and the Commission, as needed, regarding the timing and duration of drawdowns. GMP also proposes to consult with Vermont DEC prior to any maintenance or repair work that could affect water quality. Notifying and receiving feedback from Vermont DEC prior to conducting planned or unplanned drawdowns for maintenance or repairs would allow the agency to make recommendations to GMP to minimize erosion and sedimentation and adverse effects to water quality and aquatic resources that may result from such maintenance drawdowns. However, Vermont ANR's requirement that GMP file plans and receive approval from Vermont DEC prior to performing planned or unplanned maintenance repairs could limit GMP's ability to complete needed repairs in a timely fashion.

### **3.3.2 Aquatic Resources**

#### **3.3.2.1 Affected Environment**

##### **Water Quantity and Use**

The Wells River at the Newbury Project has a drainage area of approximately 100 square miles. The estimated mean annual daily flow (MADF) at the project is 170 cfs, with flows typically highest in April and lowest during August and September (table D-1).

The project's main turbine and minimum flow turbine have a combined maximum hydraulic capacity of 164 cfs. Flows in the Wells River equal or exceed the maximum hydraulic capacity of the project about 32% of the time on an annual basis, based on USGS gage number 01139000.<sup>25</sup> The minimum hydraulic capacity (i.e., 20 cfs) is equaled or exceeded about 98% of the time on an annual basis, based on gage flows.<sup>26</sup>

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<sup>25</sup> USGS gage number 0113900 is located about 0.7 miles upstream of the project dam. Flows were prorated by 1.013 to account for the difference between drainage areas at the gage and project dam.

<sup>26</sup> Under GMP's proposed operation, the Newbury Project would require a minimum inflow of 57 cfs to operate the main turbine (20 cfs minimum hydraulic capacity of the main turbine plus 37 cfs minimum flow to the bypassed reach) and 40 cfs to operate the minimum flow turbine (30 cfs through the minimum flow turbine plus 10 cfs aesthetic flow). Inflows of 57 cfs and 40 cfs are exceeded 77 percent and 88 percent of the time, respectively, on an annual basis, based on gage flows.



As discussed above in section 3.1, *General Description of the River Basin*, the only water uses in the project area are for recreation and hydropower production. There are no public water supply uses or withdrawals for agriculture or industrial purposes in the Wells River near the project.

### **Water Quality**

The state of Vermont classifies the Wells River as a B2 waterway and designates the river as coldwater fish habitat.<sup>27</sup> The State manages Class B2 waters for the uses of aquatic biota and wildlife, aquatic habitat, aesthetics, recreation, public water, and irrigation and other agricultural uses. According to Vermont state water quality regulations, the dissolved oxygen (DO) concentration of coldwater fish habitat may not be less than 6 milligrams per liter (mg/L) and 70% saturation at all times. The regulations also state that in coldwater fish habitat, the total increase in water temperature due to all discharges and activities shall not exceed 1.0°F (table D-2).

The Vermont DEC periodically conducts water quality and benthic macroinvertebrate sampling at several sites within the Wells River. DO, pH, total nitrogen (NO<sub>3</sub>-N), total phosphorus, and turbidity samples that were collected at five stations in the river (one downstream and four upstream of the Newbury Project) between 1992 and 2017 demonstrated that the Wells River attained the standards for Class B(2) waters (Vermont ANR, 2023). Vermont DEC evaluates the biological integrity of the macroinvertebrate community by comparing specific metrics to the values expected for a naturally occurring macroinvertebrate population. Macroinvertebrate assessments completed between 1992 and 2017 in the Wells River found the community to be Very Good to Excellent,<sup>28</sup> and thus, to meet Class B(2) water quality standards and fully support aquatic life standards.

### **Water Quality Study**

GMP conducted a water quality study from July 8 to September 30, 2019.<sup>29</sup> During the study, GMP monitored DO and water temperature at 15-minute intervals at six sites located: (1) in the riverine reach just upstream of the impoundment; (2) within the impoundment; (3) at the intake; (4) in the bypassed reach adjacent to the minimum flow turbine; (5) in the bypassed reach downstream of the minimum flow turbine and upstream of the tailrace; and (6) in the tailrace (figure C-1). During the study, the main turbine was not operational, thus all flows passed into the bypassed reach by spilling over the dam or by passing through the minimum flow turbine.

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<sup>27</sup> Vermont Water Quality Standards, Environmental Protection Rule §29A-306 and §A-02.

<sup>28</sup> Benthic macroinvertebrate communities are classified on a scale ranging from poor to excellent, which correspond to highly degraded to near natural conditions, respectively.

<sup>29</sup> See Appendix C of the final license application.

The mean flow during the study was 54 cfs, which is less than the mean monthly flow for July, August, and September (table D-1).

In the riverine reach just upstream of the impoundment (site 1), DO concentration was 6.0 mg/L or greater and DO saturation was 70% or greater during the entire study period (table D-3). DO concentrations at site 1 ranged from 7.5 mg/L to 10.5 mg/L, with an average DO of 8.7 mg/L and DO saturation ranged from 93.1% to 98.4%, with an average saturation of 96.1%. Water temperature at site 1 ranged from 53.4°F to 79.5°F, with an average temperature of 67.2°F (table D-3).

Within the impoundment (site 2), the DO concentration was 6.0 mg/L or greater during the entire study period (table D-3), and DO saturation was 70% or greater during all but 15 minutes of the study. DO concentrations at site 2 ranged from 6.1 mg/L to 11.2, with an average DO of 8.9 mg/L and DO saturation ranged from 69.1% to 113.1%, with an average saturation of 98.3%. Water temperature at site 1 ranged from 55.8°F to 78.4°F, with an average temperature of 67.3°F (table D-3).

At the powerhouse intake (site 3), the DO concentration was 6.0 mg/L or greater 99.3% of the time, falling below 6.0 mg/L during about 14.3 hours of the study (table D-3). The DO saturation was 70% or greater 99.1% of the time, falling below 70% during about 17.5 hours of the study. DO concentrations at site 3 ranged from 4.5 mg/L to 11.5 mg/L, with an average DO concentration of 8.8 mg/L and DO saturation ranged from 49.4% to 125.5%, with an average saturation of 96.4%. Water temperature at site 3 ranged from 55.8°F to 78.1°F, with an average temperature of 67.3°F (table D-3).

In the bypassed reach adjacent to the minimum flow turbine (site 4), the DO concentration was 6.0 mg/L or greater during the study period (table D-3) and DO saturation was 70% or greater during all but 15 minutes of the study. DO concentrations at site 4 ranged from 6.3 mg/L to 10.7 mg/L, with an average DO concentration of 9.1 mg/L and DO saturation ranged from 69.4% to 107.2%, with an average saturation of 99.8%. Water temperature at site 4 ranged from 55.6°F to 78.4°F, with an average temperature of 67.9°F (table D-3).

In the bypassed reach downstream of the minimum flow turbine and upstream of the tailrace (site 5), the DO concentration was 6.0 mg/L or greater and DO saturation was 70% or greater during the entire study period (table D-3). DO concentrations ranged from 7.5 mg/L to 10.4 mg/L, with an average DO concentration of 8.8 mg/L and DO saturation ranged from 85.9% to 104.1%, with an average saturation of 96.9%. Water temperature at site 5 ranged from 55.6°F to 79.0°F, with an average temperature of 68.0°F (table D-3).

In the tailrace (site 6), the DO concentration was 6.0 mg/L or greater 99.9% of the time, falling below 6.0 mg/L during about 1 hour of the study. The DO saturation was 70% or greater 99.9% of the time, falling below 70% during about 2 hours of the study (table D-3). DO concentrations at site 6 ranged from 5.7 mg/L to 10.6 mg/L, with an average DO concentration of 8.9 mg/L and DO saturation ranged from 63.2% to 104.1%, with an average saturation of 99.3%. Water temperature at site 6 ranged from 55.6°F to 78.8°F, with an average temperature of 68.1°F (table D-3).

## **Fishery Resources**

The Wells River supports both warm and coldwater fish species and is managed by the Vermont Fish and Wildlife Department (FWD) as a coldwater fishery. Fish species observed about 5.2 river miles upstream of the project include slimy sculpin, common shiner, lake chub, largemouth bass, yellow perch, brook trout, brown trout, white sucker, pumpkinseed, longnose sucker, bluntnose minnow, and creek chub.<sup>30</sup> Fish species observed about 1,000 feet downstream of the project dam in 2018 include brown trout, rainbow trout, smallmouth bass, longnose sucker, white sucker, creek chub, longnose dace, fallfish, and burbot.<sup>31</sup> Brown trout and rainbow trout are stocked annually in the Wells River between Ricker Pond (about 22 river miles upstream of the project dam) and the confluence of the Connecticut River (about 0.9 river miles downstream of the project dam) to support a put-and-take fishery. Brook trout were historically stocked in the Wells River but have not been stocked since 2013. However, wild brook trout populations are present in tributaries upstream of the Newbury Project.

### **Instream Habitat Flow Study**

GMP conducted an Instream Habitat Flow Study in the bypassed reach to evaluate habitat suitability for aquatic species typical of Vermont river systems at different flows (15 cfs, 25 cfs, 35 cfs, and 50 cfs) (table D-4). Three representative transects were selected within the bypassed reach where water depth, water velocity, and stream width were measured, substrates were classified, and photographs were taken. Field data were then compared to habitat suitability curves that described water depth, water velocity, and substrate preferences of the target species/life-stages. For most species/life-stages (excluding benthic macroinvertebrates and juvenile and adult white sucker), the largest increase in habitat suitability occurred between 15 cfs and 25 cfs as the river channel became wetter, deeper, and faster flowing (table D-4). Habitat suitability continued to increase up to 50 cfs for nearly all species, except juvenile and adult white sucker. However, the increase in suitable habitat between 35 cfs and 50 cfs was less than 10 percent for all species/life-stages except benthic macroinvertebrates (25 percent).

## **Freshwater Mussels**

Alewife floater, brook floater, and dwarf wedgemussel are the only freshwater mussels known to occur in the Connecticut River watershed. In 2019, GMP conducted freshwater mussel

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<sup>30</sup> Redstart (2009) describes fish species observed about 1 mile upstream of Boltonville Dam (also known as the Wells River Hydropower Project [FERC Exemption No. 4770]) but does not provide a survey date.

<sup>31</sup> The downstream fish community information is based on personal communication between Kleinschmidt and Vermont Fish and Wildlife Department (*See* final license application).

surveys in the project impoundment, bypassed reach, tailrace, and downstream from the tailrace. No live mussels, shells, or other evidence of mussels were observed.

### **3.2.2.2 Environmental Effects**

#### **Project Operation and Maintenance**

The operation and maintenance of hydropower projects can affect aquatic habitat in impoundments and downstream reaches by exposing nearshore areas to periodic dewatering and altering the frequency and duration of downstream flows. Additionally, operating a dam on a riverine system can affect water quality by increasing the residence time of water in a reservoir and exposing more water at the surface to the heat of the sun. This can increase water temperature and lower the ability of water to retain DO. Collectively these alterations to the flow regime may reduce the suitability of aquatic and nearshore terrestrial habitats for the aquatic and terrestrial species that rely on them.

As described in section 2.2, *Applicant's Proposal*, GMP proposes to continue operating the project in run-of-river mode by maintaining stable water levels in the impoundment and releasing a year-round, minimum flow of 37 cfs or inflow, whichever is less, to the bypassed reach, rather than continuing to release a minimum flow of at least 50 cfs from April 15 to June 10, and at least 25 cfs during the remainder of the year. As discussed in section 3.3.1.2, *Maintenance Drawdowns*, GMP proposes to continue to conduct four planned drawdowns of the project impoundment each year to install and remove the downstream fish passage chute. GMP proposes to consult with the Vermont ANR regarding the timing and duration of maintenance drawdowns so as to conduct the drawdowns in a manner that is protective of nearshore terrestrial and aquatic habitat and to maintain minimum flows to the bypassed reach for the protection of aquatic habitat. In addition, GMP proposes to consult with Vermont DEC prior to conducting project maintenance or repair work that has the potential to have an adverse effect on water quality.

Vermont ANR's certification condition B requires that the project be operated in an "instantaneous run-of-river mode" with no use of the impoundment for storage and such that outflow from the project is equal to inflow to the impoundment on an instantaneous basis except for short term, unavoidable deviations. Certification condition B also requires GMP to provide a continuous minimum flow of 37 cfs or inflow, whichever is less, to the bypassed reach year-round.

Vermont ANR's certification condition H also requires GMP to file plans with Vermont DEC for review and approval of any project maintenance or repair work, including drawdowns below the normal operating level, if the work may result in a discharge, have a material adverse effect on water quality, or cause less-than-full support of an existing use or beneficial values or use of State waters.

## *Our Analysis*

### Water Quantity and Aquatic Habitat

Under current run-of-river operations, the water surface elevation in the project impoundment is maintained at or above the crest of the dam while the project is generating and any flows in excess of the maximum hydraulic capacity of the main turbine (134 cfs) are passed over the spillway, through the minimum flow turbine, and/or through the downstream fish passage chute and into the bypassed reach. GMP proposes to continue to operate in the current manner. Continuing to operate the project in run-of-river mode would maintain stable water surface elevations in the impoundment thereby limiting the potential for stranding of fish and other aquatic organisms and minimizing disruptions to habitat necessary for feeding, cover, spawning, and rearing. Further, run-of-river operation would maintain the existing habitat downstream of the powerhouse as downstream water level fluctuations continue to follow the natural seasonal variation of flows in the Wells River.

Vermont ANR has not demonstrated that the project is capable of operating in an instantaneous run-of-river mode, with total outflow from the project equaling inflow on an instantaneous basis. GMP maintains run-of-river operation with a stable, normal impoundment elevation at about 463.9 feet by operating the main turbine using an automatic pond level control. The automatic pond level system measures the surface elevation of the impoundment, thus providing an indirect measure of changes to the volume of inflow. The minimum flow unit is primarily turned on and off manually but shuts-off automatically when the impoundment falls to about 2.4 inches below the normal impoundment elevation. For the main unit, once the impoundment reaches a high or low threshold elevation, the pond level control system automatically adjusts turbine flow appropriately. Because of the inherent limitations of the system, regular, short-term delay in adjusting project outflow to match inflow is unavoidable.

As discussed in section 3.3.2.1, *Aquatic Resources, Fishery Resources*, GMP conducted an Instream Habitat Flow Study to evaluate the suitability of aquatic habitats for several fish species and life stages as well as benthic macroinvertebrates within the bypassed reach under varying flow releases. GMP's proposed, and Vermont ANR's required, minimum flow of 37 cfs provides 80% of the maximum available habitat for benthic macroinvertebrates, the most habitat limited biota, and greater than 90% of the maximum available habitat for all representative fish species and life stages (figure C-2; table D-4). A minimum flow of 37 cfs also provides more suitable habitat than the current 25 cfs minimum seasonal flow (June 11 to April 14) for all of the species and life stages examined. GMP's current 50 cfs maximum seasonal flow (April 15 to June 10) provides nearly 100% suitable habitat for benthic macroinvertebrates compared 80% at 37 cfs, but a 50 cfs minimum flow only provides a marginal increase in suitable habitat (less than 10%) for all fish species and life stages compared to 37 cfs. Thus, GMP's proposed minimum flow of 37 cfs would improve aquatic habitat from June 11 to April 14 and would result in a modest loss of habitat from April 15 to June 10. A minimum flow of 37 cfs, relative to 50 cfs, also allows the project to operate more frequently using either the minimum flow turbine or the main turbine. Therefore, GMP's proposed, and Vermont ANR's required minimum flow of 37 cfs to the bypassed reach would help to maintain suitable aquatic habitat within the bypassed reach while also providing more operational flexibility than the current 50 cfs, seasonal, minimum flow.

GMP conducts four planned annual drawdowns of the project impoundment to install and remove the downstream fish passage chute. These planned drawdowns last approximately six hours and lower the impoundment surface elevation about 2.6 feet. Though uncommon, additional unplanned maintenance and/or emergency drawdowns may occur throughout the year. Drawdowns of the impoundment have the potential to adversely affect aquatic resources by dewatering nests of nearshore spawning fish. If water surface elevations decrease rapidly, drawdowns can lead to stranding and isolating fish or benthic invertebrates in nearshore and off-channel habitats. GMP proposes to consult with Vermont ANR regarding the timing and duration of maintenance drawdowns and to maintain minimum flow requirements to the bypassed reach during drawdowns to minimize the effects of flow and water surface elevation fluctuations on terrestrial and aquatic resources. Given that GMP's planned drawdowns are short in duration and magnitude and that GMP proposes to consult with the Vermont ANR before initiating a drawdown of the impoundment, the effects of maintenance drawdowns on aquatic resources are likely to be minimal.

Notifying and receiving feedback from Vermont DEC prior to conducting a planned drawdown as required by Vermont ANR's WQC condition H would allow the agency to make recommendations to GMP to minimize adverse effects to water quality and aquatic resources that may result from maintenance drawdowns. However, Vermont ANR's requirement that GMP file plans and receive approval from Vermont DEC prior to performing planned or unplanned maintenance repairs could limit GMP's ability to complete needed repairs in a timely fashion.

### Water Quality

During the 2019 water quality study, DO concentrations at the intake and in the tailrace stayed above the minimum instantaneous (6.0 mg/L) and saturation levels (70%) established by the state standards 99.3% and 99.9% of the time, respectively. Similarly DO concentrations upstream of the impoundment, within the impoundment, at the minimum flow turbine, and in the bypassed reach exceeded the minimums established as state standards, at all times. In waters containing salmonids, DO concentrations of 6.0 mg/L or greater are generally suitable for growth and survival (EPA, 1986). Water temperatures collected during the water quality study were generally consistent throughout the project area, followed similar daily trends, and were within the levels established as state standards except on a few occasions in the bypassed reach and tailrace (there were increases in water temperature between upstream and downstream of the project that exceeded 1.0°F) (table D-3). When water temperatures in the bypassed reach and tailrace exceeded the levels established as the state standards, the difference between upstream and downstream water temperatures was typically less than 2.0°F. The small size and shallow depth of the Newbury Project impoundment creates a short hydraulic water residence time of about 1.8 hours.<sup>32</sup> This short residence time and the small amount of warming appears to indicate that water in the impoundment is replaced quickly, limiting the length of time water is warmed by the sun. While a short residence time makes it unlikely that water temperature or DO

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<sup>32</sup> The hydraulic residence time measures the average length of time the impoundment stores water, which can be many years for larger reservoirs. At the Newbury Project, the residence time is 1.8 hours, which is calculated by dividing the 25 acre-feet storage capacity of the impoundment by the 170 cfs mean annual flow.

in the impoundment will seasonally stratify, the slowing of water in the impoundment likely contributes to the small differences observed in upstream versus downstream water temperatures.

GMP proposes, and Vermont ANR recommends releasing a continuous minimum flow of 37 cfs or inflow, whichever is less, to the bypassed reach. Because the water quality study was conducted while the main turbine was inoperable, all flows were passed downstream to the bypassed reach via the minimum flow turbine or over the spillway. While this likely resulted in more spill into the bypassed reach than would have typically occurred during this time period, temperature measurements and DO concentrations in the bypassed reach generally exceeded the levels established as state standards during the study period, including during periods of low inflow when outflows would have been similar to or less than the 37 cfs minimum flow proposed by GMP.<sup>33</sup> As a result, we expect that water quality in the bypassed reach will generally remain above the minimum levels established as state standards under the proposed 37 cfs minimum flow release, as discussed above.

In summary, GMP's proposal to release 37 cfs or inflow to the bypassed reach at all times and continuing run-of-river operation would maintain current water quality conditions that are generally consistent with those levels established as state standards and protective of aquatic resources. As discussed in section 3.3.2.1, *Affected Environment, Water Quality*, these conditions support a variety of warm and coldwater fish species and a healthy macroinvertebrate community within the impoundment, bypassed reach, and tailrace. GMP's proposal, and Vermont ANR's recommendation, to consult with the Vermont ANR before conducting project maintenance or repair that has the potential to adversely affect water quality (as discussed in section 3.3.1.2, *Environmental Effects, Planned and Unplanned Drawdowns*), would help to ensure that water quality conditions throughout the project area remain protective of aquatic resources at all times during the term of any subsequent license issued for the project.

### **Operation Compliance Monitoring**

GMP monitors project operation through regular onsite operational checks<sup>34</sup> and using a Supervisory Control and Data Acquisition (SCADA) system that collects and records the impoundment elevation, tailrace elevation, and turbine output in 15-minute intervals. GMP maintains run-of-river operation with a stable impoundment elevation at about 463.9 feet by operating the main turbine using an automatic pond level control. The minimum flow unit is primarily turned on and off manually but shuts-off automatically when the impoundment falls to about 2.4 inches below the normal impoundment elevation of 463.9 feet. By monitoring SCADA data, conducting regular operation checks, and using automatic pond level control of the main turbine, GMP is able to adjust generation to maintain stable impoundment elevations and provide required minimum flows through spillage, the minimum flow turbine, and/or, seasonally,

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<sup>33</sup> During the 2019 water quality study, prorated inflow to the project dropped as low as 21 cfs and periodically dropped below 37 cfs on 2 days in July, 16 days in August, and 17 days in September.

<sup>34</sup> GMP reports that operational checks usually occur every weekday but can increase in frequency during high flows and decrease in frequency during low flows.



through the downstream fish passage chute. To ensure compliance with the operational requirements of any subsequent license, GMP proposes to develop an operation compliance monitoring plan for the project in consultation with the Vermont ANR within 6 months of license issuance.<sup>35</sup> The plan would detail how the Newbury Project would manage seasonal flow and operate in run-of-river mode while complying with minimum flow and aesthetic flow requirements.

Vermont ANR's certification condition C requires that GMP include as part of an operation compliance monitoring plan: (1) a method for continuous monitoring<sup>36</sup> and reporting of flow releases at the project (including spill flows, turbine discharge, impoundment levels, and inflows); (2) provisions for the flow data "to be available on a near real-time basis"; and (3) procedures for reporting deviations from operating requirements to Vermont DEC within 15 days of the deviation indicating the cause, severity, and duration of the deviation, observed or reported adverse environmental impacts from the incident, pertinent data, and measures to be taken to avoid recurrences.

### *Our Analysis*

Although compliance measures do not directly affect environmental resources, they do allow the Commission to ensure that a licensee complies with the environmental requirements of a license. Therefore, operation compliance monitoring and reporting are typical requirements in Commission-issued licenses. Vermont ANR's requirement to monitor inflows, outflows, and spill over the dam and make the data "available on a near real-time basis" could be used to monitor compliance with run-of-river operation, aesthetic flows, and minimum flows. However, as discussed above, GMP currently uses an existing SCADA system to measure and record the impoundment elevation, tailrace elevation, and turbine output in near real-time (15-minute intervals). While inflow, outflow, and spill over the dam is not directly measured by the SCADA system, combining inflow data from USGS gage number 01139000<sup>37</sup> with output from the SCADA system would allow GMP to continue to verify, in near real-time, stable impoundment surface elevations, run-of-river operation, and minimum flows. Additionally, GMP can use the existing impoundment elevation monitoring to provide the proposed and required 37-cfs minimum flows when the minimum flow unit is not operating and the proposed and required 10-cfs aesthetic flow by operating the pneumatic crest gate in an inflated position

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<sup>35</sup> In a letter filed on August 18, 2022, GMP proposes to develop a "flow management and monitoring plan." Staff refers to the "flow management and monitoring plan" as an operation compliance monitoring plan.

<sup>36</sup> Vermont ANR's certification condition C requires a "flow management and monitoring plan." Staff refer to the plan as an operation compliance monitoring plan. In certification condition C, Vermont ANR does not indicate the frequency of monitoring that would be needed to satisfy the continuous monitoring requirement. However, staff assumes this could be achieved via continuous monitoring and reporting at 15-minute intervals.

<sup>37</sup> USGS gage number 0113900 is located about 0.7 miles upstream of the project dam and provides real-time flow data.

and maintaining the impoundment elevation at pre-determined elevations. Therefore, GMP's existing SCADA system and impoundment elevation, tailrace elevation, and turbine output monitoring, would be sufficient to monitor compliance with project operating requirements. Consequently, there would be no project-related benefit of additional flow monitoring at the project, as required by the Vermont ANR, which would require installation of at least one stream gage for monitoring spill flows and minimum flows in the bypassed reach.<sup>38</sup>

Vermont ANR also requires flow data to be made available on a "near real-time basis." Although monitoring data from the SCADA system could be made available in near real-time via the internet, GMP could also provide the resource agencies with SCADA system data upon request, which would similarly provide operation compliance transparency.

In regard to reporting deviations from operating requirements, GMP does not formally propose to maintain a log of project operation, nor does it propose to report any deviations from its proposed operating requirements to the Commission. While reporting deviations to Vermont DEC as required by certification condition C would assist GMP and Vermont DEC in tracking compliance with operating requirements, it would not be sufficient for the Commission to determine compliance with the operating requirements of the license. Developing an operation compliance monitoring plan that includes GMP's proposed operation monitoring procedures with requirements to maintain a log of project operation and report deviations to the Commission and Vermont DEC would enable the Commission to track compliance with the operating requirements of the license and the water quality certification.

### **Impingement, Entrainment, and Turbine Mortality**

Water intake structures at hydropower projects can injure or kill fish that come into contact with intake screens, trash racks, or turbines. Fish that have body widths greater than the clear spacing between the trash rack bars, and/or have burst swim speeds lower than approach velocities or through-screen velocities, can become trapped against intake screens or bars of a trash rack. This process is known as impingement and can cause physical stress, suffocation, and death of some fish (EPRI, 2003). Entrainment into the intake structure occurs if fish are small enough to pass between trash rack bars, and are unable to overcome the approach velocity, or if they choose to pass downstream through the trash rack. If entrainment occurs, fish injury or mortality can result from collisions with turbine blades, exposure to pressure changes, shear forces in turbulent flows, or water velocity accelerations created by turbines (Rochester *et al.*, 1984). Fish that are impinged or entrained and killed are removed from the river population and no longer available for recruitment to the fishery.

GMP proposes to continue operating with full-depth (17-foot-tall by 10-foot-wide) trash racks that are angled approximately 45 degrees relative to inflow with 1-inch clear bar spacing.

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<sup>38</sup> As indicated above, inflows at the project could be estimated using USGS gage number 01139000 and outflows are currently measured at the project as turbine output.

A maximum approach velocity of 1.0 feet per second (fps)<sup>39</sup> occurs when operating at the maximum hydraulic capacity (164 cfs) of the project. Debris is removed from the trash racks at least once per week during favorable weather conditions and more frequently during adverse conditions using a mechanical rack raker. GMP proposes no additional measures to reduce fish mortality as a result of impingement or entrainment.

No entity provided recommendations on fish impingement, or fish entrainment and turbine mortality in response to the Commission's public notice that the application was ready for environmental analysis.

### *Our Analysis*

To estimate the risk of impingement and entrainment, we identified seven representative fish species that likely reside within the project impoundment (*e.g.*, brown trout, rainbow trout, smallmouth bass, longnose dace, white sucker, and pumpkinseed) based on surveys conducted upstream of the project (see section 3.3.2.1, *Affected Environment, Fishery Resources*) and compared burst swim speeds to the 1.0 cfs approach velocity in front of the trash rack. As indicated in table D-5, adults and juveniles of all seven species have burst swim speeds that exceed the approach velocity at the intake. Thus, the seven representative species that occur upstream of the project are capable of swimming to avoid impingement and entrainment.

Our analysis indicates that the seven representative species upstream of the project are not likely to be entrained, and thus would not be affected by turbine mortality. Nonetheless, some entrainment and turbine mortality are likely to occur at the project as fish volitionally swim downstream through the project's trash racks. However, entrainment studies have shown that the majority of fish entrained are small and many are young (EPRI, 1997). The younger individuals in a fish population generally have high rates of natural mortality, even in the absence of hydropower operations. Fish populations typically withstand losses of large numbers of these smaller and younger individuals with little impact to the population. Further, any turbine mortality may be offset by increased survival and growth of the remaining fish within the project impoundment due to reduced competition for limited resources (Ricker, 1975; EPRI, 1992; Therrien and Bourgeois, 2000). Thus, entrainment and turbine mortality of smaller and younger individuals could occur but would have minimal consequences to the fish communities in the project impoundment and Wells River.

### **American Eel Passage**

GMP does not propose any American eel passage measures. Vermont ANR's certification condition E requires GMP to develop a plan, within one year of American eel passage being installed at the Wilder Project (FERC No. 1892), to provide upstream and

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<sup>39</sup> Maximum estimated approach velocity was calculated using the formula: approach velocity = (intake flow)/(intake cross section area) (EPRI, 2000). Approximately 20 inches of the project's 17-foot-tall trash racks is above water at normal pond level. Therefore, a height of 16.83 feet was used for calculating cross section area.

downstream American eel passage at the Newbury Project.<sup>40</sup> Condition E requires the plan to be developed in consultation with Vermont ANR and FWS and include an implementation schedule. Condition E states that the plan can include monitoring studies, and trap and truck, eel ramp installation, or other appropriate passage measures. Condition E requires that any results of the plan will be reviewed and approved by Vermont ANR and FWS.

### *Our Analysis*

The Wells River Basin is within the native range of the American eel. After entering the Connecticut River from the Atlantic Ocean, eels must pass five hydropower dams<sup>41</sup> in the Connecticut River before reaching the Newbury Project. Of the Connecticut River dams, only the first dam on the river (Holyoke Project [FERC No. 2004]) has upstream passage facilities dedicated to passing eels. Although the remaining four dams downstream of the Newbury Project do not have passage facilities for eels, some eels do pass upstream through upstream fish passage facilities designed for other species (*e.g.*, Atlantic salmon, American shad) at the Turners Falls, Vernon, Bellows Falls, and Wilder Projects (FirstLight, 2016; TransCanada, 2016). Thus, some eels are present upstream of the Wilder Project dam, which is the first dam downstream of the Newbury Project and about 49 river miles away. Nonetheless, there is no evidence that eels currently occur downstream of the Newbury Project.<sup>42</sup> Therefore, there is currently no identifiable benefit to installing upstream or downstream passage for eels at the project.

Although there are no identifiable benefits to providing upstream or downstream eel passage at the Newbury Project at this time, federal and state management efforts in the Connecticut River Basin will likely result in eels becoming more abundant over time. In addition, should upstream eel passage be installed at the Wilder Project, eel abundance downstream of the Newbury Project may reach levels that would warrant installation of upstream and downstream eel passage during the term of any subsequent license issued. Vermont ANR's requirement to develop a plan, within one year of American eel passage being installed at the Wilder Project, to provide upstream and downstream American eel passage at the Newbury Project, would help to identify if, and when, installation of eel passage is warranted during the

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<sup>40</sup> Certification condition E does not specify whether the required plan is intended for upstream passage, downstream passage, or both. Therefore, Commission staff assume the intent is for GMP to develop a plan for both upstream and downstream passage at the project.

<sup>41</sup> The five dams from downstream to upstream are at the Holyoke Project (FERC No. 2004) (RM 87), Turners Falls Project (FERC No. 1889) (RM 122), Vernon Project (FERC No. 1904) (RM 142), Bellows Falls Project (FERC No. 1855) (RM 174), the Wilder Project (RM 217).

<sup>42</sup> Personal communication between Kleinschmidt and Vermont Fish and Wildlife Department indicated that American eel were not observed during a fish survey conducted in 2018 (*See* final license application).

term of any subsequent license issued, as well as help to determine the type of passage that would be most beneficial.

### **Downstream Fish Passage**

As described above, fish migrating downstream through hydroelectric projects may be injured or killed as they pass through project intake structures and turbines. GMP installs and operates a downstream fish passage chute to provide downstream passage of resident fish species. The chute, which is installed and operated during the spring and fall from April 1 to June 1 and from September 1 to November 15, extends through the crest gates of the dam and leads to a plunge pool located immediately downstream of the dam that is 6 to 10 feet deep. Installation and removal of the downstream fish passage chute requires lowering the surface elevation of the impoundment approximately 2.6 feet (4 times annually), using a crane to remove a 2-foot-high by 4-foot-wide section of the crest gates at the dam, and attaching an 8-foot-long by 4-foot-wide steel sluice box that extends to the plunge pool. Under current operations, the chute provides a flow of 20 cfs in the spring and fall. GMP proposes to continue operating the fish passage chute during the spring and fall but to modify the chute to provide a flow of 10 cfs during both operational periods.

Vermont ANR's certification condition D requires GMP to: (1) install and operate the downstream fish passage chute with a flow of 25 cfs from April 1 to June 1 and from September 1 to November 15;<sup>43</sup> (2) continue using the 1-inch trash rack angled toward the downstream fish passage chute; (3) maintain the existing 6-foot-deep baffle deployed in front of the existing intake structure; and (4) consult with the Vermont ANR on design and placement of the downstream fish passage chute should GMP seek to replace or modify the chute during the term of any subsequent license and file the proposed downstream fish passage design information with the Vermont ANR for approval prior to commencement of any work.

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<sup>43</sup> The water quality certification states that GMP's proposed flow through the downstream fish passage chute does not meet the 25 cfs attraction flow recommended by the FWS Fish Passage Engineering Design Criteria (2017). However, the certification does not explicitly state the flow required by the Vermont ANR for the continued operation of the downstream fish passage chute. Certification condition D requires implementing "additional measures" described in paragraph 127. These measures include maintaining the existing angled trash rack and baffle curtain, and protection measures agreed to in a letter from Newbury Hydro Company (*i.e.*, the licensee at the time) to Vermont ANR and FWS and filed by Newbury Hydro Company on February 27, 2012. In addition to the trash rack and baffle curtain requirements, the 2012 filing describes an agreed upon flow of 25 cfs to be provided through the downstream fish passage chute. Therefore, while not explicitly stated, staff assume that the certification requires a flow of 25 cfs through the downstream fish passage chute when in operation.

### *Our Analysis*

The existing fish passage chute was originally designed to pass Atlantic salmon smolts downstream of the project dam during the spring and fall. Atlantic salmon are anadromous and smolts must migrate out to sea to feed and grow, before returning to their natal rivers as adults to spawn. There are currently no Atlantic salmon at the project and efforts to reintroduce Atlantic salmon into the Connecticut River basin have been terminated (FWS, 2020). Therefore, operating the downstream fish passage chute does not provide any benefit to Atlantic salmon and would not provide any reasonably foreseeable benefit during the term of any subsequent license issued for the project.

As discussed in section 3.3.2.1, *Affected Environment, Fishery Resources*, currently only resident fish species occupy habitat in the vicinity of the Newbury Project. Unlike Atlantic salmon, for which the fish passage chute was originally designed, all of the resident species in the vicinity of the project can maintain populations entirely within freshwater and none require downstream passage to complete their life-cycle. Downstream passage facilities could provide an alternative route for fish to avoid impingement, entrainment, and turbine mortality, and potential injury or mortality associated with passage over the spillway. However, as discussed in section 3.2.2.2, *Environmental Effects, Impingement, Entrainment and Turbine Mortality*, impingement, entrainment, and turbine mortality of resident fish is not likely to have an effect on fish populations. Further, spillway flows can provide a relatively benign downstream passage route (Schilt, 2007). Thus, resident fish could successfully move downstream over the project spillway, especially during high flows when impoundment surface elevations are more likely to exceed the pneumatic crest gates on the spillway.

Successful downstream passage systems must create hydraulic signals strong enough to attract fish to one or multiple safe fish passage entrances in the presence of competing flows toward potentially unsafe entrances, such as turbine intakes (FWS, 2019). GMP proposes to continue seasonal operation of the downstream fish passage chute and to provide a continuous minimum flow of 10 cfs, rather than the current seasonal flow of 20 cfs during the spring and fall. As discussed in the certification, the FWS's 2019 Design Criteria Manual recommends that that downstream fish passage facilities should be designed to provide minimum attraction flows of 5% of the station hydraulic capacity or 25 cfs, whichever is larger (FWS, 2019). The proposed flow of 10 cfs represents 6% of the total capacity of the Newbury Project, and the existing flow of 20 cfs represents 15% of total capacity. While both existing and proposed flows exceed the 5% threshold, the 10 cfs and 20 cfs flows are less than the 25 cfs minimum flow recommended by the FWS's 2019 Design Criteria Manual. Thus, based on the FWS criteria, the downstream fish passage chute may be ineffective at passing fish under existing and proposed operation.

Operating the downstream fish passage chute with a flow of 25 cfs, as required by the certification, may provide sufficient attraction flow for resident fish species in the project area. However, as discussed above, continued operation of the downstream fish passage chute would likely have a limited effect on the resident fish population. Further, because resident fish species can travel downstream over the project spillway during periods of spill and resident fish species are not dependent on downstream movement to complete their life cycles, continued operation of

the downstream fish passage chute would provide minimal benefit to the resident fish populations upstream or downstream of the project.

### **Debris Management**

GMP states that trash racks are cleaned using a mechanical raker a minimum of once per week during good weather conditions and as many as two times per day during adverse weather or high flow events. However, GMP does not indicate how or where it disposes of the debris.

Vermont ANR's certification condition G requires that "debris associated with Project operations shall be disposed of in accordance with state laws and regulations." Vermont ANR states that depositing or emitting debris and other solids<sup>44</sup> to state waters would violate Vermont's solid waste laws and standards and notes that debris that is not properly disposed of may also impair aesthetics and boating at the project.

#### *Our Analysis*

Organic and inorganic debris typically collect on the intake trash racks of a hydroelectric project. Although no debris piles or other solids have been observed at the project, periodic disposal would prevent accumulation of unsightly debris and keep that debris from entering the river where it could degrade water quality. Developing a debris disposal plan would guide how and when GMP is to remove and dispose of debris.

### **3.2.2.3 Cumulative Effects on Aquatic Resources**

In late 1800s and early 1900s the Wells River was used for recreation, log drives, and hydroelectric power generation for mills (i.e., paper mills, sawmills, fulling mills, grist mills) (Redstart 2009). At least 13 dams were once located throughout the Wells River watershed (Redstart 2009). Today, there are six dams in the Wells River, including the Newbury Project dam and the Wells River Project (FERC Exemption No. 4770) (also known as the Boltonville Dam) (Vermont ANR, 2020a).

The construction of these dams during the last 200 years converted a riverine system into a series of impoundments, resulting in decreased velocity and increased water depth, and likely led to some increase in water temperature and lowering of DO concentration. Installing hydropower turbines also likely resulted in fish mortality and the dam structures impeded the migrations of diadromous species (*e.g.*, American eel, Atlantic salmon). In addition to dams, urban development, agriculture, and landfill leachate from the Newbury landfill has likely decreased water quality in the Wells River. Today, the Newbury Project, in combination with the other hydropower and non-hydropower dams in the Wells River Basin, and point and non-

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<sup>44</sup> Vermont ANR does not define debris or other solids. We assume that they are referring to leaves, wood, tires, and other floating trash that could be caught on the trash racks.



point sources of water pollution cumulatively affect water quantity, water quality, aquatic habitat, and fish mortality.

GMP proposes and Vermont ANR requires construction of an impoundment boating access area for recreational boaters upstream of the project dam at a location to be determined after any subsequent license is issued. As discussed in sections above, any construction activity could disturb upland areas and potentially lead to erosion and sediment inputs to the river, which could negatively affect water quality and aquatic resources. Implementing an impoundment boating access plan that includes BMPs to reduce erosion and sedimentation would minimize the effects of construction and any cumulative effects on water quality and aquatic habitat.

GMP proposes and Vermont ANR requires operating the project in run-of-river mode and releasing a year-round, minimum flow of 37 cfs or inflow, whichever is less, to the bypassed reach. As discussed in sections above, run-of-river operation would maintain the short residency time and stable surface elevation of water in the impoundment and maintain good water quality and habitat conditions in the impoundment, bypassed reach, and downstream. Thus, run-of-river operation would contribute minimally to cumulative effects on water quality, habitat, and aquatic biota.

Vermont ANR also requires GMP to develop a plan, within one year of American eel passage being installed at the Wilder Project to provide upstream and downstream American eel passage at the Newbury Project. Installation of eel passage at the Newbury Project, if and when it is warranted during the term of any subsequent license issued would minimize the cumulative effects of dams and turbines on American eels in the Wells River.

Impingement and entrainment of fish can occur at the Newbury Project intake. However, as discussed above, the low approach velocity (1.0 fps) and narrow trash rack clear bar spacing (1 inch) would limit entrainment primarily to smaller, juvenile fish, which generally have high turbine survival rates. Further, fish populations typically withstand losses of large numbers of smaller and younger individuals with little or no impact to the population. Thus, the project's contribution to cumulative effects on fish mortality in the Wells River Basin is expected to be small.

### **3.3.3 Terrestrial Resources**

#### **3.3.3.1 Affected Environment**

##### **Vegetation**

The Newbury Project boundary mostly follows the shoreline of the Wells River. The area between the project boundary and the water's edge at the impoundment and bypassed reach is generally steep and narrow. As a result, minimal upland vegetation exists within the project boundary. Forests in the area contain a mixture of beech, sugar maple, yellow birch, hemlock, red oak, red maple, white ash, basswood, white pine, and red spruce trees. The northern side of the project impoundment contains a narrow band of such mixed hardwood and coniferous upland

forest located adjacent to the Wells River Streambank Management Area.<sup>45</sup> The impoundment's southern shoreline is dominated by a vegetated rip-rap bank associated with the U.S. Route 302 right-of-way. The shoreline along the bypassed reach and tailrace is also steep and narrow and consists of a bedrock wall with forest growth at the top of the bank.

## **Wildlife**

Approximately 47 mammal species are likely to occur within the Newbury Project area, including: black bear, moose, bobcat, white-tailed deer, coyote, gray and red fox, snowshoe hare, Eastern cottontail, porcupine, fisher, and beaver, as well as various species of squirrels, voles, moles, shrews, and mice. Vermont also provides diverse terrestrial and subterranean habitats for nine species of bats, 21 species of amphibians (11 frogs and toads and 9 salamanders), and 21 species of reptiles (8 turtles, 12 snakes, and 1 lizard) (Vermont FWD, 2022b; Vermont FWD, 2022c).<sup>46</sup>

Roughly 265 migratory and non-migratory bird species are known to occur in Vermont, with 146 species found in Orange County (Vermont FWD, 2022d).

### Special Status Species

Fifty-three state threatened or endangered species are found in Vermont (Vermont FWD, 2022e). According to the Vermont Natural Resource Atlas (Vermont ANR, 2020b), none of these species are known to occur within the project boundary. Eight bird species of Conservation Concern may occupy habitats near or within the project boundary (FWS, 2021a). The evening grosbeak is primarily a winter resident of the project area while the black-billed cuckoo, bobolink, Canada warbler, Eastern whip-poor-will,<sup>47</sup> wood thrush, and olive-sided flycatcher likely breed within the project vicinity. The bald eagle may be present within the project area, particularly during the fall months.

The Newbury Project is located within the summer breeding range of the eastern North American migratory monarch butterfly population (Xerces, 2022). The monarch butterfly is a candidate for listing as a threatened or endangered species under the ESA.<sup>48</sup>

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<sup>45</sup> Streambank Management Areas are lands purchased by the Vermont Fish and Wildlife Department to ensure access to the state's rivers for angling and other recreation, and to improve habitat for aquatic species (Vermont FWD, 2022a).

<sup>46</sup> The federally listed northern long-eared bat is discussed in section 3.3.3, *Threatened and Endangered Species*.

<sup>47</sup> The Eastern whip-poor-will is a state threatened species. While it may occur within the project vicinity, it has not been identified within the project boundary.

<sup>48</sup> 85 Fed. Reg. 81,813 (2020).

## **Wetlands**

According to the National Wetlands Inventory, there are 10.2 acres of palustrine<sup>49</sup> wetlands within the project area.<sup>50</sup> These wetlands consist of: (1) a permanently flooded freshwater pond (6.7 acres); (2) four seasonally flooded or temporarily flooded freshwater emergent wetlands (total of 3.1 acres); and (3) a temporarily flooded freshwater forested/shrub wetland (0.4 acres). Freshwater ponds include all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than about 2.4-2.8 inches), and a vegetative cover less than 30%. Freshwater emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, with vegetation present for most of the growing season in most years. Forested/shrub wetlands include areas dominated by woody vegetation less than 20 feet tall (*e.g.*, shrubs, young trees [saplings], and trees or shrubs that are small or stunted because of environmental conditions).

## **Invasive Species**

No non-native, invasive plant species are currently known to occur within the Newbury Project boundary. However, GMP conducted a review of Vermont's noxious plant list and identified 29 terrestrial and aquatic plant species that might occur, or have the potential to occur, within the project area during the term of a subsequent license (table D-6). Many of the species identified by GMP are spread by tiny seeds (*i.e.*, garlic mustard and purple loosestrife) or fragments (*i.e.*, flowering rush, Brazilian elodea, and hydrilla) that are transported by wind, water, and/or wildlife (Munger, 2001; Munger, 2002; Jacono *et al.*, 2022; Maine DACF, 2022; Morgan *et al.*, 2022). These seeds and plant fragments can also be inadvertently carried to new areas on tires, equipment, boat trailers, and the soles of shoes during construction, maintenance, and recreation activities.

### **3.3.3.2 Environmental Effects**

#### **Project Operation and Maintenance**

Hydropower operation and maintenance can affect wetlands, riparian habitat, and associated wildlife by modifying the frequency and duration of downstream flows and the stability of impoundment water surface elevations. These modifications may alter the

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<sup>49</sup> The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand (ppt). It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 hectares (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2.5 meters (8.2 feet) at low water; and (4) salinity due to ocean-derived salts less than 0.5 ppt (FGDC, 2013).

<sup>50</sup> Five wetlands are found within or adjacent to the project impoundment and are enclosed within the project boundary. One, 0.2-acre freshwater emergent wetland, is found approximately 140 feet north of the project boundary.

availability and quality of nearshore habitats for the species that rely on them. Vegetation management along project facilities can result in the permanent removal of terrestrial habitat or temporary disturbances to the suitability of terrestrial habitat. These activities may affect species composition and density, as well as the structure and function of terrestrial habitats. Additionally, transmission lines and exposed energized components can pose electrocution and collision risks for birds and other wildlife.

As described in section 2.2, *Applicant's Proposal*, GMP proposes to continue operating the project in run-of-river mode by maintaining stable water levels in the impoundment and releasing a new, year-round, minimum flow of 37 cfs or inflow, whichever is less, to the bypassed reach. As discussed in section 3.3.1.2, *Planned and Unplanned Drawdowns*, GMP proposes to continue to conduct four planned annual drawdowns each year to install and remove the downstream fish passage chute. GMP proposes to consult with Vermont ANR regarding the timing and duration of maintenance drawdowns so as to conduct the drawdowns in a manner that is protective of nearshore terrestrial and aquatic habitat. GMP does not propose any changes to existing vegetation management at the project which includes occasional, one to two times per year, weed whacking of vegetation surrounding the dam, intake, and powerhouse areas to ensure there is no significant growth within 15 feet of project structures. No animal protection guards are installed on, or proposed for, the project transmission line or exposed, energized components.

No entity provided comments on the effects of continued project operation and maintenance on terrestrial resources in response to the Commission's public notice that the application was ready for environmental analysis.

### *Our Analysis*

#### Project Operation

Continuing to operate the project in run-of-river mode would maintain stable water levels in the project impoundment and ensure that nearshore terrestrial habitat, including the wetlands located within, and adjacent to, the project impoundment, are not degraded by water level fluctuations. Further, run-of-river operation would maintain the existing downstream terrestrial habitat as downstream water level fluctuations would follow the natural, seasonal variation of flows in the Wells River. Because the bypassed reach is lined by a steep bedrock bank with limited forest growth on top, GMP's proposal to provide a year-round minimum flow of 37 cfs to the bypassed reach, instead of seasonal minimum flows ranging from 25 cfs to 50 cfs, is unlikely to adversely affect terrestrial habitat.

GMP's planned annual drawdowns last approximately six hours and lower the impoundment surface elevation roughly 2.6 feet. Nearshore vegetation, wetlands, and wildlife are adapted to periodic water level fluctuations, such as those caused by a storm event or seasonal drought. As discussed in section 3.2.2.2, *Environmental Effects*, continuing to install/remove and operate the downstream fish passage chute would provide minimal benefit to resident fish species. GMP's planned drawdowns, however, are short in duration and magnitude and are, therefore, unlikely to have adverse long-term effects on terrestrial resources, including wetlands. If the operation of the downstream fish passage chute is discontinued under any subsequent license issued for the project, there would no longer be a need for impoundment

drawdowns to install and remove the fish passage chute. As a result, any adverse effects associated with planned lowering of the impoundment surface elevation for installing and removing the chute, though expected to be minimal, would be eliminated.

Though uncommon, unplanned maintenance and/or emergency drawdowns may occur throughout the year. As discussed above, GMP proposes to maintain minimum flows to the bypassed reach and consult with Vermont ANR regarding the timing and duration of maintenance drawdowns to minimize the effects of flow and water surface elevation fluctuations on terrestrial and aquatic resources. Combined these measures would help to mitigate the effects of unplanned or irregular drawdowns on terrestrial resources.

Most bird collisions with transmission lines involve waterfowl and other large, heavy-bodied, and less agile birds (APLIC, 2012). Additionally, most electrocutions involve raptor species with large wingspans that enable them to simultaneously touch energized and/or grounded parts of the transmission structures, potentially resulting in electrocution (APLIC and FWS, 2005). As discussed above, numerous raptors, waterfowl, and other large-bodied bird species likely use the project impoundment (e.g., for foraging) or occur within the project boundary. However, at only seven feet long, the Newbury Project transmission line is short and there are no reports of bird or other wildlife collisions with the transmission line. Similarly, there are no reports of electrocutions associated with the transformers or other exposed energized components of the project transmission lines. Therefore, there would be no benefit to implementing mitigation measures to prevent wildlife collisions or electrocutions at the project.

### Vegetation Management

Vegetation management activities, such as weed whacking, have the potential to affect monarch butterfly habitat if milkweed and/or nectar rich plants are cut or removed. Additionally, these activities can spread non-native invasive plants that have the potential to reduce local biodiversity and provide lower quality wildlife habitat and foraging opportunities than areas with diverse assemblages of native plants (Swearingen et al., 2014). Continuing GMP's current vegetation management practices would keep vegetation trimming to a minimum while maintaining access to project structures. Given the small amount of upland habitat within the project boundary (approximately 3 acres) and limited scale of trimming activities, vegetation management is expected to have minimal negative effects on monarch butterfly habitat and the spread of non-native invasive species.

### **Project Recreation**

Construction, operation, and maintenance of new recreational features, and increased recreational activity, could affect wildlife by creating noise, habitat disturbances and deterioration, and an increased human presence within the project area. Additionally, areas disturbed by the construction and maintenance of recreational features, and public use of the features, could create suitable conditions for the establishment of non-native invasive plants which may reduce biodiversity and alter the composition of existing native plant and animal communities (Hobbs and Huenneke, 1992).

GMP proposes to construct an impoundment boating access area for recreational boaters to improve access the project impoundment and upstream waters. However, the location and timing of construction, if developed, depend on the results of an on-going feasibility analysis. GMP proposes to submit an annual feasibility assessment for an impoundment boating access area until the access area is deemed unfeasible or until construction of the area is completed.

No entity provided comments or recommendations regarding the potential effects of recreation related activities on terrestrial resources in response to the Commission's public notice that the application was ready for environmental analysis.

### *Our Analysis*

Construction of the proposed impoundment boating access area is likely to involve some ground disturbing activities including vegetation/tree removal and/or trimming. These activities, along with use of the access area, have the potential to displace native plants and wildlife, including monarch butterfly, and spread non-native, invasive species, if present. Because the proposed impoundment boating access area is still in the conceptual stage, when, where, and how long it would take to construct and maintain the access area are unknown. As a result, the effects of the proposed impoundment boating access area on wildlife and their habitats are also unknown.

Approximately eight percent of Vermont's non-native species have the potential to create environmental and economic harm due to their ability to grow rapidly, profusely, and widely. Use of the impoundment boating access area is likely to result in increased human traffic which has the potential to spread non-native, invasive species if they are present. Invasive species often occur along the shorelines of rivers and waterbodies, in part, because when these locations are used for recreation, plant fragments and seeds can be spread by recreational users and flowing water.

As discussed in section 3.3.1.2, *Environmental Effects, Impoundment boating access Construction*, implementing BMPs to minimize soil erosion and sedimentation (e.g., silt fencing, revegetation with native species) would reduce the effects of construction of the impoundment boating access area on aquatic, riparian, and wildlife species and habitats, and are measures that could be included in an impoundment boating access plan. Additionally, including: (1) provisions to consult on site selection with the Vermont ANR and FWS before any construction activities occur; (2) methods for preventing the establishment of invasive plants; and (3) guidelines for detecting and treating invasive plant populations, in a impoundment boating access plan would ensure that the effects of the proposed impoundment boating access area on wildlife, including monarch butterfly, and their habitats are minimized.

## **3.3.4 Threatened and Endangered Species**

### **3.3.4.1 Affected Environment**

On September 12, 2023, staff accessed the FWS's Information for Planning and Consultation (IPaC) database to determine whether any federally listed species could occur in the vicinity of the project. According to the IPaC database, the endangered northern long-eared bat

(*Myotis septentrionalis*) (NLEB),<sup>51</sup> the candidate monarch butterfly (*Danaus plexippus*),<sup>52</sup> and the proposed endangered tricolored bat (*Perimyotis subflavus*)<sup>53</sup> may occur in the project vicinity.<sup>54</sup> No critical habitat for these or other species occurs within project-affected lands.

Our analysis of project effects on the monarch butterfly is presented in section 3.3.3, *Terrestrial Resources*. Our analysis of project effects on NLEB and the tricolored bat is summarized here and presented in full in Appendix F.

No tree removal is anticipated as part of normal project operation and maintenance. However, if tree removal were to become necessary during a subsequent license, restricting the planned removal of trees three inches dbh or greater to the period between November 1 through April 14, would reduce the likelihood of disturbing NLEB and their newly born pups during the active season. Because the location of the proposed impoundment boating access area is undetermined and the duration of activity associated constructing and maintaining the access area, including when the access area would be created, is unknown, incorporating, at a minimum, a provision to consult on site selection with the Vermont ANR and FWS before any construction activities occur in an impoundment boating access plan would help ensure that the effects of the proposed impoundment boating access area on NLEB and their habitats are minimized whenever and wherever the impoundment boating access area is constructed. We conclude that relicensing the project, as proposed with our recommended measures, is not likely to adversely affect the NLEB.

Seasonal limits on tree clearing for NLEB would also reduce the likelihood of disturbing tricolored bats during the concurrent pup-rearing season for this species. Additionally, including a provision to consult on site selection with the Vermont ANR and FWS before any construction activities occur in an impoundment boating access plan would help ensure that the effects of the proposed impoundment boating access area on tricolored bats and their habitats are minimized. With the implementation of the staff recommended measures for the NLEB discussed above, we conclude that relicensing the project would not jeopardize the continued existence of the tricolored bat.

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<sup>51</sup> 88 Fed. Reg. 4908-4910 (January 26, 2023).

<sup>52</sup> 85 Fed. Reg. 81,813 (December 17, 2020).

<sup>53</sup> On September 14, 2022, FWS issued a proposed rule to list the tricolored bat as an endangered species under the ESA (87 Fed. Reg. 56,381-56,393). In the proposed rule, FWS found that designating critical habitat for this species is not prudent. While the tricolored bat does not appear on the September 12, 2023, IPaC report, the range of tricolored bat includes all of Vermont. Therefore, this species is included in our analysis of threatened and endangered species.

<sup>54</sup> See Commission staff's September 12, 2023, memorandum on *List of Threatened and Endangered Species Generated by ECOS-IPaC Website*; see also, IPaC, FWS, <https://ipac.ecosphere.fws.gov/> (accessed September 12, 2023).



### **3.3.5 Recreation and Land Use**

#### **3.3.5.1 Affected Environment**

##### **Recreation Overview**

A wide variety of recreation activities are available within east-central Vermont. Groton State Forest is approximately 15 river miles northwest of the Newbury Project in the towns of Groton and Peacham, Vermont. Groton State Forest covers over 26,000 acres and is the second largest state forest in Vermont. Groton State Forest includes seven state parks (Ricker Pond State Park, Stillwater State Park, New Discovery State Park, Kettle Pond State Park, Big Deer State Park, Boulder Beach State Park, and Seyon Lodge State Park); the Groton Nature Center; eight lakes and ponds; and several state-designated natural areas (*e.g.*, Peacham Bog Natural Area, Lords Hill Natural Area).

There are no licensed project recreation facilities. However, a non-project recreation facility provided by the Vermont Department of Fish and Wildlife offers hand-carry boat access to the project's impoundment and Wells River. This facility is located approximately 500 feet upstream of the western end of the project boundary (figure C-3).

In a letter filed December 13, 1991, the licensee requested exemption from filing Licensed Hydropower Development Recreation Reports (Form 80), and subsequent Form 80 reports for the Newbury Project. On November 9, 1992, Commission staff exempted the licensee from filing recreation Form 80 reports due to minor existing or potential recreational use at the project.<sup>55</sup>

##### **Land Use**

The Newbury Project resides completely within the village of Wells River in the northern section of the town of Newbury in Orange County, Vermont. The town of Newbury consists of several small villages and hamlets and is largely composed of forest and agricultural land. Approximately 70% of land in the town of Newbury consists of forest parcels of 20 acres or more. The Village of Wells River includes the main commercial and retail section of the town of Newbury as well as a historic district.

#### **3.3.5.2 Environmental Effects**

GMP proposes to continue to operate the project in run-of-river mode, such that outflow from the project approximates inflow. Rather than continuing to provide a minimum flow to the bypassed reach of at least 50 cfs from April 15 to June 10, and at least 25 cfs during the remainder of the year, GMP proposes to release a bypassed reach minimum flow of 37 cfs or inflow, whichever is less.

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<sup>55</sup> Letter order issued November 9, 1992.

GMP hosted a group site meeting including representatives from Vermont FWD, Vermont DEC, the Town of Newbury, American Whitewater, the Connecticut River Conservancy, and Chief Logging and Construction, Inc.<sup>56</sup> to evaluate needs for river access on June 30, 2021. The participants agreed that an improved put-in area for hand carry boat access would improve recreational fishing, wildlife viewing, and other general river recreation opportunities. In the license application, GMP proposes to install a new hand-carry boat access area upstream of the project dam to accommodate interest in improved access near the project. However, after additional review, GMP determined that the initial location of the access area is not feasible immediately due to the identified presence of cultural resources associated with the former Wells River Electric Light Plant and Pumping Station located at the site.<sup>57</sup> Additionally, the remains of the plant and station located within the proposed access area are structurally hazardous and a safety issue. GMP is therefore working to identify a preferable, alternate location for the hand carry access area upstream of the project dam. GMP proposes to provide annual status and progress reports until the facility is deemed unfeasible or upon completion of any associated construction of the facility. American Whitewater recommends GMP's proposal and Vermont ANR's Certification requirement.

Vermont ANR's certification condition F requires that the location for the proposed impoundment boating access area be located upstream of the dam (pending private landowner approval and hand-carry cultural resource consultation), and that, if landowner and permit approvals allow, the access area be constructed within four years of the effective date of an issued license.

### *Our Analysis*

#### Recreation Access and Use

Continued project operation in a run-of-river mode, would maintain flows downstream of the powerhouse that approximate inflows and minimize impoundment fluctuation levels, making them as stable as possible for recreation. The effects of releasing a minimum flow of 37 cfs, as opposed to continuing to release 50 cfs from April 15 to June 10, and at least 25 cfs during the remainder of the year would be negligible to recreation use because existing and proposed minimum flows are all very low and provide insignificant recreation value. With flows from the project approximating natural flows, operation of the project would likely cause no effect on recreation, including canoe and kayak navigation, upstream or downstream of the project. Therefore, relicensing the project as proposed would not significantly affect recreation use.

In the project vicinity, the Wells River provides angling opportunities and is a popular whitewater boating resource.<sup>58</sup> The Lower Wells River, in particular, provides a whitewater run

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<sup>56</sup> Chief Logging and Construction, Inc. owns land abutting the project boundary.

<sup>57</sup> See letter filed by GMP on February 2, 2022.

<sup>58</sup> In comments filed on June 3, 2022, American Whitewater notes that Dartmouth University holds an annual whitewater boating race on this 1.1-mile stretch of the Wells River.

that is listed in American Whitewater's River Inventory as a 1.1-mile Class IV-V run.<sup>59</sup> Downstream of the put-in for this whitewater run are two possible hand-carry take-outs. One take-out is provided by the Vermont DFW and is located about 1,000 feet downstream of the put-in. However, as a result of the short distance from the put-in, this take-out omits over 4,800 feet of whitewater, including multiple named rapids. A second take-out exists at the head of the project impoundment and allows boaters to experience the entire 1.1-mile whitewater run. However, the second take-out at the head of the project impoundment is overgrown with vegetation and is steep and hazardous to navigate. Thus, currently there are no reasonable hand-carry take-outs for this popular whitewater run.

GMP thus proposes, and Vermont ANR's certification condition F requires, construction of an impoundment boating access area to be located upstream of the dam pending private landowner approval and cultural resource investigation. GMP proposes to submit an annual feasibility assessment for an impoundment boating access area that would help to identify and foster adequate boating access opportunities at the project. Constructing a impoundment boating access area upstream of the project dam would provide a safe take out for boaters that use the upstream whitewater run and access for fishing.

Developing an upstream impoundment boating access plan, including a schedule, would ensure that a decision is made in consultation with American Whitewater, Vermont FWD, Vermont DEC, the Connecticut River Conservancy, the Town of Newbury, and Chief Logging and Construction, Inc. on the feasibility of a project impoundment boating access area, and if feasible, that the impoundment boating access area is constructed within four years of the issuance of any subsequent license. Along with the aquatic and terrestrial resource protection measures discussed in sections 3.3.1.2 and 3.3.3.2, *Environmental Effects*, it would be beneficial for a impoundment boating access plan to include: (1) an implementation and construction schedule; (2) a design plan, including the estimated length, width, and composition of the proposed access area, parking area, trail, and stairway; and (3) provisions for operation and maintenance of the facility.

### Land Use

Project boundaries should enclose "only those lands that are necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources."<sup>60</sup>

GMP proposes to modify the project boundary to remove portions of the mill building that do not include generating equipment. The change would result in the removal of 1.04 acres from the project boundary. The project boundary would then contain a total of 14.67 acres of land and water. The 1.04 acres of land does not appear to be needed for project purposes, and removal of this land from the project boundary would not affect project uses or substantially

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<sup>59</sup> According to the international scale of river difficulty, Class IV rapids are for advanced paddlers, and Class V rapids are for expert paddlers.

<sup>60</sup> 18 C.F.R. § 4.41(h)(2) (2022).

affect land use. The Vermont SHPO concurred that this site is not eligible for the National Register of Historic Places.<sup>61</sup>

### **3.3.6 Aesthetic Resources**

#### **3.3.6.1 Affected Environment**

The Newbury Project resides within a narrow, straight portion of the Wells River valley. The river left bank is steep and forested with ledge outcrops along the impoundment, bypassed reach, and tailwaters. The river right bank consists of a narrow impoundment shoreline that follows U.S. Route 302, the project intake structure, minimum flow turbine, and the former Adams Paper Company mill complex which houses the project powerhouse area within the lower level of the former mill building. The project is momentarily visible from vehicle while traveling U.S. Route 302. Much of the dam and powerhouse area consists of a gravel/dirt parking area used by the commercial businesses located on the property. GMP currently releases a year-round 5 cfs aesthetic flow over the dam by passing flows uniformly across the spillway gates.

Vermont DEC requested an aesthetic flow study during the relicensing process. GMP conducted the aesthetic flow study in 2020, and released five aesthetic flows (leakage, 5 cfs, 10 cfs, 15 cfs, and 25 cfs), documenting each of the flows via video and still photos. On March 4, 2021, GMP held a virtual aesthetic flow evaluation meeting. Meeting participants included Vermont ANR, Connecticut River Conservancy, Kleinschmidt (applicant's contractor), and GMP. The participants agreed that the release of 10 cfs provided good aesthetic value. The parties agreed that the 10 cfs flow provided a full veil across the dam, a good level of noise from falling water, mixing and flow of water in the pool below the dam, and wetted bedrock areas on the river margin that enhanced overall aesthetics (figure C-4).

#### **3.3.6.2 Environmental Effects**

##### **Aesthetic Flows**

Vermont ANR certification condition B requires, and GMP proposes to provide, a continuous spillage (aesthetic) flow of 10 cfs<sup>62</sup> over the dam, or inflow, whichever is less.

##### *Our Analysis*

GMP's proposed and Vermont ANR's required 10-cfs aesthetic flow is in accord with the consensus reached in the virtual aesthetic flow evaluation meeting. The flow would not only provide good aesthetic value, but also be consistent with the intent of Vermont's water quality standards for aesthetic flows. The proposed and required aesthetic flow would double GMP's current aesthetic flow, from 5 cfs to 10 cfs, thereby enhancing the scenic value to viewers of the

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<sup>61</sup> See letter filed by Vermont SHPO on October 25, 2021

project. Further, a 10-cfs aesthetic flow would contribute to a year-round flow over the dam into the bypassed reach.

### **3.3.7 Cultural Resources**

#### **3.3.7.1 Affected Environment**

Section 106 of the NHPA requires the Commission to evaluate potential effects on properties listed or eligible for listing in the National Register prior to an undertaking. In this case, the undertaking is the issuance of a subsequent license for the Newbury Project. Project-related effects associated with this undertaking include those effects associated with the day-to-day operation and maintenance of the projects after issuance of a license. Section 106 also requires that the Commission seek concurrence with the Vermont SHPO on any finding involving effects or no effects on historic properties and allow the Advisory Council on Historic Preservation (Advisory Council) an opportunity to comment on any finding of effects on historic properties. If Native American properties have been identified, section 106 requires that the Commission consult with interested Native American tribes that might attach religious or cultural significance to such properties. In this document, we also use the term “cultural resources” for properties that have not been determined eligible for listing on the National Register. Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic.

#### **Area of Potential Effect**

Under section 106 of the NHPA of 1966, as amended, the Commission must take into account whether any historic property within the proposed project’s area of potential effects (APE) could be affected by the issuance of a license for the project. The Advisory Council on Historic Preservation defines an APE as the geographic area, or areas, in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 C.F.R. § 800.16(d)).

The APE for the Newbury Project was developed in consultation with the Vermont SHPO and is defined as lands enclosed by the project boundary and lands located within 10 meters (about 33 feet) of the edge of the riverbank as measured from the top of the bank, whichever is greater. The APE differs from the 10-meter buffer in locations where either the roadway or other infrastructure associated with the hydroelectric project necessitate a larger or smaller buffer around the project area. Along the right bank (facing downstream) of the impoundment where Route 302 is closer than 10 meters, the APE extends to the edge of the roadway. (In some areas, the roadway is as close as 3 meters from the edge of the impoundment.) The downstream end of the APE encompasses the dam and other infrastructure associated with the project and extends to the edge of the roadway. The downstream limit of the APE is past the tailrace of the powerhouse, and is where the tailrace and bypassed reach flows reconverge. The APE is presumed to extend upstream 10 meters beyond the upstream limit of the impoundment, where a natural cascade spills into the reservoir. In this area, the APE contains the remains of a former powerhouse located on the right bank of the river.

## **Pre-contact Period**

The prehistory of the northeast is generally characterized by three broad periods: the Paleoindian period (before 8,000 BC – 1,000 BC), the Archaic period (8,000 – 1,000 BC), and the Woodland period (1,000 BC – 1620 AD). There is evidence of the first people in New England around the year 10,000 BC. The people of this era lived in a cold, tundra environment and centered their settlement and migration around a resource-rich mosaic of streams and wetlands formed in the basins of post-glacial lakes.

The period following the Paleoindian occupation has been designated the Archaic period by North American archaeologists. The Archaic period is further divided into at least three sub periods: Early, Middle, and Late, with the distinction between these being a marked change in tool usage and the organization of a sedentary way of life. The Early and Middle Archaic periods are defined by the use of quartz core and flake tools with fully channeled gouges<sup>63</sup> made from mostly local materials. Site rarity around the region suggests a relatively low population density at this time, but their prevalence on riverine terraces indicates that riverbanks were still primary occupation sites for Archaic populations. During the Late Archaic period there was a large population increase, as indicated by the greater prevalence of artifacts from this time period in the region. There was a clear shift in focus to utilizing marine resources, especially for food, with deer becoming a secondary diet supplement to fish.

The use of ceramics by New England Native Americans marks the transition from the Archaic period to the Woodland period. This ability to store food for the long-term and an enhanced ability to cook increased Native Americans' ability to create settlements and a more sedentary way of life. During the Early Woodland period, a cooling climate may have placed pressure on the native populations, resulting in smaller communities because of the constraints on resources. The Middle Woodland period was marked by an expansion of settlements. There was definitive evidence of crop cultivation in the Late Woodland period, including maize, gourds, and beans.

## **Post-contact Period**

The first English settlers began to arrive in New England in the 1600s (National Geographic, 2023). New Hampshire Governor Benning Wentworth chartered the town of Newbury in 1763. Settlement by the European colonists was initially concentrated around the town of Newbury, to the south of the Newbury Project, and the prime farmland near two oxbows along the Connecticut River. The village of Wells River began to be actively settled around 1770 by Er Chamberlin, who cleared the land around the river, which was reportedly characterized by fallen trees and meandering streams. Chamberlin built the first gristmill and house and eventually constructed a sawmill and blacksmith shop, and established a ferry that crossed the Connecticut River to connect Wells River, Vermont to Woodsville, New Hampshire. The junction of the two rivers was a determining factor in the development of the town, providing power for early industries that served the surrounding agricultural communities in

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<sup>63</sup> A stone tool in the form of chisel, with a curved blade having a channel extending its full length. The tool was used for scooping or cutting holes.

Newbury and acting as a major highway for transporting goods throughout northern New England.

The settlement and industrial development of the Village of Wells River accelerated during the 19<sup>th</sup> century following construction of the bridge linking Vermont and New Hampshire and the establishment of a paper mill around 1800, which remained in operation until the early 2000s. The Boston, Concord, and Montreal Railroad reached Wells River around 1850 and further connected the town with outside industries and commercial markets. By the mid to late-19<sup>th</sup> century there were over a dozen commercial buildings including fulling mills, additional grist mills and blacksmiths, a brickmaker, a tannery, slaughter houses, and various mercantile ventures, as well as residences and public structures constructed on Main Street and the surrounding streets. Population growth increased in the village of Wells River throughout the 19<sup>th</sup> century and then leveled off. The town's population is currently just under 400 residents.

### **Cultural Resources Investigations**

A Phase I Archaeological Resources Assessment was conducted in 2020 for the Newbury Project APE by GMP's consultant, Northeast Archaeology Research Center (NE Archaeology). The field work portion of the survey included subsurface excavation of three 0.5-meter by 0.5-meter (about 1.64-feet by 1.64-feet) shovel test sites. The assessment identified structural remains from the former Wells River Electric Light Plant and Pumping Station circa 1896-1938 at the upstream end of the project APE. These structural remains were designated site number VT-OR-0122.

NE Archaeology then completed Phase II investigation field work for VT-OR-0122 in 2021 after receiving concurrence from the Vermont SHPO on the scope of survey work. Eight 0.5-meter by 0.5-meter shovel tests were excavated along three transects within the site. All artifacts identified appeared to be contemporaneous with the former Wells River Electric Light Plant and Pumping Station.

### **Historic Properties at the Project**

The Wells River Electric Light Plant and Pumping Station structural remains are located within the APE for the project. The remains include stone and brick structural remnants and a steel penstock. The remains may have served as the location of an earlier sawmill (circa 1858). NE Archaeology recommended that the Wells River Electric Light Plant and Pumping Station is eligible for listing in the National Register. The Vermont SHPO concurred with this recommendation and stated that the site is being adversely affected by erosion due to project operation.<sup>64</sup>

### **Traditional Cultural Properties**

There are no federally-recognized tribes in Vermont. However, on September 1, 2017, Commission staff invited the Saint Regis Mohawk Tribe to participate in the relicensing process

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<sup>64</sup> See letter filed by Vermont SHPO on June 3, 2022.



for the Newbury Project. No response has been received. The tribe has not reported any known traditional cultural properties within the project's APE to date.

### **3.3.7.2 Environmental Effects**

GMP proposes to develop an Historic Properties Management Plan (HPMP) to address any potential adverse effects to historic properties over the term of a subsequent license and to consult with the Vermont SHPO before any land-disturbing activities or alterations to historic structures within the project boundary. In a letter dated October 25, 2021, and filed on March 25, 2022, the Vermont SHPO concurred with this proposal. In a letter filed June 3, 2022, the Vermont SHPO recommended that the three measures from the archaeological Phase II evaluation of the Wells River Electric Light Plant and Pumping Site VT-OR-0122 be implemented into an HPMP for the project. These measures are: (1) conduct Phase III data recovery investigations at VT-OR-0122 utilizing, but not limited to additional mapping and recordation, photo documentation, and the development of a more robust historic context; (2) complete a National Register of Historic Places Nomination for site VT-OR-0122; and (3) develop a public outreach program including an interpretive exhibit about the Wells River Electric Light Plant and Pumping Station near the site.

#### *Our Analysis*

As discussed in section 3.3.1.2, *Geologic and Soil Resources – Environmental Effects*, operating the project in run-of-river mode by maintaining stable impoundment elevations would continue to limit shoreline erosion, turbidity, and siltation in the impoundment and have little new effect on shoreline erosion downstream of the project. Nonetheless, project operation could cause adverse effects, due to ongoing erosion, on the historic powerhouse foundation and penstock. Therefore, mitigation measures have been developed for the identified effects, as discussed above. Developing and implementing an HPMP, in consultation with the Vermont SHPO, would ensure that the mitigation measures are in place to protect historic properties within the APE from adverse effects of erosion related to the operation and maintenance of project facilities. An HPMP would also include measures to ensure that any previously undiscovered archaeological resources within the APE are not adversely affected by the project during the term of any subsequent license. It is also possible that unknown archaeological resources may be discovered as a result of the project's operation or project-related activities. As stated above, GMP proposes to consult with the Vermont SHPO before beginning any land-disturbing activities or alterations to known historic structures within the project boundary.

To meet the requirements of section 106 of the NHPA, the Commission intends to execute a Programmatic Agreement with the Vermont SHPO for the project to protect historic properties. The terms of the Programmatic Agreement would require GMP to develop and implement an HPMP to ensure that mitigation measures are in place to minimize adverse effects to historic properties in the APE.

### 3.3.8 Environmental Justice

#### 3.3.8.1 Affected Environment

According to the U.S. Environmental Protection Agency (EPA), “environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies (EPA, 2022a). Meaningful involvement means:

1. people have an opportunity to participate in decisions about activities that may affect their environment and/or health;
2. the public’s contributions can influence the regulatory agency’s decision;
3. community concerns will be considered in the decision-making process; and
4. decision makers will seek out and facilitate the involvement of those potentially affected (EPA, 2022a).

In conducting NEPA reviews of hydropower projects, the Commission follows the instruction of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, which directs federal agencies to identify and address “disproportionately high and adverse human health or environmental effects” of their actions on minority and low-income populations (i.e., environmental justice communities).<sup>65</sup> Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, also directs agencies to develop “programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”<sup>66</sup> The term “environmental justice community” includes disadvantaged communities that have been historically marginalized and overburdened by pollution.<sup>67</sup> Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples.<sup>68</sup>

Commission staff used the Federal Interagency Working Group on Environmental Justice & NEPA Committee’s publication, *Promising Practices for EJ Methodologies in NEPA Reviews*

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<sup>65</sup> Exec. Order No. 12,898, 59 Fed. Reg. 7629, at 7629, 7632 (Feb. 11, 1994).

<sup>66</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619, at 7629 (Jan. 27, 2021).

<sup>67</sup> *Id.*

<sup>68</sup> See EPA, *EJ 2020 Glossary* (August 21, 2022), <https://www.epa.gov/environmentaljustice/ej-2020-glossary>.

(*Promising Practices*) (EPA, 2016), which provides methodologies for conducting environmental justice analyses throughout the NEPA process for this project. Commission staff's use of these methodologies is described throughout this section.

Commission staff used EJScreen, EPA's environmental justice mapping and screening tool, as an initial step to gather information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors. EPA recommends that screening tools, such as EJScreen, be used for a "screening-level" look and a useful first step in understanding or highlighting locations that may require further review.

### **Meaningful Engagement and Public Involvement**

CEQ's *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ *Environmental Justice Guidance*) (CEQ, 1997) and *Promising Practices* recommend that federal agencies provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.<sup>69</sup> They also recommend using adaptive approaches to overcome linguistic, institutional, cultural, economic, historical, or other potential barriers to effective participation in the decision-making processes of federal agencies. In addition, Section 8 of Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, strongly encourages independent agencies to "consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, federal policies and programs."

There have been opportunities for public involvement during the Commission's review process. The Commission's communication and involvement with the surrounding communities began on October 26, 2018, with the public notice of the pre-application document, followed by public notice of the relicense application on November 10, 2021. Issuance of the *Notice Soliciting Scoping Comments* on December 8, 2021, opened a 30-day formal scoping period to identify issues, concerns, and opportunities for enhancement or mitigation associated with the proposed action. We issued a *Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions* on April 6, 2022, which established a 60-day comment period and intervention deadline. Finally, we issued a *Notice of Intent to Prepare an Environmental Assessment* on June 10, 2022. Each of these notices were published in the *Federal Register* and local newspapers.

All documents that form the administrative record for this proceeding, with the exclusion of privileged or critical energy infrastructure information, are available to the public

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<sup>69</sup> CEQ, *Environmental Justice: Guidance Under the National Environmental Policy Act*, 4 (Dec. 1997) (CEQ's *Environmental Justice Guidance*), [https://www.energy.gov/sites/default/files/nepapub/nepa\\_documents/RedDont/GCEQ-EJGuidance.pdf](https://www.energy.gov/sites/default/files/nepapub/nepa_documents/RedDont/GCEQ-EJGuidance.pdf).

electronically on the FERC’s website (www.ferc.gov). We recognize that not everyone has internet access or is able to file electronic comments. Anyone may comment to FERC about the proceeding, either in writing or electronically.

In 2021, the Commission established the Office of Public Participation (OPP) to support meaningful public engagement and participation in Commission proceedings. OPP provides members of the public, including environmental justice communities, landowners, Tribal citizens, and consumer advocates, with assistance in FERC proceedings – including navigating Commission processes and activities relating to the project. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6592 or OPP@ferc.gov for further information.

### Identification of Environmental Justice Communities

According to CEQ’s *Environmental Justice Guidance* and *Promising Practices*, minority populations are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices*, FERC uses the **50 percent** and the **meaningfully greater analysis** methods to identify minority populations. Using this methodology, minority populations are defined in this EA where either: (a) the aggregate minority population of the block groups in the affected area exceeds 50 percent; or (b) the aggregate minority population in the block group affected is 10 percent higher than the aggregate minority population percentage in the county. The guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using *Promising Practices*’ **low-income threshold criteria** method, low-income populations are identified as census block groups where the percent low-income population in the identified block group is equal to or greater than that of the county. Here, Commission staff selected Caledonia and Orange Counties in Vermont and Grafton County in New Hampshire, in which the project action buffer is located, as the comparable reference communities to ensure that affected environmental justice communities are properly identified. A reference community may vary according to the characteristics of the particular project and the surrounding communities.

According to the current U.S. Census Bureau information, minority and low-income populations exist within the project area. Table D-7 identifies the minority populations by race and ethnicity and low-income populations within Vermont and New Hampshire, the counties affected by the relicense application (Caledonia and Orange Counties in Vermont and Grafton County in New Hampshire), and U.S. census block groups<sup>70</sup> within vicinity of the project site. For this project, staff chose a 1-mile radius around the project boundary (Figure C-5). Staff determined that a 1-mile radius is sufficient to encompass and address any potential impacts that may arise from the proposed action given the limited scope of the proposed relicensing,

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<sup>70</sup> Census block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people. U.S. Census Bureau. 2022. Glossary: Block Group. Available online at: [https://www.census.gov/programs-surveys/geography/about/glossary.html#par\\_textimage\\_4](https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4). Accessed October 2022.

including limited construction activities and the concentration of project-related effects within the project boundary. To ensure we are using the most recent available data, we use U.S. Census American Community Survey File# B03002 for the race and ethnicity data and Survey File# B17017 for poverty data at the census block group level.<sup>71</sup>

Within the study area, staff has identified two census block groups in which the populations qualify as environmental justice communities (see figure C-5 and table D-7). Of these, one block group qualifies as an environmental justice community with a minority population (Census Tract 9590, Block Group 1); and one block group qualifies as an environmental justice community with a low-income population (Census Tract 9603, Block Group 4).

### 3.3.8.2 Environmental Effects

Consistent with *Promising Practices* and EO 12898, we reviewed the project to determine if its resulting impacts would be disproportionately high and adverse on minority and low-income populations and also whether impacts would be significant.<sup>72</sup> *Promising Practices* provides that agencies can consider any number of conditions for determining whether an action will cause a disproportionately high and adverse impact.<sup>73</sup> The presence of any of these factors could indicate a potential disproportionately high and adverse impact. For this project, a disproportionately high and adverse effect on an environmental justice community means the adverse effect is predominantly borne by such population. Relevant considerations include the location and natural physical environment of project facilities and the project's human health and environmental impacts, including associated social, economic, or cultural direct, indirect and cumulative impacts, on identified environmental justice communities.

As described in section 2.2.3, *Proposed Operation and Environmental Measures*, GMP proposes to continue operating the project in run-of-river mode, where outflow from the project approximates inflow by maintaining the impoundment water surface elevation at or above the crest of the dam at all times, and to release a minimum flow of 37 cfs or inflow, whichever is

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<sup>71</sup> U.S. Census Bureau, American Community Survey 2021 ACS 5-Year Estimates Detailed Tables, File# B17017, *Poverty Status in the Past 12 Months by Household Type by Age of Householder*, <https://data.census.gov/cedsci/table?q=B17017>; File #B03002 *Hispanic or Latino Origin By Race*, <https://data.census.gov/cedsci/table?q=b03002>.

<sup>72</sup> See *Promising Practices* at 33 (stating that “an agency may determine that impacts are disproportionately high and adverse, but not significant within the meaning of NEPA” and in other circumstances “an agency may determine that an impact is both disproportionately high and adverse and significant within the meaning of NEPA”).

<sup>73</sup> See *Promising Practices* at 45-46 (explaining that there are various approaches to determining whether an impact will cause a disproportionately high and adverse impact). We recognize that CEQ and EPA are in the process of updating their guidance regarding environmental justice and we will review and incorporate that anticipated guidance in our future analysis, as appropriate.

less. As discussed in section 3.3.5, *Recreation and Land Use*, GMP proposes to attempt to locate a suitable location for an upstream hand carry access area to facilitate boating.

No entity provided comments or recommendations regarding the effects of the project on environmental justice communities in response to the Commission's public notice that the application was ready for environmental analysis.

#### *Our Analysis*

Staff evaluated the effects of continued project operation on aquatic resources, terrestrial resources, threatened and endangered species, land use, recreation, aesthetics, and cultural resources in sections 3.3.1 through 3.3.7 above.

GMP proposes no changes to project operation that would adversely affect environmental resources, including water supply, water quality, or fisheries. The Newbury Project has been providing safe and renewable power to the region since its construction, as well as recreational opportunities to the public. The project is operated in run-of-river mode, resulting in minimal impoundment fluctuations. The primary uses of the Wells River and land within the project area include hydroelectric power generation, recreation, and aquatic and wildlife habitat. The majority of the land in the project area is forested, with a small amount classified as agricultural, and smaller amounts classified as developed.

Implementing a hand carry access facility could provide additional opportunities and access for fishing and hand carry boating if feasible. When the location and scope of construction for GMP's proposed hand carry access area is finalized, GMP would be required to seek approval from the Commission. At that time, the need for protective measures during construction would be evaluated. There could be inconveniences with construction of the hand carry access area, such as noise, dust, and construction traffic, but these impacts would be temporary in nature. Although the concentration of recreation use at the project could increase slightly with public access at the reservoir, the site is remote and unlikely to experience large increases in usage that would adversely affect the identified communities through increases in traffic or overfishing.

In consideration of the included census data, the limited scope of the proposed project, the minimal anticipated adverse impact on environmental justice communities, and the environmental protection and enhancement measures for aquatic resources, threatened and endangered species, and cultural resources, the project would not result in a disproportionately high and adverse impact on the identified environmental justice communities.

### **3.4 NO-ACTION ALTERNATIVE**

Under the no-action alternative, the Newbury Project would continue to operate in its current manner. None of the applicant's proposed measures or the resource agencies' recommendations would be required. Minimum flows would not improve between June 11 and April 14, aesthetic flows would not increase by 5 cfs, and measures to protect terrestrial resources would not occur. Development of a recreation site would not occur, and no additional avoidance, protection, mitigation, or enhancement measures would be implemented to protect historic properties.

## 4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the project's use of the Wells River for hydropower purposes to see what effect various environmental measures would have on the project's costs and power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,<sup>74</sup> the Commission compares the current project cost to an estimate of the cost of obtaining the same amount of energy and capacity using a likely alternative source of power for the region (cost of alternative power). In keeping with Commission policy as described in *Mead Corp.*, our economic analysis is based on current electric power cost conditions and does not consider future escalation of fuel prices in valuing the hydropower project's power benefits.

For each of the licensing alternatives, our analysis includes an estimate of: (1) the cost of individual measures considered in the EA for the protection, mitigation and enhancement of environmental resources affected by the project; (2) the cost of alternative power; (3) the total project cost (i.e., for construction, operation, maintenance, and environmental measures); and (4) the difference between the cost of alternative power and total project cost. If the difference between the cost of alternative power and total project cost is positive, the project produces power for less than the cost of alternative power. If the difference between the cost of alternative power and total project cost is negative, the project produces power for more than the cost of alternative power. This estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

### POWER AND DEVELOPMENTAL BENEFITS OF THE PROJECT

Table 1 summarizes the assumptions and economic information we use in our analysis for the project. This information was provided by the applicant in their license application and subsequent submittals. We find that the values provided by the applicant are reasonable for the purposes of our analysis. Cost items common to all alternatives include: taxes and insurance costs; estimated capital investment required to develop the project; licensing costs; normal operation and maintenance cost; and Commission fees. All costs have been adjusted to 2022 dollars.

**Table 1.** Parameters for economic analysis of the project (Source: GMP, and staff).

Parameter	Value
Installed Capacity	0.365 MW
Average annual generation	1,076 MWh
Period of analysis	30 years

<sup>74</sup> See *Mead Corp.*, 72 FERC ¶ 61,027 (July 13, 1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.



Parameter	Value
Local and Federal income tax rate	Included in the Operation and Maintenance (O&M) cost
Insurance rate	Included in the O&M cost
Interest rate	5.5 %
Net Investment <sup>a</sup>	\$4,423,222
Application cost	\$350,000
Operation and maintenance	\$92,299/year
Estimated Commission fees <sup>b</sup>	\$0/year
Cost of Alternative Power (2022) <sup>c</sup>	
1) Energy cost	\$71.42/MWh
2) Dependable Capacity Cost	\$179.08/kW-year

<sup>a</sup> Excludes protection, mitigation, and enhancement measures and licensing cost.

<sup>b</sup> The Commission collects an annual administration charge for all licensed projects which is based on the authorized installed capacity of the project and amount of federal land occupied by the project.

<sup>c</sup> The Cost of Alternative Power is based on the cost of providing the same amount of generation and capacity from a natural gas-fired combined cycle plant, as reported by The U.S. Energy Information Administration (EIA), Annual Energy Outlook 2023, for the Division 1, New England Region. The total cost of alternative power is a combination of energy costs and a cost for dependable capacity.

## COMPARISON OF ALTERNATIVES

Table 2 summarizes the installed capacity, annual generation, cost of alternative power, estimated total project cost, and difference between the cost of alternative power and total project cost for each of the alternatives considered in this EA: no-action, the applicant's proposal, and the staff alternative with mandatory conditions.

**Table 2.** Summary of the annual cost of alternative power and annual project cost for three alternatives for the Newbury Project (Source: staff).

	No Action	Applicant's Proposal	Staff Alternative with Mandatory Conditions
Installed capacity	0.365 MWh	0.365 MW	0.365 MW
Annual generation	1,076 MWh	1,041 MWh	1,041 MWh
Dependable Capacity <sup>a</sup>	0.0 MW	0.0 MW	0.0 MW
Current alternative source of power cost <sup>b</sup>	\$76,826	\$74,363	\$74,363

	<b>No Action</b>	<b>Applicant's Proposal</b>	<b>Staff Alternative with Mandatory Conditions</b>
Total annual project cost (2022) <sup>c</sup>	\$436,845	\$447,193	\$472,986
Difference between the cost of alternative power and project cost <sup>d</sup>	(\$360,019)	(\$372,830)	(\$398,623)

<sup>a</sup> Staff estimated the dependable capacity based on the ratio of the mean annual flow available for generation for each of 12 months, and the hydraulic capacity of the project.

<sup>b</sup> The alternative source of power cost is based on the Cost of Alternative Power in the New England Region, as identified in table 4-1 above.

<sup>c</sup> All project costs were adjusted to 2022 dollars to be consistent with the value of energy which is also in 2022 dollars.

<sup>d</sup> A number in parentheses denotes that the difference between the cost of alternative power and project cost is negative, thus the project cost is greater than the cost of alternative power.

### **No-Action Alternative**

Under the no-action alternative, the project has an installed capacity of 0.365 MW, a capacity benefit of 0 MW, and an average annual generation of 1,076 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit is \$76,826. The total annual project cost, which includes purchasing/construction, operations and maintenance, and preparing the license application, is \$436,845. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity is \$360,019 more than the cost of alternative power.

### **Applicant's Proposal**

Under the applicant's proposal, the project would have an installed capacity of 0.365 MW, a capacity benefit of 0 MW, and an average annual generation of 1,041 MWh. The current cost to produce the same amount of energy and provide the same capacity benefit from an alternative source of power is \$74,363/year. The total annual cost for the project is about \$447,193. Subtracting the total annual project cost from the alternative source of power's cost, the project costs \$372,830/year more to produce power than the cost of alternative power.

### **As Licensed with Mandatory and Staff Measures**

This alternative includes the same developmental components as the applicant's proposal and therefore, would have the same capacity benefit and energy values described above for the applicant's proposal. The levelized annual cost for this alternative is about \$472,986. Subtracting the total annual project cost from the alternative source of power's cost, the project costs \$398,623/year more to produce power than the cost of alternative power.

### **4.3 COST OF ENVIRONMENTAL MEASURES**

Appendix G shows the applicant's proposed environmental protection and enhancement measures, staff-recommended additions, deletions, and modifications to these measures, mandatory conditions, and the estimated cost of each. All costs are in December 2022 dollars. We convert all costs to equal annual (levelized) values over a 30-year period of analysis to give a uniform basis for comparing the benefits of a measure to its cost.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE**

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. This section contains the basis for, and a summary of, our recommendations for relicensing the project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

Based on our independent review of agency and public comments filed on the project and our review of the environmental and economic effects of the proposed project and project alternatives, we selected the staff alternative as the preferred alternative. We recommend this alternative because: (1) issuing a subsequent license for the project would allow GMP to continue to operate the project as a dependable and inexpensive source of electrical energy; (2) the 365 kW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution; (3) the public benefits of the staff alternative would exceed those of the no-action alternative; and (4) the proposed and recommended measures would enhance aquatic and recreational resources, and protect wildlife resources at the project.

In the following section, we make recommendations as to which environmental measures proposed by GMP or recommended by agencies or other entities should be included in any subsequent license issued for the project. In addition to GMP's proposed environmental measures listed below, we recommend additional staff-recommended environmental measures to be included in any license issued for the project.

#### **5.1.1 Measures Proposed by GMP**

Based on our environmental analysis of GMP's proposal in section 3, *Environmental Analysis*, and the costs presented in section 4, *Developmental Analysis*, we conclude that the following environmental measures proposed by GMP would protect and enhance environmental resources and would be worth the cost. Therefore, we recommend including these measures in any license issued for the project.

- Continue operating the project in run-of-river mode, such that outflow from the project approximates inflow on a continuous basis.
- Consult with Vermont ANR prior to conducting maintenance and repair work that has the potential to adversely affect water quality.
- Consult with Vermont ANR regarding the timing and duration of periodic maintenance drawdowns of the impoundment and maintain minimum flow requirements to the bypassed reach during any maintenance drawdowns.

- Continue providing minimum flows to the bypassed reach via a combination of discharge from the minimum flow turbine, spill over the pneumatic crest gate on the spillway of the dam, and/or discharge through a downstream fish passage chute.
- Decrease the minimum flow to the bypassed reach from 50 cfs to 37 cfs from April 15 to June 10 and increase the minimum flow from 25 cfs to 37 cfs during the remainder of the year.
- Develop an operation compliance monitoring plan in consultation with Vermont ANR, as modified below.
- Restrict the removal of trees, as modified below, for protection of rare, threatened, and endangered terrestrial species.
- Increase the aesthetic flow over the spillway from 5 cfs to 10 cfs.
- Construct an impoundment boating access area for recreational boaters upstream of the project dam, if feasible, at a location to be determined after any subsequent license is issued.
- Develop a Historic Properties Management Plan to address and mitigate project effects on historic properties.

### **5.1.2 Additional Measures Recommended by Staff**

In addition to GMP's proposed measures noted above, we recommend including the following additional measures in any license that may be issued for the Newbury Project.

- Modify the proposed operation compliance monitoring plan to include provisions for monitoring and reporting compliance with all operating requirements of the license (e.g., run-of-river operation, minimum flows, aesthetic flows, fish passage flows, impoundment water levels, timing of planned maintenance), and reporting deviations from operating requirements to the Commission and Vermont ANR (Certification condition C);
- Develop a plan, within one year of American eel passage being installed at the Wilder Project, to provide upstream and downstream American eel passage at the Newbury Project (Certification condition E).
- Develop a debris disposal plan (Certification condition G).
- Develop an impoundment boating access plan that includes: (1) provisions to consult on boating access design (Certification condition F) and site selection with the Vermont ANR and FWS before any construction activities occur; (2) an implementation and construction schedule that does not exceed four years (Certification condition F); (3) a design plan, including the estimated length, width, and composition of the proposed access area, parking area, trail and stairway; (4) BMPs that include, soil erosion and sedimentation controls and revegetating areas disturbed during construction using native species; (5) methods for preventing the establishment of invasive plants; and (6) guidelines for detecting and treating invasive plant populations.
- Restrict the removal of trees greater than or equal to 3 inches dbh to the period between November 1 and April 14 for the protection of NLEB (Certification condition I).

In addition, we are recommending all of the conditions of Vermont ANR water quality certification, with the exception of those conditions discussed in Appendix H, *Comprehensive Development and Recommended Alternative*.

In Appendix H, *Comprehensive Development and Recommended Alternative*, we discuss the basis for our additional staff-recommended measures and the rationale for modifying GMP's proposal.

## **5.2 UNAVOIDABLE ADVERSE EFFECTS**

Continued project operation would result in some unavoidable fish impingement and entrainment mortality. However, our analysis in section 3.2.2.2, *Environmental Effects, Impingement, Entrainment, and Turbine Mortality*, indicates that the level of impingement and entrainment mortality would have minimal effects on fish populations in the Newbury Project impoundment or Wells River.

## **5.3 CONSISTENCY WITH COMPREHENSIVE PLANS**

Section 10(a)(2)(A) of the FPA, 16 U.S.C. §803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We reviewed the following 16 qualifying comprehensive plans that are applicable to the Newbury Project. No inconsistencies were found.

Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Plan for American eel (*Anguilla rostrata*). (Report No. 36). April 2000.

Atlantic States Marine Fisheries Commission. 2008. Amendment 2 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2008.

Atlantic States Marine Fisheries Commission. 2013. Amendment 3 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. August 2013.

Atlantic States Marine Fisheries Commission. 2014. Amendment 4 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2014.

Connecticut River Joint Commission. New Hampshire Department of Environmental Services. 2013. Connecticut River Recreation Management Plan: Headwaters Region. Concord, New Hampshire.

National Park Service. 1993. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C.

U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Vermont Agency of Environmental Conservation. 1986. Vermont Rivers Study. Waterbury, Vermont.

Vermont Agency of Natural Resources. 1986. The waterfalls, cascades, and gorges of Vermont. Waterbury, Vermont. May 1986.

Vermont Agency of Natural Resources. 1988. Hydropower in Vermont: an assessment of environmental problems and opportunities. Waterbury, Vermont. May 1988.

Vermont Agency of Natural Resources. 1988. Wetlands component of the 1988 Vermont recreation plan. Waterbury, Vermont. July 1988.

Vermont Department of Environmental Conservation. 2020. Ompompanoosuc, Stevens, Wells, Waits & Connecticut River Direct Tributaries Basin 14 Tactical Basin Plan. Montpelier, Vermont. December 2020.

Vermont Department of Fish and Wildlife. 2015. Vermont's Wildlife Action Plan. Montpelier, Vermont.

Vermont Fish and Wildlife Department. 2017. Statewide Management Plan for Largemouth and Smallmouth Bass. Montpelier, Vermont. August 2017.

Vermont Department of Fish and Wildlife. 2018. The Vermont Plan for Brook, Brown, and Rainbow Trout. Montpelier, Vermont. January 2018.

Vermont Department of Forests, Parks and Recreation. 2019. Vermont State Comprehensive Outdoor Recreation Plan 2019-2023. Montpelier, Vermont. December 2019.

## **6.0 FINDING OF NO SIGNIFICANT IMPACT**

If the Newbury Project is issued a subsequent license as proposed with the additional staff-recommended measures, the project would continue to operate, while enhancing and protecting aquatic, terrestrial, federally threatened and endangered resources, recreation, aesthetic, and cultural resources in the project area.

Based on our independent analysis, the issuance of a subsequent license for the Newbury Project, with additional staff-recommended environmental measures, would not constitute a major federal action significantly affecting the quality of the human environment.

## **7.0 LITERATURE CITED**

The literature cited in this EA is presented as Appendix I.

## **8.0 LIST OF PREPARERS**

The list of preparers of this EA is presented as Appendix K.



## **APPENDIX A: STATUTORY AND REGULATORY REQUIREMENTS**

### **Federal Power Act**

#### Section 18 Fishway Prescriptions

Section 18 of the FPA, 16 U.S.C. § 811, states that the Commission is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of the U.S. Department of Commerce or Interior. On June 2, 2022, Interior requested that the Commission include a reservation of authority to prescribe fishways under section 18 in any license issued for the project.

#### Section 10(j) Recommendations

Under section 10(j) of the FPA, 16 U.S.C. § 803(j)(1), each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency. No section 10(j) recommendations were filed in response to the Commission's notice requesting conditions and recommendations for the Newbury Project, issued on April 6, 2022.

#### Section 10(a) Recommendations

Under section 10(a) of the FPA, each hydroelectric license issue by the Commission must be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

On June 3, Vermont SHPO and American Whitewater each filed one recommendation under section 10(a). We discuss these section 10(a) recommendations in section 3 and Appendix H of this EA.

### **Clean Water Act**

Under section 401 of the Clean Water Act (CWA), 33 U.S.C. § 1341(a)(1), a license applicant must obtain either a water quality certification (certification) from the appropriate state pollution control agency verifying that any discharge from the project would comply with applicable provisions of the CWA, or a waiver of such certification by the appropriate state agency. The failure to act on a request for certification within a reasonable period of time, not to exceed one year, after receipt of the request constitutes a waiver.

On June 3, 2022, GMP applied to the Vermont Department of Environmental Conservation (Vermont DEC) for section 401 certification for the Newbury Project.<sup>75</sup> Vermont DEC acknowledged receipt of the application request on June 6, 2022. On May 11, 2023, Vermont ANR issued a certification for the project. The conditions of the certification are included in Appendix E.

### **Endangered Species Act**

Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species. On September 12, 2023, we accessed the U.S. Fish and Wildlife Service's (FWS) Information Planning and Consultation (IPaC) database to determine whether any federally listed species could occur in the vicinity of the project. According to the IPaC database, the endangered northern long-eared bat (NLEB; *Myotis septentrionalis*) may occur within the Newbury Project boundary, or be affected by the project.<sup>76</sup> Additionally, the proposed endangered tricolored bat (*Perimyotis subflavus*)<sup>77</sup> and candidate monarch butterfly (*Danaus plexippus*)<sup>78</sup> may occur within the project boundary or be affected by the project. No designated critical habitats are located within the project boundary.

Our analysis of project effects on NLEB and the tricolored bat is summarized here and presented in full in Appendix F, and our recommendations are included in section 5.1, *Comprehensive Development and Recommended Alternative* and Appendix H.

No tree removal is anticipated as part of normal project operation and maintenance. However, if tree removal were to become necessary during a subsequent license, restricting planned removal of trees three inches dbh or greater to the period between November 1 through April 14, would reduce the likelihood of disturbing NLEB and their newly born pups during the active season. Because the location of the proposed impoundment boating access area is undetermined and the duration of activity associated constructing and maintaining the access area, including when the access area will be created, is unknown, including, at a minimum, a provision to consult with the Vermont ANR and FWS on site selection before any construction activities occur in an impoundment boating access plan would help ensure that the effects of the proposed impoundment boating access area on NLEB and their habitats are minimized whenever and wherever the impoundment boating access area is constructed. We conclude that relicensing

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<sup>75</sup> By letter filed on June 6, 2022, GMP indicated that the section 401 water quality certification was requested on June 3, 2022, and that Vermont DEC acknowledged receipt of this request on June 6, 2022.

<sup>76</sup> 88 Fed. Reg. 4908-4910 (January 26, 2023).

<sup>77</sup> 87 Fed. Reg. 56,381-56,393 (September 14, 2022).

<sup>78</sup> 85 Fed. Reg. 81,813 (December 17, 2020).

the project, as proposed with our recommended measures, is not likely to adversely affect the NLEB.

Seasonal limits on tree clearing for NLEB would also reduce the likelihood of disturbing tricolored bats during the concurrent pup-rearing season for these species. Additionally, including, at a minimum, a provision to consult with the Vermont ANR and FWS regarding site selection before any construction activities occur in an impoundment boating access plan would ensure that the effects of the proposed impoundment boating access area on tricolored bats and their habitats are minimized. With the implementation of the staff recommended measures for the NLEB discussed above, we conclude that relicensing the project would not jeopardize the continued existence of the tricolored bat.

### **National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, requires that a federal agency “take into account” how its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

Commission staff designated GMP as its non-federal representative for the purposes of conducting section 106 consultation under the NHPA on October 26, 2018. GMP consulted with the Vermont SHPO to identify historic properties, determine the eligibility of cultural resources for listing on the National Register, and assess potential adverse effects on historic properties within the project’s APE. Vermont SHPO stated that site VT-OR-0122 is eligible for the National Register and that there are adverse effects to the site due to erosion. The license application stated that there may be additional effects related to the development of a hand carry access location, which is no longer being proposed at the location. GMP proposes to develop a Historic Properties Management Plan (HPMP) for these reasons, and in a letter filed on February 2, 2022, the Vermont SHPO concurred with this proposal.

To meet the requirements of section 106 of the NHPA, we intend to execute a Programmatic Agreement (PA) with the Vermont SHPO for the protection of historic properties from the effects of construction, operation, and maintenance of the Newbury Project. The terms of the PA would ensure that GMP addresses and treats all historic properties identified within the project’s APE through the finalization of a HPMP.

### **Executive Orders 12898 and 14008**

In conducting NEPA reviews of proposed hydropower projects, the Commission follows the instruction of Executive Order 12898, which directs federal agencies to identify and address “disproportionately high and adverse human health or environmental effects” of their actions on minority and low-income populations (i.e., environmental justice communities).<sup>79</sup> Executive

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<sup>79</sup> Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless

Order 14008 also directs agencies to develop “programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”<sup>80</sup>

Staff identified two environmental justice communities within a 1-mile radius of the project boundary and considered how the communities may be affected by noise, visual, and traffic impacts of the construction of a potential new recreation facility, concentration of recreational activity, and the effect of project operation and recreation on subsistence fishing. Our analysis of the project’s impacts on the communities is presented in section 3.3.8, *Environmental Justice*. We conclude that relicensing the project, as proposed with staff’s recommended modifications, would not result in disproportionately high and adverse impacts on the identified environmental justice communities.

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addresses environmental justice in its analysis, in accordance with our governing regulations and guidance, and statutory duty to evaluate all factors bearing on the public interest.

<sup>80</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619 (Feb. 1, 2021). The term “environmental justice community” includes disadvantaged communities that have been historically marginalized and overburdened by pollution. *Id.* § 219, 86 Fed. Reg. 7619, 7629. The term also includes, but may not be limited to, minority populations, low-income populations, or indigenous peoples (EPA, 2022a).

## **APPENDIX B: ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

### **Issuing a Non-Power License**

A non-power license is a temporary license that the Commission would terminate when it determines that another governmental agency will assume regulatory authority and supervision over the land and facilities covered by the non-power license. No agency has suggested a willingness or ability to do so. No party has sought a non-power license for the project, and we have no basis for concluding that the project should no longer be used to produce power.

### **Federal Government Takeover**

Federal takeover and operation of the project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested a federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

### **Project Retirement**

As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing a project in most cases.<sup>81</sup> Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs.<sup>82</sup> For these reasons, the Commission does not speculate about possible decommissioning measures at the time of relicensing, but rather waits until an applicant actually proposes to decommission a project, or a participant in a relicensing proceeding demonstrates that there are serious resource concerns that cannot be addressed with appropriate license measures and that make decommissioning a reasonable alternative.<sup>83</sup>

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<sup>81</sup> See, e.g., *Eagle Crest Energy Co.*, 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc.*, 111 FERC ¶ 61,327, at PP 35-38 (2005).

<sup>82</sup> In the unlikely event that the Commission denies relicensing a project or a licensee decides to surrender an existing project, the Commission must approve a surrender “upon such conditions with respect to the disposition of such works as may be determined by the Commission.” 18 C.F.R. § 6.2 (2021). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

<sup>83</sup> See generally *Project Decommissioning at Relicensing*; Policy Statement, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); see also *City of Tacoma, Wash.*, 110 FERC ¶ 61,140 (2005) (finding that unless and until the Commission has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

GMP does not propose decommissioning, nor does the record to date demonstrate there are serious resource concerns that cannot be mitigated if the project is relicensed; therefore, there is no reason, at this time, to include decommissioning as a reasonable alternative to be evaluated and studied as part of staff's NEPA analysis.

## APPENDIX C: FIGURES



Figure C-1. Water quality monitoring locations (Source: GMP, 2021).



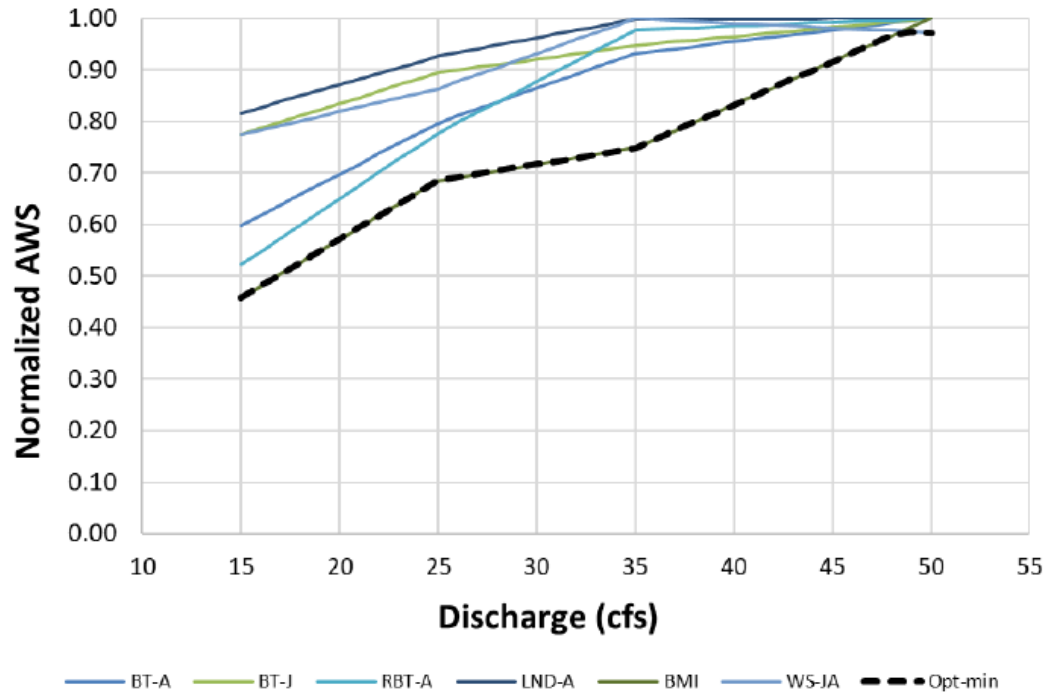


Figure C-2. Relationship between minimum flow (discharge) and habitat suitability (area weighted suitability, AWS) for select species and life stages in the project bypassed reach. Species include juvenile (BT-J) and adult (BT-A) brook trout, adult rainbow trout (RBT-A), juvenile (WS-J) and adult white sucker (WS-A), and benthic macroinvertebrates (BMI). The dashed line represents the most limiting available habitat across the measured flows, which is for BMI (Source: Vermont ANR letter filed June 6, 2022).



Figure C-3. Non-project recreation facility (Source: Staff).





Figure C-4. Proposed 10 cfs aesthetic flow release (Source: GMP, 2021, as modified by staff).

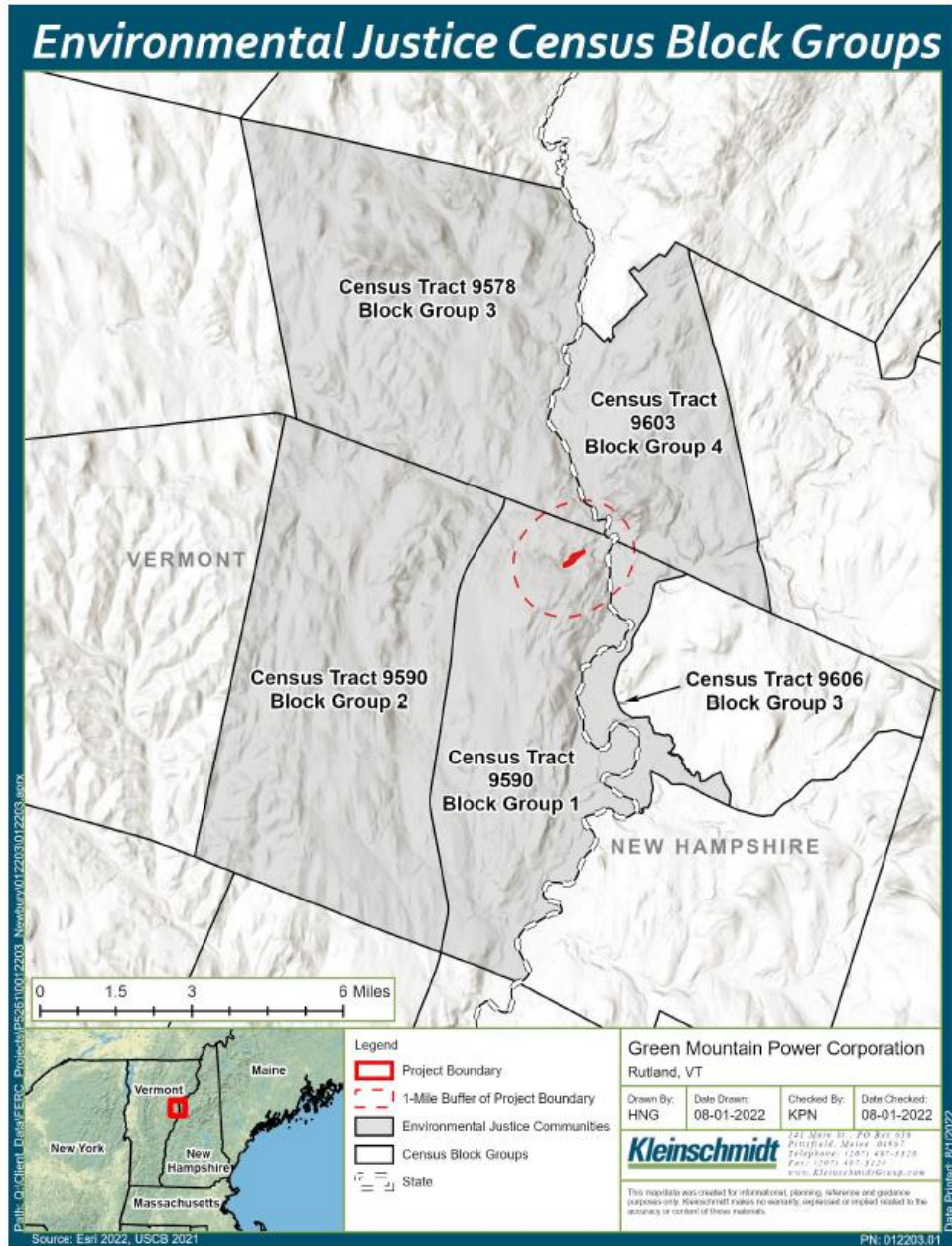


Figure C-5. Block Groups and Environmental Justice Communities within 1-mile of the project boundary (Source: GMP, 2022c).

## APPENDIX D: TABLES

Table D-1. Monthly flow data (cfs) from 1991-2020 at USGS gage number 01139000 Wells River at Wells River, Vermont (Source: GMP, 2021, as modified by staff).

Month	Flow (cfs)				
	Minimum	90% exceedance	Mean	10% exceedance	Maximum
January	30	51	142	243	2,087
February	24	43	107	180	1,357
March	26	55	201	427	1,489
April	70	166	464	902	2,320
May	60	99	244	433	2,239
June	14	48	155	316	1,054
July	15	28	121	250	2,249
August	9	23	86	156	2,441
September	8	20	68	128	1,884
October	18	35	134	280	1,975
November	29	59	155	292	1,155
December	32	67	164	285	1,560

Table D-2. Water quality criteria for Class B(2) cold water fish habitat (Source: GMP, 2021).

Parameter	Criteria
Water Temperature	Increase in temperature due to all discharges and activities less than 1°F
Turbidity	less than or equal to 10 nephelometric turbidity unit as an annual average under dry weather baseflow conditions
Dissolved Oxygen	greater than or equal to 6 mg/L and 70 % saturation greater than or equal to 7 mg/L and 75% saturation at all times (instantaneous minimum) in designated salmonid spawning or nursery areas
pH	Not to exceed 8.5 standard units
NO <sub>3</sub> -N	less than or equal to 5.0 mg/L at flows exceeding low median monthly flows
Phosphorus	less than 12-27 µg/L parts per million at low median monthly flow depending on stream type

Table D-3. Summary of water quality monitoring results collected from July through September 2019, in the Newbury Project area (Source: GMP, 2021, as modified by staff).

	Water Temperature (°F)			DO (mg/L)			DO Percent Saturation (%)		
	July	August	Sept.	July	August	Sept.	July	August	Sept.
<b>Site 1: Upstream of the Impoundment</b>									
Minimum	65.1	61.3	53.4	7.5	7.7	8.7	94.0	93.1	94.2
Maximum	79.5	76.8	67.3	9.0	9.5	10.5	98.4	98.3	97.6
<b>Mean</b>	<b>71.4</b>	<b>69.3</b>	<b>60.8</b>	<b>8.3</b>	<b>8.5</b>	<b>9.4</b>	<b>96.4</b>	<b>96.0</b>	<b>96.0</b>
<b>Site 2: Within the Impoundment</b>									
Minimum	66.0	62.6	55.8	6.1	6.1	8.5	72.9	69.1	89.8
Maximum	78.4	75.7	66.9	9.3	10.3	11.2	106.8	113.1	110.2
<b>Mean</b>	<b>71.4</b>	<b>69.3</b>	<b>61.2</b>	<b>8.3</b>	<b>8.7</b>	<b>9.7</b>	<b>96.0</b>	<b>98.8</b>	<b>99.5</b>
<b>Site 3: Intake</b>									
Minimum	65.8	63.0	55.8	5.6	4.5	7.2	67.9	49.4	72.9
Maximum	78.1	75.0	68.4	10.8	10.7	11.5	125.5	121.6	121.6
<b>Mean</b>	<b>71.2</b>	<b>69.3</b>	<b>61.3</b>	<b>8.3</b>	<b>8.5</b>	<b>9.4</b>	<b>95.7</b>	<b>96.3</b>	<b>97.2</b>
<b>Site 4: Minimum Flow Turbine</b>									
Minimum	67.1	63.5	55.6	7.7	6.3	8.7	92.1	69.4	96.1
Maximum	78.4	76.5	67.6	9.4	9.9	10.4	106.6	107.2	104.3
<b>Mean</b>	<b>72.1</b>	<b>70.0</b>	<b>61.5</b>	<b>8.6</b>	<b>8.7</b>	<b>9.7</b>	<b>100.2</b>	<b>99.0</b>	<b>100.2</b>
<b>Site 5: Bypassed Reach</b>									
Minimum	67.1	63.7	55.6	7.5	7.8	8.1	90.1	85.9	88.9
Maximum	79.0	76.5	67.8	9.3	9.6	10.2	104.1	103.8	100.6
<b>Mean</b>	<b>72.3</b>	<b>70.0</b>	<b>61.7</b>	<b>8.3</b>	<b>8.5</b>	<b>9.3</b>	<b>97.2</b>	<b>97.0</b>	<b>96.7</b>
<b>Site 6: Tailwater</b>									
Minimum	67.1	63.7	55.6	6.7	5.7	8.8	80.9	63.2	95.4
Maximum	78.8	76.3	67.8	9.0	9.6	10.6	101.2	104.1	103.2
<b>Mean</b>	<b>72.1</b>	<b>70.0</b>	<b>62.1</b>	<b>8.3</b>	<b>8.7</b>	<b>9.7</b>	<b>97.4</b>	<b>99.5</b>	<b>100.8</b>

Table D-4. Percent change in habitat suitability across a range of flows released from the Newbury Project impoundment (Source: GMP, 2021).

<b>Species/Lifestage</b>	<b>Percent of Maximum Suitability</b>			
	<b>15 cfs</b>	<b>25 cfs</b>	<b>35 cfs</b>	<b>50 cfs</b>
Brook trout (adult)	60%	80%	93%	100%
Brook trout (adult)	78%	89%	95%	100%
Rainbow trout (adult)	52%	78%	98%	100%
Longnose dace (adult)	82%	93%	100%	100%
Benthic macroinvertebrates	46%	69%	75%	100%
White Sucker (spawning)	86%	100%	67%	75%
White Sucker (juvenile and adult)	77%	86%	100%	97%

Table D-5. Expected burst speeds of adult and juvenile resident fish species found upstream of the Newbury Project. (Source: Staff).

<b>Species</b>	<b>Burst Speed (feet per second)</b>		<b>Source</b>
	<b>Adult</b>	<b>Juvenile</b>	
Rainbow Trout	2.4 to 11.5	3.6 to 5.8	Domenici and Blake, 1997; Froese and Pauley, 2010
Brown Trout	7.0 to 12.7	2.7 to 7.1	Bell, 1991
Brook Trout <sup>a</sup>	7.0 to 12.7	1.8 to 3.5	Bell, 1991
Longnose Dace	3.8 to 4.4	1.9 to 3.4	Aedo et al., 2009
White Sucker	5.2 to 10.2	1.4 to 2.2	MTO, 2006; Bell, 1991
Smallmouth Bass	3.5 to 5.6	1.5 to 2.1	Peake, 2004; Bell, 1991
Pumpkinseed <sup>b</sup>	4.3	1.8	Webb, 1998; Beamish, 1978

<sup>a</sup> Brown trout used as a surrogate

<sup>b</sup> Bluegill used as a surrogate



Table D-6. Plant species on Vermont's noxious plant list that may occur in the project area (Source: GMP, 2021, as modified by staff).

Species	
Goutweed ( <i>Aegopodium podagraria</i> )	Bell Honeysuckle ( <i>Lonicera x bella</i> )
Tree-of-Heaven ( <i>Ailanthus altissima</i> )	Purple Loosestrife ( <i>Lythrum salicaria</i> )
Garlic Mustard ( <i>Alliaria petiolata</i> )	Parrot Feather* ( <i>Myriophyllum aquaticum</i> )
Flowering Rush ( <i>Butomus umbellatus</i> )	Variable-leaved milfoil* ( <i>Myriophyllum heterophyllum</i> )
Fanwort* ( <i>Cabomba caroliniana</i> )	Eurasian Watermilfoil ( <i>Myriophyllum spicatum</i> )
Oriental Bittersweet ( <i>Celastrus orbiculatus</i> )	Yellow Floating Heart ( <i>Nymphoides peltata</i> )
Brazilian Elodea* ( <i>Egeria densa</i> )	Common Reed ( <i>Phragmites australis</i> )
Japanese Knotweed ( <i>Fallopia japonica</i> )	Curly Leaf Pondweed ( <i>Potamogeton crispus</i> )
Hydrilla* ( <i>Hydrilla verticillata</i> )	Common Buckthorn ( <i>Rhamnus cathartica</i> )
Frogbit ( <i>Hydrocharis morsus-ranae</i> )	Glossy Buckthorn ( <i>Rhamnus frangula</i> )
East Indian Hygrophila* ( <i>Hygrophila polysperma</i> )	Giant Salvinia* ( <i>Salvinia auriculata</i> )
Japanese Honeysuckle ( <i>Lonicera japonica</i> )	Water Chestnut ( <i>Trapa natans</i> )
Amur Honeysuckle ( <i>Lonicera maackii</i> )	Swallow-wort* ( <i>Vincetoxicum hirundinaria</i> )
Morrow Honeysuckle ( <i>Lonicera morrowii</i> )	Black Swallow-wort ( <i>Vincetoxicum nigrum</i> )
Tartarian Honeysuckle ( <i>Lonicera tatarica</i> )	

\* Species not currently known to exist in Vermont.

Table D-7. Minority and low-income populations within one mile of the project boundary (Source: Census, 2021, as modified by staff). Note: Gray shading indicates an environmental justice community.

Race and Ethnicity											Low-Income
Geographic Area	Total Population	White (%) <sup>a</sup>	Black or African American (%) <sup>a</sup>	American Indian & Alaska Native (%) <sup>a</sup>	Asian (%) <sup>a</sup>	Native Hawaiian & Other Pacific Islander (%) <sup>a</sup>	Some Other Race (%) <sup>a</sup>	Two or More Races (%) <sup>a</sup>	Hispanic or Latino (any race) (%) <sup>a</sup>	Total Minority Population (%) <sup>a</sup>	Household in Poverty (%) <sup>b</sup>
<b>Vermont</b>	<b>641,637</b>	91.9	1.2	0.2	1.7	>0.1	0.2	2.8	2.1	8.1	10.6
<b>Caledonia County*</b>	30,402	93.8	0.7	0.1	0.4	0.0	0.5	2.7	1.9	6.2	12.9
Census Tract 9578, Block Group 3	1,068	94.3	0.0	0.3	0.7	0.0	0.0	1.0	3.7	5.7	8.2
<b>Orange County*</b>	29,286	94.6	0.3	0.2	0.3	>0.1	0.4	2.6	1.4	5.4	8.9
Census Tract 9590, Block Group 1	1,298	88.8	0.8	0.0	0.3	0.5	4.1	2.9	2.7	11.2**	11.0
<b>New Hampshire</b>	<b>1,372,175</b>	88.9	1.4	0.1	2.7	>0.1	0.2	2.6	4.1	11.1	7.8
<b>Grafton County*</b>	91,025	89.4	1.2	0.2	3.5	>0.1	0.2	2.8	2.6	10.6	10.3
Census Tract 9603, Block Group 4	297	99.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.7	12.4
Census Tract 9606, Block Group 3	2,046	91.1	0.3	0.0	0.0	0.0	0.0	2.9	5.7	8.9	8.7

\* Reference community

\*\* This percent exceeds the meaningfully greater threshold of 5.94%

<sup>a</sup> Percent of Total Population (Table B03002 – Hispanic or Latino Origin by Race. 2021 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates: <https://data.census.gov/cedsci/table?g=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2019.B03002>). Accessed July 14, 2023.

<sup>b</sup> Percent of Households (Table B17017 – Poverty Status in the Past 12 Months by Household Type and Age of Householder. 2021 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates: <https://data.census.gov/cedsci/table?t=Income%20and%20Poverty&g=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2019.B17017>). Accessed July 14, 2023.

Gray shading denotes an environmental justice community.

## APPENDIX E: WATER QUALITY CERTIFICATION CONDITIONS

### WATER QUALITY CONDITIONS FOR THE NEWBURY RIVER HYDROELECTRIC PROJECT NO. 5261 ISSUED BY THE VERMONT AGENCY OF NATURAL RESOURCES, MAY 11, 2023

#### Decision and Certification

The Department has examined the Project application and other pertinent information deemed relevant by the Department in order to issue a decision on this certification application pursuant to the Department's responsibilities under Section 401 of the federal Clean Water Act and 10 V.S.A. § 1253(h). After examination of these materials, the Department certifies that there is reasonable assurance that operation of the Project in accordance with the following conditions will not violate Standards; will not have a significant impact on use of the affected waters by aquatic biota, fish or wildlife, including their growth, reproduction, and habitat; will not impair the viability of the existing populations; will not result in a significant degradation of any use of the waters for recreation, fishing, water supply or commercial enterprises that depend directly on the existing level of water quality; and will be in compliance with sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, 33 U.S.C. section 1341, and other appropriate requirements of state law:

- A. **Compliance with Conditions.** The Applicant shall operate and maintain this Project consistent with the findings and conditions of this certification. The Applicant shall not make any changes to the Project or its operations that would have a significant or material effect on the findings, conclusions or conditions of this Certification without approval of the Department.

*See finding 114 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-101.*

- B. **Flow Management.** The Project shall be operated in instantaneous run-of-river mode. Instantaneous run-of-river operation means no utilization of impoundment storage and that outflow from the facility is equal to inflow to the impoundment on an instantaneous basis except for short term, unavoidable deviations.

The Applicant shall provide 37 cfs, or inflow if less, into the bypassed reach year-round. This flow shall not be interrupted. When generating, the Project shall spill 10 cfs continuously year-round in the bypass reach unless otherwise indicated in the flow management and monitoring plan (condition C). When the Project is not operating, all flow shall be spilled at the dam.

*See findings 42, 43, 77, 106, 107, 129-133, and 147-151 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-304 & § 29A-306 (b)(3)(B) & § 306 (c)(3)(B)(i).*

- C. **Flow Management and Monitoring Plan.** The Applicant shall develop within 180 days of the effective date of the FERC license, a flow management and monitoring plan detailing how the Project will operate in instantaneous run-of-river mode and manage flow seasonally to comply with the conservation flow requirements. The plan will also include a method for continuous monitoring and reporting (to allow records to be furnished upon request) of flow releases at the Project (conservation flow, spillage, and turbine discharge), impoundment levels and inflows. The plan shall include provisions for the flow data to be available on a near real-time basis.

The plan will include procedures for reporting deviations from prescribed operating conditions to the Department. Reports shall be made within 15 days after a deviation and will include, if possible, the causes, severity and duration of the deviation, observed or reported adverse environmental impacts from the incident, pertinent data, and measures to be taken to avoid recurrences.

The plan shall be subject to Department approval. The department reserves the right to review and approve any material changes made to the plan.

*See findings 42, 43, 77-80, 105-107, 129-134, and 147-151 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-304 & § 29A-306(b).*

- D. **Fish Passage.** The Applicant shall install and maintain the downstream fish passage facility from April 1st- June 1st and from September 1st – November 15th and maintaining additional measures (finding 127). Prior to replacement of the fish passage chute, the Applicant shall consult with the Fish and Wildlife Department and US Fish and Wildlife Service with respect to the design, to determine the appropriate design meets requirements for safe, timely, and effective fish passage. The Applicant shall file the design information with the Department of Environmental Conservation for approval prior to commencement of work.

*See findings 44, 59-69, and 120- 128 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306(a-b).*

- E. **American Eel Passage.** Within one year of American eel Passage being installed at the Wilder Hydroelectric Project on the mainstem of the Connecticut River, the Applicant shall initiate plans to develop passage. Before developing the plan, the Applicant will consult with the Vermont Agency of Natural Resources and the US Fish and Wildlife Service. The results of the plan will be reviewed and approved by the Vermont Agency of Natural Resources and the US Fish and Wildlife Service. In addition to the method of passage, the Applicant shall include an implementation schedule which can include monitoring studies. The plan can include but is not limited to, a trap and truck program or eel ramp installation, or other appropriate measures.

*See findings 59-69, and 120- 128 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306(a).*

- F. **Recreation.** The Applicant shall develop and finalize designs for a hand carry access area located upstream of the Newbury Hydroelectric dam (pending private landowner approval and consultation surrounding cultural resources). The designs shall be done in consultation with appropriate stakeholders. The Applicant shall construct recreation access improvements within 4 years of the effective date of the FERC license (pending landowner and permit approvals).

*See findings 47, 100, 101, and 141- 145 for a statement of necessity 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A- 103(b)(1)(G).*

- G. **Debris Disposal.** Debris associated with Project operations shall be disposed of in accordance with the Standards and applicable state laws and regulations.

*See findings 10, 102, 103, and 146 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-303(1).*

- H. **Maintenance and Repair Work.** For any Project maintenance or repair work, including drawdowns below the normal operating level to facilitate repair/maintenance work, plans shall be filed with the Department for prior review and approval, if said work may result in a discharge, have a material adverse effect on water quality, or cause less-than-full support of an existing use or a beneficial values or use of State waters.

*See findings 62, 77, 95, 113, 122, and 139 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-103(a), § 29A-306(b) and § 29A-304(b).*

- I. **Threatened and Endangered Species.** For activities requiring the clearing of trees 3-inches diameter breast height or greater, GMP shall abide by seasonal tree clearing restrictions and only clear trees between November 1st- April 14th to avoid any roost disruption of the Northern long-eared bat. Should tree clearing be required during the restricted time period (April 15th- October 31st), GMP will consult with the USFWS and VTFWD regarding removal.

*See findings 46, 91-93, and 137-139 for a statement of necessity. 10 V.S.A. § 5403.*

- J. **Compliance Inspection by Department.** The Applicant shall allow the Department to inspect the Project area at any time to monitor compliance with certification conditions.

*See finding 114 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-104(a).*

- K. **Posting of Certification.** A copy of the certification shall be prominently posed within the Project powerhouse.

*See finding 114 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-104(a).*

- L. **Modification of Certification.** The Department may request, at any time, that FERC reopen the license to consider modifications to the license as necessary to assure compliance with Vermont Water Quality Standards.

*See finding 114 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-104(a).*

## APPENDIX F: BIOLOGICAL ASSESSMENT

### Affected Environment

#### Northern Long-Eared Bat

The NLEB is a medium-sized nocturnal bat ranging from 3 to 3.6 inches in length with light to dark brown fur (Wisconsin DNR, 2013). The NLEB's historical range includes 37 states, encompassing most of the central and eastern United States. The NLEB typically feeds on moths, flies, and other insects in the understory of forested areas. These bats are flexible in selecting roost sites, choosing roost trees that provide cavities and crevices, and trees three inches or greater in diameter at breast height (dbh) (FWS, 2014). Human-made structures, such as buildings, barns, bridges, and bat houses can be considered potential summer habitat. However, trees found in highly developed urban areas are unlikely to be suitable NLEB habitat (FWS, 2014). In Vermont, NLEB are generally active from April 15 through October, and hibernate over the winter season (FWS, 2016; FWS, 2023). Winter hibernation typically occurs in caves and areas around them and can be used for fall-swarming<sup>84</sup> and spring-staging.<sup>85</sup>

There has been a 99% reduction of NLEB populations in recent years as a result of white-nose syndrome<sup>86</sup> in the Northeast United States. White-nose syndrome is expected to spread throughout the rest of United States in the foreseeable future. Other threats to NLEB include: (1) changes to hibernacula openings that restrict movement or change the microclimate; (2) blasting, drilling, and other noises that disturb bats during hibernation; (3) clearing trees that are used for staging or swarming habitat or as maternity roosts; (4) burning that allows smoke to pass through roost trees (spring through fall) or enter hibernacula during the winter; (5) changes to water resources entering hibernacula or used for drinking or foraging habitat; and (6) exposure to pesticides and herbicides.

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<sup>84</sup> Fall-swarming fills the time between summer and winter hibernation. The purpose of swarming behavior may include an introduction of juveniles to potential hibernacula, copulation, and gathering at stop-over sites on migratory pathways between summer and winter regions.

<sup>85</sup> Spring-staging is the time period between winter hibernation and migration to summer habitat. During this time, bats begin to gradually emerge from hibernation and exit the hibernacula to feed but re-enter the same or alternative hibernacula to resume daily bouts of torpor (i.e., a state of mental or physical inactivity).

<sup>86</sup> White-nose syndrome is a fungal infection that agitates hibernating bats, causing them to rouse prematurely and burn fat supplies. Mortality results from starvation or, in some cases, exposure.



There are no known occupied NLEB hibernacula within 0.25 mile of the project boundary, and there are no known maternity roost trees within 150 feet of the project boundary. On April 27, 2016, FWS found that designating critical habitat for NLEB was not prudent.<sup>87</sup>

### **Tricolored Bat**

The tricolored bat is a small bat, rarely reaching 3.5 inches in length, with tricolored fur (dark gray at the base, yellowish brown in the middle, and dark brown at the tip) that usually appears yellowish in color overall but ranges from silvery-gray to black (Missouri Department of Conservation, 2023). It typically forages on small insects including moths, flies, leafhoppers, and beetles in areas over waterways along the forest edge (Missouri Department of Conservation, 2023). The range of tricolored bats includes southeastern Canada, most of Central America, and all, or portions of, 39 states and the District of Columbia, including all of Vermont.

Tricolored bats are active from spring to fall, using a combination of summer and winter habitats from mid-March to mid-April and August through October, respectively, and summer habitats from mid-April through July (FWS, 2021b). The pup-rearing season for tricolored bat occurs from May through July, with pups achieving adult-like flight and foraging ability four weeks after birth. During the summer, tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees, but they have also been observed within artificial roosts (*e.g.*, in barns and under roofs and bridges) and rarely in caves. During the winter, tricolored bats typically hibernate in caves and mines, exhibiting high interannual fidelity to their hibernacula (FWS, 2021b).

Similar to the NLEB, white-nose syndrome is the primary threat to the tricolored bat.<sup>88</sup> Forest removal or conversion and the disturbance or destruction of caves can result in the loss of suitable summer roosting and foraging habitat, as well as winter hibernacula.<sup>89</sup> The loss or disturbance of habitat may compound the effects of white-nose syndrome.

On September 14, 2022, FWS found that designating critical habitat for tricolored bat was not prudent.<sup>90</sup>

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<sup>87</sup> 81 Fed. Reg. 24,707-24,714 (April 27, 2016).

<sup>88</sup> See n. 86 *supra*.

<sup>89</sup> See n. 77 *supra*.

<sup>90</sup> *Id.*

## **Environmental Effects**

### **Northern Long-Eared Bat and Tricolored Bat**

The continued operation and maintenance of the Newbury Project, and the construction, maintenance, and use of the proposed impoundment boating access area, could affect NLEB and tricolored bats if they are present within the project area.

GMP proposes to abide by seasonal tree clearing restrictions and only clear trees greater than or equal to four inches diameter at breast height (dbh)<sup>91</sup> between November 1 and April 14 for the protection of NLEB. Should tree clearing be required during the time period between April 15 and October 31, GMP proposes to consult with the FWS and Vermont FWD regarding removal needs. No mitigation measures are proposed specifically for the protection of tricolored bats.

Vermont ANR's certification condition I requires GMP to restrict the removal of trees three inches dbh or greater to the period between November 1 through April 14 to avoid any disruption to roosting NLEB. Should tree clearing be required during the prohibited season, the certification also requires that GMP consult with the FWS and Vermont ANR regarding removal.

#### *Our Analysis*

##### **Northern Long-eared Bat**

GMP proposes no changes to project operations or maintenance other than providing a continuous, year-round, minimum flow to the bypassed reach instead of seasonal minimum flows. As discussed above, there are no known occupied NLEB hibernacula within 0.25 mile of the project boundary, and there are no known maternity roost trees within 150 feet of the project boundary. However, the limited upland forest in the project vicinity may provide suitable summer roosting habitat for NLEB and the project impoundment and riparian areas may be used for foraging and travel.

No tree removal is anticipated as part of normal project operation and maintenance. However, in the event that tree removal becomes necessary during a subsequent license, GMP's proposal to restrict the clearing of trees greater than or equal to four inches dbh to the inactive season between November 1 and April 14 would help prevent incidental take of NLEB. However, additional tree cutting size restrictions (greater than or equal to three inches dbh), as required by the certification, would better protect summer swarming, foraging, and travel habitat for NLEB in the project area during the active season.

Construction of the proposed impoundment boating access area is likely to involve some tree removal. Because the proposed impoundment boating access area is still in the conceptual stage, the location of the proposed impoundment boating access area is undetermined and the

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<sup>91</sup> GMP's proposal references four inches diameter at base height. Staff understands the intended reference to be four inches dbh.

duration of activity associated constructing and maintaining the access area, including when the access area will be created, is unknown. Therefore, the presence of NLEB within the proposed impoundment boating access area and the effects of the proposed impoundment boating access area on NLEB and their habitat (i.e., the number and size of trees trimmed/removed and the magnitude of vegetative disturbance, if any) are unknown. Including, at a minimum, a provision to consult on site selection with the Vermont ANR and FWS before any construction activities occur in an impoundment boating access plan would help ensure that the effects of the proposed impoundment boating access area on NLEB and their habitats are minimized whenever and wherever the impoundment boating access area is constructed.

With the mitigation measures discussed above, we conclude that relicensing the project is not likely to adversely affect the NLEB.<sup>92</sup>

#### Tricolored bat

As with NLEB, the removal of woody vegetation, and construction of the proposed impoundment boating access area could affect potential summer roosting and foraging habitat of the tricolored bat. As noted above, restricting the planned removal of trees three inches dbh or greater to the period of November 1 through April 14 would protect NLEB, and would also reduce the likelihood of disturbing tricolored bats during the concurrent pup-rearing season for these species. Further, including, at a minimum, a provision to consult on site selection with the Vermont ANR and FWS before any construction activities occur in an impoundment boating access plan would help ensure that the effects of the proposed impoundment boating access area on tricolored bats and their habitats are minimized whenever and wherever the impoundment boating access area is constructed.

With these mitigation measures, we conclude that relicensing the project would not jeopardize the continued existence of the tricolored bat.

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<sup>92</sup> A concurrence letter for the NLEB effects determination was generated using FWS' IPaC system on September 15, 2023, and filed to the record on September 18, 2023.

## APPENDIX G: COST OF ENVIRONMENTAL MEASURES

**Table G-1.** Cost of environmental mitigation and enhancement measures considered in assessing the environmental effects of the Newbury Project (Source: GMP, 2021; GMP, 2022a, GMP, 2023; and staff).

Enhancement/Mitigation Measures	Entity	Capital cost (\$) (2022)	Annual Cost (\$/year) (2022)	Levelized Annual Cost (\$/year) (2022)
<b>General</b>				
Continue operating the project in run-of-river mode, where outflow from the project approximates inflow.	GMP, Staff	\$0	\$0	\$0
Operate the project in an instantaneous run-of-river mode where outflow from the project equals inflow except for short term deviations such as during impoundment re-filling following planned or unplanned maintenance activities. <sup>a</sup>	Vermont ANR	Unknown <sup>b</sup>	Unknown <sup>b</sup>	Unknown
<b>Aquatic Resources</b>				
Release a continuous minimum flow of 37 cfs year-round into the bypassed reach, rather than the current minimum flow of 50 cfs from April 15 to June 10 and 25 cfs the remainder of the year. <sup>a</sup>	GMP, Vermont ANR, Staff	\$0	\$0 <sup>c</sup>	\$0
Develop an operation compliance monitoring plan in consultation with Vermont DEC.	GMP	\$12,000 <sup>f</sup>	\$500 <sup>f</sup>	\$1,366

Enhancement/Mitigation Measures	Entity	Capital cost (\$) (2022)	Annual Cost (\$/year) (2022)	Levelized Annual Cost (\$/year) (2022)
Develop an operation compliance monitoring plan detailing how the project would operate in instantaneous run-of-river mode where outflow equals inflow while maintaining a 37 cfs minimum flow and 10-cfs aesthetic flow and include a method for continuous (near real-time) monitoring and reporting of impoundment levels, inflows, spill flows into the bypassed reach, and turbine discharges. <sup>a</sup>	Vermont ANR	\$30,000 <sup>g</sup>	\$20,900 <sup>g</sup>	\$23,065
Develop an operation compliance monitoring plan.	Staff	\$12,000 <sup>f</sup>	\$500 <sup>f</sup>	\$1,366
Consult with the resource agencies prior to conducting maintenance and repair work to minimize effects on water quality.	GMP, Staff	\$0	\$0	\$0
Consult with Vermont ANR regarding the timing and duration of periodic maintenance drawdowns of the impoundment and maintain	GMP, Staff	\$0	\$0	\$0

<b>Enhancement/Mitigation Measures</b>	<b>Entity</b>	<b>Capital cost (\$) (2022)</b>	<b>Annual Cost (\$/year) (2022)</b>	<b>Levelized Annual Cost (\$/year) (2022)</b>
minimum flow requirements to the bypassed reach during any maintenance drawdowns.				
File plans with Vermont DEC for review and approval of any project maintenance or repair work, including drawdowns below the normal operating level, if the work may result in a discharge, have a material adverse effect on water quality, or cause less-than-full support of an existing use or beneficial values or use of State waters. <sup>a</sup>	Vermont ANR	\$0	\$500 <sup>l</sup>	\$500
Develop a plan, within one year of American eel passage being installed at the Wilder Project, to provide upstream and downstream American eel passage at the Newbury Project. <sup>a</sup>	Vermont ANR, Staff	\$5,000 <sup>l</sup>	\$0	\$361
Continue providing seasonal downstream fish passage but provide 10 cfs through the fish passage chute from April 1 to June 1 and September 1 to November 15, rather than 20 cfs during the same time periods.	GMP	\$3,000 <sup>d</sup>	\$5,600 <sup>c e</sup>	\$5,817

<b>Enhancement/Mitigation Measures</b>	<b>Entity</b>	<b>Capital cost (\$) (2022)</b>	<b>Annual Cost (\$/year) (2022)</b>	<b>Levelized Annual Cost (\$/year) (2022)</b>
Implement the following fish passage measures: (1) install and operate the downstream fish passage chute with a flow of 25 cfs from April 1 to June 1 and from September 1 to November 15; (2) continue using the 1-inch trash rack angled toward the downstream fish passage chute; (3) maintain the existing 6-foot-deep baffle curtain deployed in front of the existing intake structure; and (4) consult with the Vermont ANR on design and placement of the downstream fish passage chute should GMP seek to replace or modify the chute during the term of any subsequent license and file the proposed downstream fish passage design information with the Vermont ANR for approval prior to commencement of any work. <sup>a</sup>	Vermont ANR	\$5,000 <sup>h</sup>	\$5,600 <sup>c e</sup>	\$5,961
Dispose of project-related debris in accordance with state laws and regulations <sup>a</sup>	Vermont ANR	Unknown <sup>i</sup>	Unknown <sup>i</sup>	Unknown
Develop a debris disposal plan in consultation with Vermont ANR	Staff	\$5,000 <sup>l</sup>	\$0	\$361



Enhancement/Mitigation Measures	Entity	Capital cost (\$) (2022)	Annual Cost (\$/year) (2022)	Levelized Annual Cost (\$/year) (2022)
<b>Terrestrial Resources</b>				
Restrict the removal of trees greater than or equal to 4 inches dbh to the period of November 1 through April 14 for protection of rare, threatened, and endangered terrestrial species.	GMP	\$0	\$0	\$0
Restrict the removal of trees greater than or equal to 3 inches dbh to the period between November 1 and April 14 for the protection of northern long-eared bats (NLEB). <sup>a</sup>	Vermont ANR, Staff	\$0	\$0	\$0
<b>Recreation and Land Use</b>				
Construct an impoundment boating access area at a location to be determined after any subsequent license is issued. <sup>a</sup>	GMP, Vermont ANR, Staff	\$20,000 <sup>j</sup>	\$500 <sup>j</sup>	\$1,944
Develop an impoundment boating access plan for the construction and maintenance of the impoundment boating access area.	Staff	\$5,000 <sup>l</sup>	\$1,000 <sup>l</sup>	\$1,361
<b>Aesthetic Resources</b>				
Increase the aesthetic flow over the dam from 5 cfs year-round to 10 cfs year-round. <sup>a</sup>	GMP, Vermont ANR, Staff	\$0	\$0	\$0

Enhancement/Mitigation Measures	Entity	Capital cost (\$) (2022)	Annual Cost (\$/year) (2022)	Levelized Annual Cost (\$/year) (2022)
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### Cultural Resources

Develop a historic properties management plan in consultation with the Vermont SHPO to protect historic properties that are eligible or listed on the National Register.

GMP, Staff

\$10,000<sup>k</sup>

\$500<sup>k</sup>

\$1,222

\* All costs are in December 2022 dollars to be consistent with the value of energy which is also in December 2022 dollars. We convert all costs to equal annual (levelized) costs over a 30-year period of analysis to give a uniform basis for comparing the benefits of a measure to its cost.

<sup>a</sup> Water quality certification condition under section 401(a)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1341(a)(1).

<sup>b</sup> Costs related to any required new or upgraded equipment needed for compliance with this measure cannot be accurately estimated.

<sup>c</sup> In a letter filed on April 28, 2023, GMP indicated that proposed changes to minimum flows, fish passage flows, and aesthetic flows would result in a generation loss of 34.5 megawatt hours per year compared to existing operations.

<sup>d</sup> In a letter filed on April 28, 2023, GMP stated that releasing 10 cfs through the fish passage chute would require fabricating a new weir at a capital cost of \$3,000.

<sup>e</sup> In a letter filed on April 28, 2023, GMP stated that a crane is used at a cost of \$1,400 per event each time the fish passage chute is installed and removed. At two installations and two removals per year, the annual cost of installing and removing the fish passage chute is \$5,600.

<sup>f</sup> In a letter filed on February 2, 2022, GMP stated that the capital cost to develop an operation compliance monitoring plan would be \$12,000 and the annual cost would be \$500. Staff estimate the same costs for an operation compliance monitoring plan.

<sup>g</sup> Staff estimate \$30,000 in year one for installing one new gage capable of real-time flow monitoring and reporting data at 15-minute increments, \$400 annually to maintain data on the internet in real-time, \$20,000 to maintain the new gage annually, and \$500 to maintain the existing monitoring equipment annually.

<sup>h</sup> Staff estimate a capital cost of \$3,000 to fabricate a new weir to provide 25 cfs through the fish passage chute (See footnote f) and an additional \$2,000 to verify that the flows passing through the fish passage chute provide 25 cfs.

<sup>i</sup> Costs are unknown because they would depend on the quantity and method of disposal.

<sup>j</sup> In a letter filed on February 2, 2022, GMP stated that the capital cost of the impoundment boating access area would be \$20,000 and the annual cost would be \$500.

<sup>k</sup> In a letter filed on February 2, 2022, GMP stated that the capital cost to develop a historic properties management plan would be \$10,000 and the annual cost would be \$500.

<sup>l</sup> Staff estimated cost.

## **APPENDIX H: COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE**

This appendix discusses the basis for the staff-recommended measures presented in section 5.1.2, *Additional Measures Recommended by Staff*, and the rationale for modifying GMP's proposal.

### **Additional Measures Recommended by Staff**

#### **Operation Compliance Monitoring**

GMP proposes to continue operating the project in a run-of-river mode and provide a year-round, 10-cfs aesthetic flow over the spillway and a year-round 37-cfs minimum flow into the bypassed reach. To ensure compliance with the operational requirements of any subsequent license, GMP proposes to develop an operation compliance monitoring plan for the project in consultation with the Vermont ANR within 6 months of license issuance. The plan would detail how the Newbury Project would manage seasonal flow and operate in run-of-river mode while complying with minimum flow and aesthetic flow requirements.

Vermont ANR's certification condition C requires that GMP include as part of an operation compliance monitoring plan plan: (1) a method for continuous monitoring and reporting of flow releases at the project (including spill flows, turbine discharge, impoundment levels, and inflows); (2) provisions for flow data to "be available on a near real-time basis"; and (3) procedures for reporting deviations from operating requirements to Vermont DEC within 15 days of a deviation.

Our analysis in section 3.2.2.2, *Aquatic Resources, Environmental Effects* indicates that GMP's existing SCADA system, with impoundment elevation, tailrace elevation, and turbine output monitoring, would be sufficient to monitor compliance with its proposed run-of-river operation, aesthetic flow, and minimum flow requirements. While Vermont ANR's requirement to monitor inflows, outflows, and spill over the dam could be used to monitor compliance with run-of-river operation, minimum flow, and aesthetic flow releases, GMP would likely need to install and operate at least one new flow gage in the bypassed reach capable of continuously monitoring stream levels. In addition, Vermont ANR's requirement to make flow data available on a "near real-time basis" would require GMP to provide the data via the internet. We estimate that installing and maintaining one new gage for monitoring bypassed reach flows and making all flow data available via the internet would add \$22,565 in levelized annual costs compared to continuing to monitor impoundment levels using GMP's automated system as it does currently, at a levelized annual cost of \$500. Because monitoring impoundment levels via GMP's existing automated monitoring and control system would achieve the same compliance objectives at a lower cost, we conclude the benefits of the real-time flow monitoring would not be worth the higher costs.

However, to enable the Commission to track compliance with the operating requirements of any license issued for the project, we recommend that GMP develop an operation compliance monitoring plan that includes a detailed description of how the licensee would monitor compliance with the operational requirements of the license (i.e., run-of-river operation,

impoundment levels, minimum flow, aesthetic flow, timing of planned maintenance, etc.), maintain a log of project operation, and report deviations from operating requirements to the Commission and Vermont ANR. We estimate that the annual levelized cost of developing an operation and compliance monitoring plan with the above provisions would be \$1,366, and conclude that the compliance benefits outweigh the cost.

### **Debris Disposal Plan**

GMP states that trash racks are cleaned using a mechanical rake a minimum of once per week during good weather conditions and as many as two times per day during adverse weather or high flow events but does not indicate how or where it disposes debris collected at the project. Vermont ANR states in the water quality certification that depositing debris and other solids to state waters would violate Vermont's solid waste laws and standards and that debris that is not properly disposed of may also impair aesthetics and boating at the project. Therefore, certification condition G requires that "debris associated with Project operations shall be disposed of in accordance with state laws and regulations."

Although there is no evidence of accumulating debris at the project (e.g., presence of debris piles or other solids), our analysis in section 3.2.2.2, *Environmental Effects, Debris Management* indicates that periodic disposal would prevent accumulation of unsightly debris and keep that debris from entering the river where it could degrade water quality. Developing a debris disposal plan, after consultation with Vermont ANR, would avoid misunderstandings and guide how and when GMP is to remove and dispose of debris. We estimate that the annual levelized cost of developing a debris disposal plan would be \$361, and conclude that the operational and resource benefits would be worth the cost.

### **Northern Long-eared Bat Protection Measures**

GMP proposes to abide by seasonal tree clearing restrictions and only clear trees greater than or equal to four inches diameter at breast height (dbh) between November 1 and April 14 for the protection of northern long-eared bat (NLEB). Should tree clearing be required during the time period between April 15 and October 31, GMP proposes to consult with the FWS and Vermont FWD regarding removal needs.

Vermont ANR's certification condition I requires GMP to restrict the removal of trees three inches dbh or greater to the period between November 1 through April 14 to avoid any disruption to roosting NLEB. Should tree clearing be required during the prohibited season, the certification also requires that GMP consult with the FWS and Vermont ANR regarding tree removal.

As discussed in Appendix E, *Biological Assessment*, the limited upland forest in the project vicinity may provide suitable summer roosting habitat for NLEB and the project impoundment and riparian areas may be used for foraging and travel. While no tree removal is anticipated as part of normal project operation and maintenance, some tree removal might become necessary during the term of a subsequent license issued for the project. Restricting the planned removal of trees greater than or equal to three inches diameter at breast height to the period between November 1 through April 14 would help protect NLEB summer swarming,

foraging, and travel habitat during the active season. Additionally, because development of the proposed impoundment boating access area is still in the conceptual stage, including, at a minimum, a provision to consult on site selection with the Vermont ANR and FWS before any construction activities occur, in an impoundment boating access plan, would help ensure that the effects of the proposed impoundment boating access area on NLEB and their habitats are minimized whenever and wherever the impoundment boating access area is constructed. Staff recommends the above discussed measures required by certification condition I, because they would ensure that NLEB is protected from project-related activities, at no additional cost to GMP.

### **Recreation Access**

Vermont ANR's certification condition F requires that the location of the proposed impoundment boating access area be located upstream of the dam pending private landowner approval and cultural resource consultation, and that the access area be constructed within four years of the effective date an issued license.

GMP proposes and American Whitewater recommends constructing an impoundment boating access area for recreational boaters upstream of the project dam at a location to be determined after any subsequent license is issued.

As discussed in section 3.3.5, *Recreation and Land Use*, developing an impoundment boating access plan would provide public recreational boating access at the project reservoir and provisions for operating and maintaining the facility at the project over the term of a subsequent license. Boating access is needed at the project impoundment because there are no reasonable hand-carry take-outs for the 1.1-mile Lower Wells River whitewater run, located immediately upstream of the impoundment. Incorporating BMPs that include erosion and sedimentation controls, such as installing silt fencing along the banks of the river, and revegetating areas disturbed during construction using native species, would help minimize erosion and sedimentation during construction. Additionally, including wildlife protection measures into the plan would help ensure that the effects of construction and operation of the impoundment boating access area on wildlife (including the federally endangered NLEB) and their habitats within the project area are minimized.

Therefore, we recommend GMP develop an upstream impoundment boating access plan that includes: (1) provisions to consult on site selection with the Vermont ANR and FWS before any construction activities occur; (2) an implementation and construction schedule that does not exceed four years; (3) a design plan, including the estimated length, width, and composition of the proposed access area, parking area, trail and stairway; (4) best management practices (BMPs) that include, erosion and sedimentation controls and revegetating areas disturbed during construction using native species; (5) methods for preventing the establishment of invasive plants; and (6) guidelines for detecting and treating invasive plant populations. We estimate that the annual levelized cost of developing a impoundment boating access plan would be approximately \$1,361 and conclude that the benefits of the plan outweigh the cost.

## **Measures Not Recommended**

Some of the measures proposed by GMP and recommended by Vermont ANR, would not contribute to the best comprehensive use of water resources within the Wells River and or would not result in benefits to non-power resources that would be worth its cost. The following discussion includes the basis for staff's conclusions to not recommend the measures.

### **Impoundment Drawdown Measures**

GMP proposes to continue to conduct four planned annual drawdowns each year to install and remove the downstream fish passage chute, by lowering the impoundment by about 2.6 feet (461.3 feet msl). GMP proposes to consult with the Vermont DEC regarding the timing and duration of maintenance drawdowns so as to conduct the drawdowns in a manner that is protective of nearshore terrestrial and aquatic habitat and to maintain minimum flows to the bypassed reach for the protection of aquatic habitat. In addition, GMP proposes to consult with Vermont DEC prior to conducting project maintenance or repair work that has the potential to have an adverse effect on water quality. Vermont ANR's certification condition H requires GMP to file plans with Vermont DEC for review and approval of any project maintenance or repair work, including drawdowns below the normal operating level, if the work may result in a discharge, have a material adverse effect on water quality, or cause less-than-full support of an existing use or beneficial values or use of State waters.

Our analysis indicates that consulting with Vermont DEC prior to conducting a planned drawdown of the reservoir as required by Vermont ANR's certification condition H would allow the agency to make recommendations to GMP to minimize adverse effects to aquatic resources from such maintenance drawdowns. However, obtaining Vermont DEC approval prior to performing planned or unplanned maintenance repairs as required by the certification could limit GMP's ability to complete needed repairs in a timely fashion. Therefore, we recommend that GMP consult with Vermont DEC prior to conducting a planned drawdown but do not recommend that GMP be required to develop a plan for review and approval from Vermont DEC before conducting a maintenance drawdown or completing other maintenance activities at the project. However, we recognize that developing a plan for review and approval would be included in any license issued as a condition of Vermont ANR's water quality certification.

### **Instantaneous Run-of-River Operation**

GMP proposes to continue operating the project in run-of-river mode where outflow approximates inflow. Vermont ANR's WQC condition B requires that GMP operate the project in run-of-river mode where outflow always equals inflow (rather than approximating inflow) on an instantaneous basis throughout the year except for short term, unavoidable deviations.

As discussed in section 3.3.2.2, *Environmental Effects, Project Operation and Maintenance*, Vermont ANR has not demonstrated that the project is capable of operating in an instantaneous run-of-river mode, with total outflow from the project equaling inflow on an instantaneous basis. The project is currently operated in a run-of-river mode using an automatic pond level control system. This system measures changes to the surface elevation of the impoundment, thus providing an indirect measure of changes to inflow. As inflow increases or



decreases, a certain amount of time elapses before the impoundment elevation changes, depending on the rate and magnitude of the change in inflow. Once the change in inflow causes the impoundment elevation to reach a high or low threshold, the pond level control system automatically adjusts turbine flow. Because of these technical limitations and the inherent delay associated with the system adjusting project outflow to match inflow, regular, short-term deviations from instantaneous run-of-river are unavoidable. Moreover, Vermont ANR has not described how operating the project in an instantaneous run-of-river mode would provide additional protection or benefits to aquatic resources compared to current run-of-river operation.

Continuing to operate the project such that the total outflow from the project *approximates*, rather than equals, inflow at any point in time would maintain stable impoundment elevations, which in turn would help protect fish spawning areas from becoming dewatered and limit project-related erosion along the impoundment shoreline. Operating the project in this manner would likewise ensure that downstream flows are not affected by project operation. Therefore, operating the project as run-of-river – defined as the sum of all outflows approximating the sum of all inflows at any given point in time – would provide the same level of benefits to aquatic resources upstream and downstream of the project as Vermont ANR’s instantaneous run-of-river mode of operation, and is operationally feasible.

As discussed in section 5.1.1, *Measures Proposed by GMP*, staff recommends GMP’s proposal to continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the project impoundment. Based on the technical limitations of the project described above, staff does not recommend operating the project in an instantaneous run-of-river mode, whereby outflow from the project equals inflow on an instantaneous basis, as required by Vermont ANR. We recognize that this measure would be included in any license issued as a condition of Vermont ANR’s water quality certification. To that end, we recommend that the operation compliance monitoring plan required by Vermont ANR’s condition C identify how GMP proposes to operate in instantaneous run-of-river mode, except for short-term, unavoidable deviations, throughout the year and that the plan be provided to the Commission for review and approval prior to implementation.

### **Downstream Fish Passage**

GMP proposes to operate the fish passage chute by providing flows of 10 cfs during the spring and fall, rather than continuing to provide 20 cfs during both operational periods. Vermont ANR’s certification condition D requires GMP to: (1) install and operate the downstream fish passage chute with a flow of 25 cfs from April 1 to June 1 and from September 1 to November 15; (2) continue using the 1-inch trash rack angled toward the downstream fish passage chute; (3) maintain the existing 6-foot-deep baffle curtain deployed in front of the existing intake structure; and (4) consult with the Vermont ANR on design and placement of the downstream fish passage chute should GMP seek to replace or modify the chute during the term of any subsequent license and file the proposed downstream fish passage design information with the Vermont ANR for approval prior to commencement of any work.

As discussed in section 3.2.2.2, *Environmental Effects*, operating the downstream fish passage chute does not provide any benefit to Atlantic salmon and would not provide any reasonably foreseeable benefit during the term of any subsequent license issued for the project.

All of the resident fish species found in the vicinity of the project can maintain populations entirely within freshwater and none require downstream passage to complete their life-cycle. Further, based on the FWS criteria, the 20 and 10-cfs attraction flows provided through the downstream fish passage chute under existing and proposed operation, respectively, may be ineffective at passing fish. Operating the downstream fish passage chute with a flow of 25 cfs, as required by certification condition D, may provide sufficient attraction flow for resident fish species in the project area, based on FWS's 2019 Design Criteria Manual (FWS, 2019). However, as discussed in section 3.2.2.2, *Environmental Effects*, the likelihood of fish experiencing impingement, entrainment, and turbine mortality at the project is low. Thus, operating the fish passage chute as required by certification condition D would likely have a limited effect on reducing impingement, entrainment, and turbine mortality. For these reasons, operating the downstream fish passage chute, as proposed by GMP and required by Vermont ANR, would likely provide minimal benefit to the resident fish populations upstream of the project. Therefore, GMP's proposal would not be worth the estimated levelized annual cost of \$5,817 and Vermont ANR's certification condition D would not be worth the estimated levelized annual cost of approximately \$5,961.

Even though we do not recommend Vermont ANR's certification condition D requirements, we recognize that the agency's downstream fish passage requirements, including passage flows of 25 cfs, would be included in any license issued because it is mandatory. To that end, we recommend that the operation compliance monitoring plan recommended above, include provisions for: (1) identifying how GMP would provide a 25-cfs flow through the downstream fish passage chute; (2) verifying that 25 cfs is passing through the downstream fish passage chute; and (3) describing methods for monitoring flows through the fish passage chute.

## APPENDIX I: LITERATURE CITED

- Aedo, J., M. Belk, and R. Hotchkiss. 2009. Swimming performance and morphology of Utah fishes: Critical information for culvert design in Utah streams. Brigham Young University and Utah Department of Transportation.
- APLIC (Avian Power Line Interaction Committee). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.
- APLIC and FWS (U.S. Fish and Wildlife Service). 2005. Avian Protection Plan Guidelines. Available at: [https://www.aplic.org/uploads/files/2634/APPguidelines\\_final-draft\\_Apr12005.pdf](https://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Apr12005.pdf). Accessed March 22, 2023.
- Beamish, F.H. 1978. Swimming capacity. Fish Physiology. Academic Press, NY.
- Bell, M.C. 1991. Fisheries handbook of engineering requirements and biological criteria. U.S. Army Corps of Engineers, North Pacific Division, Portland, Oregon. 380 pp.
- Census (U.S. Census Bureau). 2021 American Community Survey 5-year Estimate Detailed Tables B03002 and B17017. Available at: <https://data.census.gov>. Accessed July 14, 2023.
- CEQ (Council on Environmental Quality). 1997. Environmental Justice: Guidance under the National Environmental Policy Act. Available online at: [https://www.epa.gov/sites/default/files/2015-02/documents/ej\\_guidance\\_nepa\\_ceq1297.pdf](https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf). Accessed February 15, 2023.
- Domenici, P. and R.W. Blake. 1997. The kinematics and performance of fish fast-start swimming. The Journal of Experimental Biology 200: 1165- 1178.
- EPA (U.S. Environmental Protection Agency). 2022a. Learn About Environmental Justice. Available online at: <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>. Accessed February 15, 2023.
- \_\_\_\_\_. 2022b. EJ 2020 Glossary. Available online: <https://www.epa.gov/environmentaljustice/ej-2020-glossary>. Accessed on April 21, 2023.
- \_\_\_\_\_. 2016. Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee. Available online at: [https://www.epa.gov/sites/default/files/2016-08/documents/nepa\\_promising\\_practices\\_document\\_2016.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf). Accessed February 15, 2023.
- \_\_\_\_\_. 2013. Primary Distinguishing Characteristics of Level III Ecoregions of the Continental United States. Available online at: [https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/us/Eco\\_Level\\_III\\_description.s.doc](https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/us/Eco_Level_III_description.s.doc). Accessed on September 7, 2022.

- \_\_\_\_\_. 1986. Ambient Water Quality Criteria for Dissolved Oxygen. EPA 440/5-86-003. National Technical Information Service, Springfield, VA.
- EPRI (Electric Power Research Institute). 2003. Evaluating the effects of power plant operations on aquatic communities: Summary of impingement survival studies. Palo Alto, CA. EPRI Report No. 1007821.
- \_\_\_\_\_. 2000. Technical evaluation of the utility of intake approach velocity as an indicator of potential adverse environmental impact under Clean Water Act Section 316(b). EPRI Report 1000731. Prepared by Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- \_\_\_\_\_. 1997. Turbine entrainment and survival database – field tests. Prepared by Alden Research Laboratory, Inc., Holden, Massachusetts. EPRI Report No. TR-108630.
- \_\_\_\_\_. 1992. Fish entrainment and turbine mortality review and guidelines. Final report. United States.
- FirstLight. 2016. Evaluate upstream passage of American eel at the Turners Falls Project. Study report. February 2016.
- FGDC (Federal Geographic Data Committee). 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC. Available at: <https://www.fws.gov/media/classification-wetlands-and-deepwater-habitats-united-states>. Accessed September 9, 2022.
- Froese, R. and D. Pauley. Editors. 2010. FishBase. World Wide Web electronic publication. <http://www.fishbase.org>. Accessed March 22, 2023.
- FWS (U.S. Fish and Wildlife Service). 2023. Inactive season dates for northern long-eared bats (NLEB) in swarming/staging areas. Available at: [https://www.fws.gov/sites/default/files/documents/Inactive%20Season%20Dates%20for%20Swarming%20and%20Staging%20Areas\\_0.pdf](https://www.fws.gov/sites/default/files/documents/Inactive%20Season%20Dates%20for%20Swarming%20and%20Staging%20Areas_0.pdf). Accessed May 15, 2023.
- \_\_\_\_\_. 2023. Information for Planning and Conservation (IPaC) (updated) Official Species List for the Newbury Hydroelectric Project, FERC Project No. 5261-023. Filed September 12, 2023, in response to Commission staff's use of FWS' IPaC system. Available at: <https://ecos.fws.gov/ipac>. Accessed September 12, 2023.
- \_\_\_\_\_. 2021a. Birds of Conservation Concern 2021a. Available online at: <https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf>. Accessed September 8, 2022.
- \_\_\_\_\_. 2021b. Species Status Assessment Report for the Tricolored Bat (*Perimyotis subflavus*), Version 1.1. December 2021. Hadley, MA. Available at: <https://ecos.fws.gov/ServCat/DownloadFile/221212>. Accessed March 22, 2023.
- \_\_\_\_\_. 2020. Connecticut River basin anadromous fish restoration: coordination and technical assistance. Annual Progress Report. F-100-R-37.
- \_\_\_\_\_. 2019. Fish Passage Engineering Design Criteria. USFWS, Northeast Region R5, Hadley, Massachusetts.

- \_\_\_\_\_. 2017. Fish Passage Engineering Design Criteria. USFWS, Northeast Region R5, Hadley, Massachusetts.
- \_\_\_\_\_. 2016. Programmatic biological opinion on final 4(d) rule for the northern long-eared bat and activities excepted from take prohibitions. U.S. Fish and Wildlife Service, Midwest Regional Office. January 5, 2016. Available at: [https://www.fws.gov/midwest/endangered/mammals/nleb/bos/16\\_NLEBRange\\_Final4d01052016.pdf](https://www.fws.gov/midwest/endangered/mammals/nleb/bos/16_NLEBRange_Final4d01052016.pdf). Accessed September 9, 2022.
- \_\_\_\_\_. 2014. Northern long-eared bat interim conference and planning guidance. Available at: <https://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf>. Accessed September 9, 2022.
- GMP (Green Mountain Power Corporation). 2023. Response to request for additional information for the Newbury Project No. 5261. Filed April 28, 2023.
- \_\_\_\_\_. 2022a. Response to request for additional information for the Newbury Project No. 5261. Filed February 2, 2022.
- \_\_\_\_\_. 2022b. Response to request for additional information for the Newbury Project No. 5261. Filed March 25, 2022.
- \_\_\_\_\_. 2022c. Response to request for additional information for the Newbury Project No. 5261. Filed August 18, 2022.
- \_\_\_\_\_. 2021. Final License Application for the Newbury Hydroelectric Project No. 5261. Filed August 27, 2021.
- Hobbs, R.J. and L.F. Huenneke. 1992. Disturbance, Diversity, and Invasion: Implications for Conservation. *Conservation Biology*. 6(3):324-337.
- IWR (Institute of Water Resources, Michigan State University). 2002. RUSLE: online erosion assessment tool. <http://www.iwr.msu.edu/rusle/>. Accessed July 2023.
- Jacono, C.C., M.M. Richerson, V.H. Morgan, and I.A. Pfingsten. 2022. *Hydrilla verticillata* (L. f.) Royle: U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, FL. Available online at: <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=6>. Accessed September 9, 2022.
- Maine DACF (Maine Department of Agriculture, Conservation, and Forestry). 2022. Black Swallowwort. Available online at: [https://www.maine.gov/dacf/mnap/features/invasive\\_plants/cynanchum.htm](https://www.maine.gov/dacf/mnap/features/invasive_plants/cynanchum.htm). Accessed September 9, 2022.
- MTO (Ministry of Transportation of Ontario). 2006. Environmental guide for fish and fish habitat, Appendix 6.B: fish swimming speeds. Provincial and Environmental Planning Office, Ministry of Transportation, St. Catherines, Ontario. 5 pp.

- Missouri Department of Conservation. 2023. Tri-colored bat field guide. Available at: <https://mdc.mo.gov/discover-nature/field-guide/tri-colored-bat>. Accessed March 23, 2023.
- Morgan, V.H., E. Baker, C. Stottlemeyer, and J. Li. 2022. *Egeria densa* Planch.: U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, FL, and NOAA Great Lakes Aquatic Nonindigenous Species Information System, Ann Arbor, MI. Available online at: [https://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?Species\\_ID=1107&Potential=Y&Type=2&HUCNumber=](https://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?Species_ID=1107&Potential=Y&Type=2&HUCNumber=). Accessed September 9, 2022.
- Munger, G. 2001. *Alliaria petiolata*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available online at: <https://www.fs.usda.gov/database/feis/plants/forb/allpet/all.html>. Accessed September 9, 2022.
- Munger, G. 2002. *Lythrum salicaria*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available online at: <https://www.fs.usda.gov/database/feis/plants/forb/lytsal/all.html>. Accessed September 9, 2022.
- National Geographic. 2023. The New England Colonies and the Native Americans. Available online at: <https://education.nationalgeographic.org/resource/new-england-colonies-and-native-americans/>. Accessed April 12, 2023.
- NPS (National Park Service). 2022. Nationwide Rivers Inventory – Vermont Segments. Available online at: <http://www.nps.gov/nrcr/programs/rtca/nri/states/vt.html>. Accessed July 1, 2022.
- NRCC (Northeast Regional Climate Center). 2021. NOAA Online Weather Data for the National Weather Service Station at St. Johnsbury, VT. Available online at: <http://www.nrcc.cornell.edu/wxstation/nowdata.html>
- NRCS (Natural Resources Conservation Service, United States Department of Agriculture). 2021. Web Soil Survey. Available online at: <https://websoilsurvey.sc.egov.usda.gov/>. Accessed April 14, 2021.
- Peake, S.J. 2004. An evaluation of the use of critical swimming speed for determination of culvert water velocity criteria for Smallmouth Bass. Transactions of the American Fisheries Society 133: 1472-1479.
- Redstart (Redstart Forestry and Consulting). 2009. Wells River Watershed River Corridor Management Plan. Wells River Watershed of the Connecticut River Basin. Orange and Caledonia Counties, VT.
- \_\_\_\_\_. 2016. Upper Wells River Basin Stream Geomorphic Assessment and River Corridor Plan. Groton, Ryegate, Newbury, and Topsham, Vermont 2015-2016.

- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bulletin of the Fisheries Research Board of Canada, Bulletin 191, Ottawa.
- Rochester, H., Jr., T. Lloyd, and M. Farr. 1984. Physical impacts of small scale hydroelectric facilities and their effects on fish and wildlife. FWS/OBS-84/19. U.S. Fish and Wildlife Service. 191 pp.
- Schilt, C.R. 2007. Developing fish passage and protection and hydropower dams. Applied Animal Behaviour Science 104(3-4): 295-325.
- Swearingen, J. B. Slattery, K. Reshetiloff, and S. Zwicker. 2014. Plant Invaders of Mid-Atlantic Natural Areas, 5<sup>th</sup> ed. National Park Service and U.S. Fish and Wildlife Service. Washington, D.C. 168 pp.
- Therrien, J, and G. Bourgeois. 2000. Fish Passage at Small Hydro Sites. Report by Genivar Consulting Group for CANMET Energy Technology Centre, Ottawa, 114 p.
- TransCanada. 2016. ILP study 17: Upstream passage of riverine fish species assessment. Final study report. November 2016.
- Vermont Agency of Agriculture, Food, and Markets. 2023. Vermont Agency of Agriculture, Food & Markets; Quarantine #3 -Noxious Weeds. Available online at: [https://agriculture.vermont.gov/sites/agriculture/files/documents/PHARM/Plant\\_Pest/NoxiousWeedsQuarantine.pdf](https://agriculture.vermont.gov/sites/agriculture/files/documents/PHARM/Plant_Pest/NoxiousWeedsQuarantine.pdf). Accessed February 10, 2023.
- Vermont ANR (Vermont Agency of Natural Resources). 2023. Vermont Integrated Watershed Information System. Available online at: <https://anrweb.vt.gov/DEC/IWIS/>. Accessed May 10, 2023.
- \_\_\_\_\_. 2020a. Stevens, Wells, Waits, Ompompanoosuc, and Connecticut River Direct Tributaries, Basin 14 Tactical Basin Plan. December 2020.
- \_\_\_\_\_. 2020b. Natural Resources Atlas. Available online: <https://anrmaps.vermont.gov/websites/anra5/>. Accessed September 7, 2022.
- Vermont Fish and Wildlife Department (Vermont FWD). 2022a. Wells River Streambank Management Area. Available online at: [https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Fish/SMA-maps/WellsRiverSMA\\_Final.pdf](https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Fish/SMA-maps/WellsRiverSMA_Final.pdf). Accessed September 7, 2022.
- \_\_\_\_\_. 2022b. Got Bats?. Available online at: <https://vtfishandwildlife.com/learn-more/living-with-wildlife/got-bats>. Accessed September 7, 2022.
- \_\_\_\_\_. 2022c. Reptiles and Amphibians of Vermont, March 13, 2022. Available online at: <https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Learn%20More/Library/REPORTS%20AND%20DOCUMENTS/NONGAME%20AND%20NATURAL%20HERITAGE/SPECIES%20LISTS/Reptiles%20and%20Amphibians%20of%20Vermont.pdf>. Accessed September 7, 2022.
- \_\_\_\_\_. 2022d. Birds of Vermont, March 13, 2022. Available online at: <https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Learn%20More/Library/REPORTS%20AND%20DOCUMENTS/NONGAME%20AND%20NATURAL%20H>



- [ERITAGE/SPECIES%20LISTS/Birds%20of%20Vermont.pdf](#). Accessed September 7, 2022.
- \_\_\_\_\_. 2022e. Endangered and Threatened Animals of Vermont, February 10, 2022. Available online at:  
<https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Learn%20More/Library/REPORTS%20AND%20DOCUMENTS/NONGAME%20AND%20NATURAL%20HERITAGE/ENDANGERED%2C%20THREATENED%20AND%20RARE%20SPECIES%20LISTS/Endangered%20and%20Threatened%20Animals%20of%20Vermont.pdf>. Accessed September 7, 2022.
- Webb, P. W. 1998. Swimming. *In* The Physiology of Fishes (ed. D. H. Evans), pp.3 -24. Boca Raton: CRC Press.
- Wisconsin DNR (Wisconsin Department of Natural Resources). 2013. Wisconsin Northern Long-Eared Bat Species Guidance. Bureau of Natural Heritage Conservation, Wisconsin Department of Natural Resources, Madison, Wisconsin. PUB-ER-70. Available online at: <https://dnr.wi.gov/files/PDF/pubs/er/ER0700.pdf>. Accessed September 9, 2022.
- Xerces Society. 2022. Monarchs in Decline. Available online at:  
<https://xerces.org/monarchs/conservation-efforts>. Accessed September 8, 2022.

## **APPENDIX J: GLOSSARY OF TERMS**

Anadromous – A life history strategy whereby adult fish species spend most of their time (feeding and overwintering) at sea but return to freshwater to reproduce.

Anticipated reserve margin – The unused electric generating capacity at the time of peak electrical demand. Expressed as a percentage, the anticipated reserve margin designates available generating capacity in excess of expected peak demand.

Approach velocity – The velocity of water as it approaches the trash rack and is defined as the average water velocity measured a few inches in front of an intake screening device (e.g., trash rack) (EPRI, 2000).

Burst swim speed – The highest speeds attainable by fish and can be maintained for brief periods, usually lasting up to a few seconds (Beamish, 1978).

Capacity benefit – The benefit a project receives for providing capacity to the grid, which may be in the form of a dependable capacity credit or credit for monthly capacity provided.

Coldwater fishery use – The ability of a waterbody to support a balanced, integrated, adaptive community of fish species which thrive in relatively cold water, generally including any of the following: (i) trout; (ii) salmon; (iii) whitefish; or (iv) cisco (Mich. Admin. Code R. 323.1043 - Definitions; A to L).

Diadromous – Fish that migrate between freshwater and saltwater to complete part of their lifecycle.

Diameter at breast height – The diameter of a tree as measured about 4 to 4.5 feet above the ground.

Environmental Justice – The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Hibernaculum – A place where a bat hibernates over the winter, such as in a cave.

Noxious Weed/Plant – Any plant in any stage of development, including all current and subsequent subspecies, varieties, and cultivars, and parasitic plants whose presence, whether direct or indirect, is detrimental to the environment, crops or other desirable plants, livestock, land, or other property, or is injurious to the public health or the economy generally (Vermont Agency of Agriculture, Food, and Markets, 2023).

Parturition – The process of giving birth that occurs at the end of the gestation period, or pregnancy.

Smolts – Outmigrating juvenile salmon.

Stratification – occurs when water bodies form distinct thermal layers, including a warm surface layer (epilimnion), a middle layer (metalimnion) with an abrupt change in temperature (thermocline), and a cool dense lower layer (hypolimnion). Persistent stratification can result in low DO concentrations in the lower part of the water column.

## **APPENDIX K: LIST OF PREPARERS**

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Adam Peer – Project Coordinator, Geology and Soils, Aquatic Resources, (Fisheries Biologist; B.S., Biology; M.S., Fisheries Science; Ph.D., Marine, Estuarine, and Environmental Science)

Monte Terhaar – Need for Power, Engineering and Developmental Analysis (Environmental Engineer; M.S., Environmental Engineering; M.S., Aquatic/Fisheries Biology)

Dustin Wilson – Recreation, Land Use, Cultural Resources, Environmental Justice (Outdoor Recreation Planner; Ph.D., Parks, Recreation, and Tourism Management; M.P.A., Public Affairs; B.S., Parks and Recreation Management)

**PROGRAMMATIC AGREEMENT  
BETWEEN  
THE FEDERAL ENERGY REGULATORY COMMISSION  
AND THE  
VERMONT STATE HISTORIC PRESERVATION OFFICE  
FOR MANAGING HISTORIC PROPERTIES THAT MAY BE AFFECTED  
BY ISSUING A NEW LICENSE TO GREEN MOUNTAIN POWER  
CORPORATION FOR THE CONTINUED OPERATION OF THE  
NEWBURY HYDROELECTRIC PROJECT  
IN ORANGE COUNTY, VERMONT  
(FERC No. 5261-023)**

**WHEREAS**, the Federal Energy Regulatory Commission or its staff (hereinafter, "Commission") is proposing to act on an application for a subsequent license filed by Green Mountain Power Corporation (hereinafter, "Licensee") for the continued operation of the Newbury Hydroelectric Project No. 5261 (hereinafter, "Project") as authorized by Part I of the Federal Power Act, 16 U.S.C. sections 791(a) through 825(r), *as amended*; and

**WHEREAS**, the Commission has determined that issuing a subsequent license may affect properties included in or eligible for inclusion in the National Register of Historic Places (hereinafter, "historic properties"); and

**WHEREAS**, section 3.3.7, *Cultural Resources*, of the associated Environmental Assessment for the Hydropower License for the Newbury Hydroelectric Project, dated September 26, 2023, provides a description of the Project, the Project's area of potential effects (hereinafter, "APE"), historic properties, and anticipated effects identified as of the date of this Programmatic Agreement; and

**WHEREAS**, the APE for the Project is defined as: (1) the lands enclosed by the project boundary and lands located within 10 meters (about 33 feet) of the edge of the riverbank as measured from the top of the bank, whichever is greater, with the exception of state roadways, differing from the 10-meter buffer in locations where either the roadway or other infrastructure associated with the hydroelectric project necessitate a larger or smaller buffer around the project area; (2) along the southern bank of the impoundment where Route 302 is closer than 10 meters, the APE extends to the near edge of the roadway (in some areas, the roadway is as close as 3 meters from the edge of the impoundment); (3) the eastern portion of the APE encompasses

the dam and other infrastructure associated with the project and likewise extends to the edge of the roadway; (4) the downstream (eastern) limit of the APE is just past the tailrace of the powerhouse, where it is presumed that natural flow of the river is not influenced by the dam or the impoundment; (5) the upstream (western) limit of the APE is the presumed upstream edge of the impoundment, where a natural cascade spills into the reservoir; and

**WHEREAS**, the Commission has consulted with the Vermont Historic Preservation Officer (hereinafter, "Vermont SHPO") pursuant to 36 C.F.R. section 800.14(b) of the Advisory Council on Historic Preservation's (hereinafter, "Advisory Council") regulations (36 C.F.R. Part 800) implementing section 106 of the National Historic Preservation Act (54 U.S.C. § 306108; hereinafter, "section 106"); and

**WHEREAS**, the Licensee has participated in the consultation and has been invited to concur in this Programmatic Agreement; and

**WHEREAS**, the Commission will require the Licensee to implement the provisions of this Programmatic Agreement as a condition of issuing a subsequent license for the Project; and

**NOW THEREFORE**, the Commission and the Vermont SHPO agree that the Project will be administered in accordance with the following stipulations in order to satisfy the Commission's section 106 responsibilities during the term of the Project's license.

## **S T I P U L A T I O N S**

The Commission will ensure that, upon issuing a license for this Project, the Licensee implements the following stipulations. All stipulations that apply to the Licensee will similarly apply to any and all of the Licensee's successors. Compliance with any of the following stipulations does not relieve the Licensee of any other obligations it has under the Federal Power Act, the Commission's regulations, or its license.

## **I. HISTORIC PROPERTIES MANAGEMENT PLAN**

- A. Within one year of license issuance for the Project, the Licensee will file with the Commission for approval an Historic Properties Management Plan (hereinafter, "HPMP") specifying how historic properties will be managed in the Project's APE, as defined in 36 C.F.R. section 800.16(d), during the term of the license. During the development of the HPMP, the Licensee will consult with the Vermont SHPO, as defined in 36 C.F.R. section 800.2(c).<sup>1</sup> The Licensee will seek the Vermont SHPO's concurrence on the HPMP.
- B. The Licensee will take into account the "Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines" (Federal Register, September 29, 1983, Vol. 48, No. 190, Part IV, pp. 44716-44740; hereinafter, "Secretary's Standards") and the "Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects,"<sup>2</sup> while developing the HPMP. The HPMP will be developed by, or developed under the direct supervision of, a person or persons who meet(s), at a minimum, the professional qualifications standards for architectural history or archaeology in the Secretary's Standards (48 FR 44738-39). To develop the HPMP, the individual or individuals need not possess both qualifications.
- C. The HPMP will include, at a minimum, provisions for:
1. identification of the APE for the Project and inclusion of a map or maps that clearly show the APE in relation to the Project boundary;

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<sup>1</sup> The Licensee must allow the consulting parties at least 30 days to respond to a request for a review of a finding or determination involving the HPMP and during the interim period, pursuant to Stipulation III of this Programmatic Agreement.

<sup>2</sup> This document was issued jointly by the Commission and the Advisory Council on May 20, 2002. The document is available at:  
<https://www.ferc.gov/sites/default/files/2020-04/DevelopmentofHistoricPropertiesManagementPlans.pdf>



2. completion, if necessary, of identification of historic properties within the Project's APE;
3. continued use and maintenance of historic properties;
4. treatment of historic properties threatened by Project-induced shoreline erosion,<sup>3</sup> other Project-related ground-disturbing activities, and vandalism;
5. consideration and implementation of appropriate treatment that would minimize or mitigate unavoidable adverse effects on historic properties;
6. treatment and disposition of human remains that may be discovered, taking into account any applicable State laws and the Advisory Council's "Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects," February 23, 2007;
7. discovery of previously unidentified properties during Project operations;
8. public interpretation of the historic and archeological properties at the Project;
9. a list of activities (i.e., routine repair, maintenance, and replacement in kind at the Project) not requiring consultation with the Vermont SHPO because these activities would have little or no potential effect on historic properties;
10. a procedure to address effects on historic properties in the event of a Project emergency; and
11. a review of the HPMP by the Licensee and the Vermont SHPO, to ensure that the information continues to assist the Licensee in managing historic properties and updating the HPMP based on agency and tribal consultations.

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<sup>3</sup> Project-induced shoreline erosion does not include shoreline erosion attributable to flood flows or phenomena, such as wind driven wave action, erodible soils, and loss of vegetation due to natural causes.

## **II. HPMP REVIEW AND IMPLEMENTATION**

- A. The Licensee will submit the HPMP, along with documentation of the views of the Vermont SHPO to the Commission for review and approval.
- B. If the Vermont SHPO has concurred with the HPMP and the Commission determines that the HPMP is adequate, the Commission will forward a copy of the HPMP, along with the views of the Vermont SHPO, to the Advisory Council for filing.
- C. If the Vermont SHPO has not concurred with the HPMP, or the Commission finds the HPMP inadequate, the Commission will consult with the Licensee and the Vermont SHPO to seek agreement on the HPMP. If concurrence is not reached within 45 days, the Commission will request that the Advisory Council enter into consultation to seek agreement on the HPMP.
  - 1. If agreement is reached on the HPMP, the Commission will forward a copy of the revised HPMP to the Advisory Council for filing.
  - 2. If agreement on the HPMP cannot be reached among the Commission, the Vermont SHPO, and the Licensee, then the Commission will request that the Advisory Council comment pursuant to Stipulation IV.B of this Programmatic Agreement.
- D. The Licensee will submit an annual report with the Vermont SHPO on activities conducted under the implemented HPMP. The report will contain a detailed summary of any cultural resources work conducted during the preceding year; if no work was completed, a letter from the Licensee will be prepared to that effect, and will satisfy the intent of this stipulation.

## **III. INTERIM TREATMENT OF HISTORIC PROPERTIES**

- A. After a license for the Project has been issued, but before the HPMP has been approved by the Commission (hereinafter, “the Interim”), the Licensee will

consult with the Vermont SHPO regarding the effects of the following actions that may be implemented in the Interim:

1. all Project-related activities, including recreational developments, that require ground-disturbance;
  2. non-routine maintenance, new construction, demolition, or rehabilitation of Project-related National Register-eligible structures; and
  3. Project-induced shoreline erosion of archeological sites not attributable to flood flows or phenomena, such as wind-driven wave action, erodible soils, and loss of vegetation due to natural causes.
- B. Consultation will be in accordance with 36 C.F.R. sections 800.4 and 800.5, with the Licensee acting as the Agency Official. If the Licensee and the Vermont SHPO agree that the activity will not adversely affect historic properties, the Licensee may proceed in accordance with any agreed-upon treatment measures or conditions.
- C. If either the Licensee or the Vermont SHPO determines that the activity will have an adverse effect on a historic property, and the affected property is a National Historic Landmark, the Licensee will submit the matter to the Commission, which will initiate the process set forth at 36 C.F.R. section 800.6. Otherwise, the Licensee and the Vermont SHPO will consult to develop a strategy for avoiding or mitigating such adverse effects. If the Licensee and the Vermont SHPO can reach agreement, the Licensee will implement the agreed-upon strategy. If they disagree, the Licensee will submit the matter to the Commission, which will initiate the process set forth at 36 C.F.R. sections 800.6 and 800.7(a) through (c)(3).

#### **IV. DISPUTE RESOLUTION**

- A. If at any time during implementation of this Programmatic Agreement and the resulting HPMP, the Licensee, the Vermont SHPO, or the Advisory Council objects to any action or any failure to act pursuant to this Programmatic

Agreement or the HPMP, they may file written objections with the Commission. In the event a written objection is filed with the Commission, the Commission will follow the steps listed below.

1. The Commission will consult with the objecting party, and with other parties as appropriate, to resolve the objection.
2. The Commission may initiate, on its own, such consultation to remove any of its objections.

B. If the Commission determines that the objection cannot be resolved, the Commission will forward all documentation relevant to the dispute to the Advisory Council and request that the Advisory Council comment. Within 30 days after receiving all pertinent documentation, the Advisory Council will either:

1. provide the Commission with recommendations, which the Commission will take into account in reaching a final decision regarding the dispute; or
2. notify the Commission that it will comment pursuant to 36 C.F.R. sections 800.7(c)(1) through (c)(3) of the National Historic Preservation Act, and proceed to comment.

C. The Commission will take into account any Advisory Council comment, provided in response to such a request, with reference to the subject of the dispute, and will issue a decision on the matter. The Commission's responsibility to carry out all actions under this Programmatic Agreement that are not the subject of dispute will remain unchanged.

## **V. AMENDMENT AND TERMINATION OF THIS PROGRAMMATIC AGREEMENT**

A. The Commission, the Licensee, or the Vermont SHPO may request that this Programmatic Agreement be amended, whereupon these parties will consult in accordance with 36 C.F.R. section 800.14(b) to consider such amendment.

- B. The Commission or the Vermont SHPO may terminate this Programmatic Agreement by providing 30 days written notice to the other parties, provided that the Commission, Licensee, and Vermont SHPO consult during the 30-day notice period in order to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the Commission will comply with 36 C.F.R. sections 800.3 through 800.7(c)(3), with regard to individual actions covered by this Programmatic Agreement.

## **VI. DURATION OF THIS PROGRAMMATIC AGREEMENT**

This Programmatic Agreement shall continue in full force for the term of the license and any subsequent annual license.

Execution of this Programmatic Agreement, and its subsequent implementation, is evidence that the Commission has satisfied its responsibilities pursuant to section 106 of the National Historic Preservation Act, *as amended*, for all individual actions carried out under the license. Provided, however, that unless and until the Commission issues a license for the Project and this Programmatic Agreement is incorporated by reference therein, this Programmatic Agreement has no independent legal effect for any specific license applicant or Project.

Programmatic Agreement  
Project No. 5261-023

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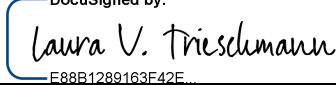
**FEDERAL ENERGY REGULATORY COMMISSION**

By: **VINCENT  
YEARICK** Digitally signed by  
VINCENT YEARICK  
Date: 2023.11.28  
11:28:44 -05'00' Date: \_\_\_\_\_  
Vince Yearick, Director  
Division of Hydropower  
Licensing

Programmatic Agreement  
Project No. 5261-023

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**VERMONT STATE HISTORIC PRESERVATION OFFICE**

DocuSigned by:  
  
By: E88B1289163F42E... Date: 11/29/2023  
Laura V. Trieschmann  
Vermont State Historic Preservation Office



Programmatic Agreement  
Project No. 5261-023

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**CONCUR: GREEN MOUNTAIN POWER**

By:  Date: DEC 08, 2023

John Tedesco

Green Mountain Power Corporation

186 FERC ¶ 62,163  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Green Mountain Power Corporation

Project No. 5261-023

ORDER ISSUING SUBSEQUENT LICENSE

(March 28, 2024)

**INTRODUCTION**

1. On August 27, 2021, Green Mountain Power Corporation (GMP) filed pursuant to Part I of the Federal Power Act (FPA),<sup>1</sup> an application for a subsequent license to continue operating and maintaining the 365-kilowatt (kW)<sup>2</sup> Newbury Hydroelectric Project No. 5261 (Newbury Project, or project). The project is located on the Wells River in the town of Newbury in Orange County, Vermont.<sup>3</sup> The project does not occupy federal land.

2. As discussed below, this order issues a subsequent license for the project.

**BACKGROUND**

3. The Commission issued the original license for the project on September 8, 1983, and the license expired on August 31, 2023.<sup>4</sup> Since the expiration date, GMP has

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<sup>1</sup> 16 U.S.C. §§ 791(a)–825(r).

<sup>2</sup> 145 FERC ¶ 62,084. The Commission issued an order on November 4, 2013, authorizing an installed capacity of 365 kW after permitting the licensee to replace the two main turbine-generator units with a single main turbine-generator unit with a capacity of 315 kW, and to correct an error in the reported capacity of the minimum flow turbine from 30 to 50 kW.

<sup>3</sup> Because the project is located on a stream over which Congress has jurisdiction under the Commerce Clause, affects interstate commerce through its connection to an interstate power grid, and involves construction after 1935, it is required to be licensed by the Commission pursuant to section 23(b)(1) of the Federal Power Act. *See* 16 U.S.C. § 817(1); *see also*, *Aquenergy Systems, Inc.*, 39 FERC ¶ 61,178 (1987), *aff'd Aquenergy Systems, Inc v. FERC*, 857 F.2d 227 (4th Cir. 1988).

<sup>4</sup> *Newbury Hydro Co.*, 24 FERC ¶ 62,275 (1983). The license has been transferred

operated the project pursuant to section 16.21 of the Commission's regulations, pending the disposition of the application.<sup>5</sup>

4. On November 10, 2021, the Commission issued a public notice that was published in the *Federal Register*, accepting the application for filing, and setting January 9, 2022, as the deadline for filing motions to intervene and protests.<sup>6</sup> The Vermont Agency of Natural Resources (Vermont ANR) filed a timely motion to intervene.<sup>7</sup> The Connecticut River Conservancy filed a late motion to intervene on January 11, 2022, which was granted.<sup>8</sup> American Whitewater filed a late motion to intervene on June 3, 2022, which was also granted.<sup>9</sup> None of the intervenors oppose relicensing the project.

5. On April 6, 2022, the Commission issued a public notice that was published in the *Federal Register* indicating the application was ready for environmental analysis, and setting June 5, 2022, as the deadline for filing comments, recommendations, terms and conditions, and prescriptions.<sup>10</sup> The U.S. Department of the Interior (Interior) filed a reservation of authority to prescribe fishways on June 3, 2022. The Vermont State

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twice. In 2015, the license was transferred from Newbury Hydro Company to Newbury Hydro Company, LLC. *Newbury Hydro Co.*, 150 FERC ¶ 62,210 (2015). In 2016, the license was transferred from Newbury Hydro Company, LLC to Green Mountain Power Corporation. *Newbury Hydro Co., LLC*, 157 ¶ 62,133 (2016).

<sup>5</sup> 18 C.F.R. § 16.21 (2023); *see also* Commission staff's September 21, 2023 Notice of Authorization for Continued Project Operation.

<sup>6</sup> 86 Fed. Reg. 64,193 (Nov. 17, 2021). The Commission's Rules of Practice and Procedure provide that if a filing deadline falls on a Saturday, Sunday, holiday, or other day when the Commission is closed for business, the filing deadline does not end until the close of business on the next business day. 18 C.F.R. § 385.2007(a)(2) (2023). Because the 60-day filing deadline fell on a Sunday (i.e., January 9, 2022), the filing deadline was extended until the close of business on Monday, January 10, 2022.

<sup>7</sup> Timely, unopposed motions to intervene are granted by operation of Rule 214(c)(1) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(c)(1) (2023).

<sup>8</sup> *See* January 31, 2022, Notice Granting Late Motion to Intervene.

<sup>9</sup> *See* August 4, 2022, Notice Granting Late Motion to Intervene.

<sup>10</sup> 87 Fed. Reg. 21,655 (Apr. 12, 2022). Because the 60-day filing deadline fell on a Sunday (i.e., June 5, 2022), the filing deadline was extended until the close of business on Monday, June 6, 2022. 18 C.F.R. § 385.2007(a)(2) (2023).

Historic Preservation Office (Vermont SHPO), Vermont ANR, and American Whitewater filed comments and recommendations.

6. Commission staff issued an environmental assessment (EA) on September 26, 2023, analyzing the effects of the proposed project and alternatives to it, and setting a filing deadline of October 26, 2023, for comments. No comments were filed.

7. The interventions, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue this license.

## **PROJECT DESCRIPTION AND OPERATION**

### **A. Project Area**

8. The 18-mile-long Wells River begins at the outlet of Lake Groton, flows south into Ricker Pond, and then continues southeast, joining the Connecticut River at the Village of Wells River, Vermont. The Wells River headwaters are located in Groton State Forest just west of Peacham, Vermont. The project is approximately 0.9 river miles upstream of the confluence of the Wells River with the Connecticut River. The Wells River watershed has a total drainage area of approximately 102 square miles, out of which 100 square miles (98%) is the Newbury Project dam drainage area.

9. The Newbury Project and the Wells River Project (FERC Exemption No. 4770) are the only hydroelectric projects located on the Wells River. There are also four other dams on the Wells River used for recreation and managed by the Vermont Department of Environmental Conservation (Vermont DEC).<sup>11</sup>

### **B. Project Facilities**

10. The Newbury Project dam is a 26-foot-high, 90-foot-long concrete gravity structure that includes a 73.3-foot-long spillway with a crest elevation of 458.9 feet, topped with two 5-foot-high (elevation 463.9 feet) pneumatic crest gates.<sup>12</sup> At a normal water surface elevation of 463.9 feet, the impoundment has a surface area of 11.4 acres. A 4-foot-wide, 8-foot-long steel sluice box, on the south side of the spillway and adjacent to the crest gates, serves as a downstream fish passage chute. Water from the spillway

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<sup>11</sup> The four other dams impound Lake Groton, Ricker Pond, Noyes Pond, and Ticklenaked Pond.

<sup>12</sup> Unless otherwise stated, all elevations in this order are referenced to National Geodetic Vertical Datum of 1929 (NGVD 29).

and sluice box passes into a 590-foot-long bypassed reach, which then connects to the project tailrace, and finally into the Wells River.

11. Water can be released from the impoundment via the spillway, sluice box, or an 11.2-foot-wide, 9-foot-long intake structure, located on the south end of the dam. In front of the intake structure there is an 18-foot-wide, 6-foot-deep baffle, and a 10-foot-wide, 18.5-foot-high angled trash rack, with 1-inch clear bar spacing. The intake leads to a 5-foot-diameter underground penstock (main penstock). Flows through the main penstock are regulated by a 6-foot-wide by 6-foot-high slide gate, which is automatically operated based on the impoundment elevation. The main penstock extends about 435 feet downstream of the dam and connects to a 0.315-megawatt (MW) main turbine generating unit located inside a brick masonry mill building.<sup>13</sup> Flows from the main turbine are passed to a 125-foot-long tailrace canal, which then joins the downstream end of the bypassed reach of the Wells River. About 75 feet downstream from the dam, the main penstock bifurcates to a 2.5-foot-diameter, 25-foot-long penstock which connects to a 0.05-MW minimum flow turbine generating unit.<sup>14</sup> A 5-foot-wide by 7-foot-high knife gate regulates flows through the minimum flow turbine, which are passed into the 590-foot-long bypassed reach.

12. Project power is transmitted through two transmission lines: an approximately 410-foot long, 480-volt underground transmission line from the minimum flow turbine generator unit to a pole mounted step-up transformer bank located adjacent to a non-project section of the mill building, and a 130-foot-long, 480-volt underground line from the powerhouse to the same pole-mounted transformer bank. A 7-foot-long, above-ground line extends from the pole-mounted transformer bank to a utility pole where it connects to the grid.

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<sup>13</sup> The project powerhouse is located on the lower level of the non-project former Adams Paper Company Mill building. GMP leases a 32-foot by 36-foot section of the lower level of the mill building to house the main turbine generator unit, and a 32-foot by 36-foot section of the upper level to house switch gear for the main unit and provide office space.

<sup>14</sup> The minimum flow turbine generator unit is located outside on the bank of the bypassed reach. The controls for the minimum flow unit switchgear, and for the pneumatic crest gates on the dam are located in an 8-foot by 24-foot building adjacent to the minimum flow unit and owned by GMP. A 5-foot by 4-foot gatehouse building, also adjacent to the minimum flow unit, houses controls for the minimum flow turbine knife gate.

### **C. Project Boundary**

13. The current project boundary includes a total of 14.44 acres and follows the normal water surface elevation around the west end of the reservoir, a series of metes and bounds on the east end of the reservoir, and a series of metes and bounds which enclose the mill building, project works, tailrace, and most of the transmission lines.<sup>15</sup> GMP leases from GRE, LLC, the project land, dam, and a mill building that encloses generating equipment.

14. As discussed below, GMP proposes to revise the project boundary to fully enclose the project's two transmission lines and remove portions of the mill building that do not include generating equipment. The change would result in the removal of 0.98 acres from the existing project boundary. The revised project boundary, as estimated by staff, would encompass 13.46 acres.<sup>16</sup>

### **D. Current Project Operation**

15. The project operates in run-of-river mode such that outflow from the project approximates inflow on a continuous basis.<sup>17</sup> GMP meets this requirement by

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<sup>15</sup> The number of acres in the current project boundary is a staff estimate based on information provided in the final license application and a letter filed by GMP on February 2, 2022. In the final license application, GMP indicates that the proposed project boundary includes 13.63 acres of land. Compared to the current project boundary, the proposed project boundary removes 1.04 acres associated with non-project buildings. The proposed project boundary also adds 0.23 acres associated with a hand-carry boating access area that GMP proposed, in the final license application, to provide recreational boating access.

<sup>16</sup> On March 31, 2022, GMP filed revised Exhibit G maps that fully encompass the project transmission lines within the proposed project boundary. Using Geographic Information System data, staff calculated that the project boundary shown in the March 31, 2022 Exhibit G maps encompasses 13.69 acres. These maps included 0.23 acres of land for the hand-carry boating access area proposed in the final license application. Subsequently, in a letter filed on February 2, 2022, GMP indicated that the 0.23-acre site for the proposed hand-carry boating access area was no longer feasible for development due to the presence of cultural resources, and any alternative site would be determined in consultation. Therefore, the 0.23 acres is not included in staff's estimate of 13.46 acres of land within the proposed project boundary.

<sup>17</sup> The current license does not include an article requiring run-of-river operation. However, GMP currently operates the project in a run-of-river mode, where outflow from the project approximates inflow.

minimizing fluctuations in the impoundment elevation. The main turbine generating unit is automatically operated and utilizes flows between 20 cfs and 134 cfs. Water released from the main unit bypasses a 590-foot-long section of the Wells River between the dam and the mill building. GMP provides a minimum flow to the bypassed reach of at least 50 cfs from April 15 to June 10, and at least 25 cfs during the remainder of the year (or inflow to the impoundment, whichever is less).<sup>18</sup> Minimum flows in the bypassed reach are provided via a combination of discharge from a minimum flow turbine, spill over the pneumatic crest gate on the spillway, and discharge through the downstream fish passage chute. GMP also provides a year-round aesthetic spill flow of at least 5 cfs over the dam.<sup>19</sup>

16. The downstream fish passage chute is seasonally installed and operated by passing a flow of 20 cfs during the spring (April 1 to June 1) and fall (September 1 to November 15). The chute is installed by removing a 2-foot by 4-foot section of the pneumatic crest gate and attaching an 8-foot-long by 4-foot-wide sluice box that extends to the plunge pool. The impoundment is seasonally drawn down four times a year by 2.6 feet to install and remove the downstream fish passage chute. These drawdowns last about 6 hours, and minimum flows to the bypassed reach are provided through the minimum flow turbine during these drawdowns.

17. The minimum flow turbine is operated manually in full-off (gate closed) or full-on (gate open) mode which discharges 30 cfs into the bypassed reach. When the river flow is too low to operate the minimum flow unit (less than 30 cfs), GMP maintains the minimum flow in the bypassed reach by raising the impoundment elevation to send flow over the spillway. GMP can also use the downstream fish passage chute to provide up to 20 cfs to the bypassed reach.

18. GMP monitors operation using a Supervisory Control and Data Acquisition (SCADA) system that collects and records impoundment elevation, tailrace elevation, and turbine output at 15-minute intervals. By monitoring this data, GMP can adjust generation to minimize impoundment fluctuations and provide required minimum flow releases.

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<sup>18</sup> The existing minimum flows are required by Article 25 of the current license. *See Newbury Hydro Company*, 24 FERC ¶ 62,275, at Art. 25 (1983).

<sup>19</sup> Although GMP provides the 5-cfs flow, the current license does not include an article requiring it.



**E. Proposed Operation and Environmental Measures**

19. To protect aquatic resources and water quality, GMP proposes to continue operating the project in a run-of-river mode, such that outflow approximates inflow on a continuous basis.
20. To protect water quality, GMP proposes to consult with Vermont ANR prior to conducting maintenance and repair work that has the potential to adversely affect water quality.
21. To protect water quality and aquatic resources, GMP proposes to consult with Vermont ANR regarding the timing and duration of periodic maintenance drawdowns of the impoundment and to maintain minimum flow requirements to the bypassed reach during any maintenance drawdowns.
22. To protect water quality and aquatic resources, GMP proposes to provide a minimum flow of 37 cfs at all times to the bypassed reach (instead of the current flow release of 50 cfs from April 15 to June 10 and 25 cfs the remainder of the year) via a combination of discharge from the minimum flow turbine, spill over the pneumatic crest gate on the spillway of the dam, and/or discharge through the downstream fish passage chute.
23. To protect fishery resources, GMP proposes to continue to seasonally install and operate the downstream fish passage chute during the spring (April 1 to June 1) and fall (September 1 to November 15).
24. To maintain fish passage downstream and provide operational flexibility, GMP proposes to provide 10 cfs through the downstream fish passage chute (instead of the current amount of 20 cfs) during the spring and fall.<sup>20</sup>
25. To document compliance with the operating requirements of a subsequent license, GMP proposes to develop a flow management and monitoring plan, in consultation with the Vermont ANR, detailing how GMP will operate in run-of-river mode and comply with minimum flow and aesthetic spill flow requirements.

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<sup>20</sup> The 10-cfs flow provided through the downstream fish passage chute would contribute to the proposed 37-cfs minimum flow in the bypassed reach, with an additional 30 cfs provided by the minimum flow unit, or an additional 27 cfs passed over the dam when the minimum flow unit is off.

26. To protect the endangered northern long-eared bat (*Myotis septentrionalis*), GMP proposes to limit the removal of trees at the project greater than or equal to 4 inches in diameter at breast height to the period of November 1 through April 14.<sup>21</sup>
27. To enhance aesthetics at the dam, GMP proposes to provide a 10-cfs aesthetic spill flow over the dam (instead of the current amount of 5 cfs) at all times.
28. To enhance recreation, GMP proposes to construct a hand-carry boating access area for recreational boaters upstream of the project dam, if feasible, at a location to be determined.
29. To protect cultural resources, GMP plans to develop a Historic Properties Management Plan (HPMP).

### **SUMMARY OF LICENSE REQUIREMENTS**

30. This license, which authorizes 0.365-MW of renewable energy generation capacity, requires most of the proposed measures listed above, the conditions required by the Vermont DEC<sup>22</sup> water quality certification (Appendix A), and the staff-recommended measures described below. Combined, these measures will protect geologic and soil resources, aquatic resources, terrestrial resources, water quality, threatened and endangered species, recreation and aesthetic resources, and cultural resources at the project.
31. To monitor compliance with the operational requirements of the license, this license requires GMP to include within the proposed flow management and monitoring plan provisions for monitoring and reporting compliance with all operating requirements of the license (e.g., run-of-river operation, minimum flow, aesthetic spill flow, downstream fish passage flow, impoundment water level, and timing of planned maintenance); maintaining a log of project operation; and reporting any deviations from the operating requirements to the Commission and Vermont ANR.
32. To protect federally listed and proposed bats, this license requires that GMP not remove or trim trees on project lands from May 1 through July 31 to protect tricolored bats (*Perimyotis subflavus*) during their roosting season, and not remove trees or trim

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<sup>21</sup> GMP's proposal references four inches in diameter at "base" height. Staff understands the intended reference to be 4 inches diameter at "breast" height.

<sup>22</sup> Vermont DEC is a department within Vermont ANR, the administering authority for Vermont's Water Quality Certification program. Vermont DEC is responsible for issuing the certification.

trees equal to or greater than 3 inches diameter at breast height from April 15 through April 30, and from August 1 through October 31 to protect northern long-eared bats.

33. To prevent debris (e.g., woody debris or trash removed from trash racks, and tree cuttings or grass clippings from vegetation management) from accumulating at the project and degrading water quality, this license requires a debris disposal plan.

34. To enhance recreation opportunities at the project, this license requires GMP to develop an upstream hand-carry boating access plan that includes the requirements stipulated in Vermont ANR's certification condition F and additional provisions to implement best management practices, during construction, methods for preventing the establishment of invasive plants, and guidelines for detecting and treating invasive plant populations.

### **WATER QUALITY CERTIFICATION**

35. Under section 401(a)(1) of the Clean Water Act (CWA),<sup>23</sup> the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency has either issued a certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification must become a condition of any federal license for the project.<sup>24</sup>

36. On June 3, 2022, GMP applied to Vermont DEC for a water quality certification (certification) for the project. On June 6, 2022, Vermont DEC confirmed that GMP's application was received. On May 11, 2023, Vermont DEC issued a certification for the project with 12 conditions, which are set forth in Appendix A of this order and are incorporated into the license by ordering paragraph (E).

37. Four of the certification conditions (conditions A, J, K, and L) are general or administrative in nature and are not discussed further.

38. The remaining eight certification conditions require GMP to:

- a. Operate the project in an instantaneous run-of-river mode where outflow from the project equals inflow except for short-term unavoidable deviations such as during impoundment re-filling following planned or unplanned maintenance activities; provide 37 cfs, or inflow if less, into the bypassed reach year-round uninterrupted; when generating, spill 10 cfs continuously over the dam year-round into the

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<sup>23</sup> 33 U.S.C. § 1341(a)(1).

<sup>24</sup> *Id.* § 1341(d).

bypassed reach; and when not generating, spill all inflow over the dam (Condition B).

- b. Develop and submit for Vermont DEC approval within 180 days of the effective date of this license, a flow management and monitoring plan that: (1) details how the project will operate in an instantaneous run-of-river mode while also complying with “conservation” flow requirements;<sup>25</sup> (2) includes a method for continuous monitoring and reporting of project flow releases, impoundment levels, and inflows; (3) includes a provision to maintain flow data so that it is available on a “near real-time basis;” and (4) includes procedures for reporting deviations from operating requirements to Vermont DEC within 15 days of the deviation (Condition C).
- c. Install and maintain the downstream fish passage chute from April 1 to June 1 and from September 1 to November 15. Consult with Vermont Fish and Wildlife Department (Vermont FWD) and the U.S. Fish and Wildlife Service (FWS) to ensure the fish passage chute meets all design requirements prior to replacement and file all design information with Vermont DEC (Condition D).
- d. Develop a plan for American eel passage that: (1) is initiated within one year of American eel passage being installed at the Wilder Hydroelectric Project (FERC No. 1892)<sup>26</sup> on the Connecticut River mainstem; (2) undergoes pre-development consultation with, and post-development review and approval by Vermont ANR and FWS; (3) contains detailed information about the method of passage which can include, but is not limited to, a trap and truck program or eel ramp installation; and (4) includes an implementation schedule with monitoring studies as needed (Condition E).
- e. Develop and finalize the design for a hand carry access area located upstream of the Newbury Project dam, in consultation with and approval by all appropriate stakeholders.<sup>27</sup> Construction of recreation access improvements are to be

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<sup>25</sup> Vermont DEC does not define the term “conservation flow” in the certification. However, staff interprets “conservation flow” to be the certification requirement that GMP maintain a minimum flow of 37 cfs year-round into the bypassed reach.

<sup>26</sup> The Wilder Project (FERC No. 1892) is the first dam downstream of the Newbury Project and about 49 river miles away on the Connecticut River.

<sup>27</sup> Staff understand that the hand carry access area would provide access to and from the Wells River for recreational boaters.

completed within 4 years of the effective date of this license pending landowner and permit approvals (Condition F).

- f. Dispose of debris associated with project operation in accordance with state laws and regulations (Condition G).
- g. Notify and receive approval from Vermont DEC prior to conducting any project maintenance or repair work, including drawdowns below the normal operating range, if the work may result in a discharge, have a material adverse effect on water quality, or cause less than full support of an existing use or a beneficial value or use of State of Vermont waters (Condition H).
- h. Avoid removal of trees greater than or equal to 3 inches diameter breast height from April 15 to October 31 to prevent any roost disruption of the northern long-eared bat. Consult with Vermont FWD and the FWS should tree clearing be required during the restricted time period (Condition I).

### **COASTAL ZONE MANAGEMENT ACT**

39. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),<sup>28</sup> the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within six months of receipt of the applicant's certification.

40. The State of Vermont does not have a Coastal Zone Management Program. Therefore, a CZMA consistency certification is not required.

### **SECTION 18 FISHWAY PRESCRIPTIONS**

41. Section 18 of the FPA<sup>29</sup> provides that the Commission must require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of Commerce or the Secretary of the Interior, as appropriate.

42. On June 3, 2022, Interior filed a letter requesting that the Commission include a reservation of authority to prescribe fishways under section 18 in any license issued for the project. Consistent with Commission policy, Article 407 of this license reserves the

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<sup>28</sup> 16 U.S.C. § 1456(c)(3)(A).

<sup>29</sup> 16 U.S.C. § 811.

Commission's authority to require fishways that may be prescribed by Interior for the Newbury Project.

### **THREATENED AND ENDANGERED SPECIES**

43. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)<sup>30</sup> requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of their designated critical habitat.

44. Based on FWS's Information for Planning and Consultation (IPaC) website, the endangered northern long-eared bat has the potential to occur in the project area.<sup>31</sup> Additionally, the tricolored bat, which is proposed for listing, may occur in the project area.<sup>32</sup>

#### **A. Northern Long-Eared Bat**

45. Commission staff determined that the northern long-eared bat could be affected by vegetation management within the project boundary and construction of the proposed hand-carry boating access area.<sup>33</sup> Commission staff concluded that a seasonal clearing restriction for non-hazardous trees with diameters that are equal to or greater than 3 inches in diameter at breast height during the active season from April 15 through October 31, would protect the northern long-eared bat from adverse effects associated with project maintenance. Commission staff also concluded that consulting with the FWS and Vermont ANR on potential site locations for the proposed hand-carry boating access area would help ensure that the effects of the proposed hand-carry boating access area on northern long-eared bat and their habitats are minimized when the hand-carry boating access is constructed. With these measures in place, staff concluded that relicensing the project is not likely to adversely affect the northern long-eared bat.

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<sup>30</sup> 16 U.S.C. § 1536(a).

<sup>31</sup> See Commission staff's September 12, 2023, memorandum on List of Threatened and Endangered Species Generated by ECOS-IPaC Website; *see also*, IPaC, FWS, <https://ipac.ecosphere.fws.gov/> (accessed September 12, 2023).

<sup>32</sup> 87 Fed. Reg. 56,381 (Sept. 14, 2022). Although proposed species are provided no special protection under the ESA, staff nevertheless provides an analysis of the action on tricolored bat because the species may become federally listed during the term of the subsequent license.

<sup>33</sup> EA at F-4.

46. Commission staff requested concurrence with a finding that relicensing the project is not likely to adversely affect the northern long-eared bat using the *Northern Long-eared Bat Rangewide Determination Key* (DKey) available through IPaC. By letter generated on September 18, 2023, FWS concurred with staff's determination.<sup>34</sup>

47. As noted above and consistent with Commission staff's recommended seasonal clearing restriction, Vermont DEC's certification condition I (Appendix A) requires that the clearing of non-hazardous trees with a diameter at breast height of 3 inches or greater only occur between November 1 and April 14 to avoid any roost disruption of the northern long-eared bat. Further, Article 405 requires GMP to develop and implement a hand-carry boating access plan with measures to consult with the FWS and Vermont ANR on potential site locations before any construction activities occur to ensure that negative effects on northern long-eared bats and their habitats are minimized. Therefore, no further action under the ESA is required for this species.

## **B. Tricolored Bat**

48. On September 14, 2022, FWS proposed to list the tricolored bat as an endangered species based upon the range-wide impacts of white-nose syndrome that have caused declines in affected colonies.<sup>35</sup> Critical habitat is not proposed for the species.

49. Tricolored bats are known, or believed to, occur in 39 states, including Vermont.<sup>36</sup> The active season for the tricolored bat is similar to the northern long-eared bat. During spring, summer, and fall, tricolored bats primarily roost among leaf clusters of live or recently dead trees and form summer maternity colonies where young are born.<sup>37</sup> May 1 through July 31 is the roosting season, for the tricolored bat.

50. Project maintenance and potential construction activities that may affect the tricolored bat are the same as those noted above for the northern-long eared bat.<sup>38</sup>

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<sup>34</sup> See Commission staff's September 18, 2023 memorandum on FWS's concurrence letter.

<sup>35</sup> 87 Fed. Reg. 56,381 (Sept.14, 2022).

<sup>36</sup> FWS, *Environmental Conservation Online System Tricolored Bat Species Profile*, <https://ecos.fws.gov/ecp/species/10515> (accessed October 25, 2023).

<sup>37</sup> FWS. 2021. Species Status Assessment Report for the Tricolored Bat (*Perimyotis subflavus*), Version 1.1. December 2021. Hadley, MA., [https://www.fws.gov/sites/default/files/documents/Tricolored\\_Bat\\_SSA.pdf](https://www.fws.gov/sites/default/files/documents/Tricolored_Bat_SSA.pdf).

<sup>38</sup> EA at F-4.



Because the tricolored bat can roost in small understory trees among lichen, dead leaves, or foliage from May 1 through July 31, avoiding all tree removal and tree trimming activities during this period will be protective of the species at the project. Therefore, Article 404 requires this restriction for all non-hazardous trees.<sup>39</sup> Moreover, the requirement to consult with the FWS and Vermont ANR on potential site locations for the proposed hand-carry boating access area specified in Article 405 will limit any adverse effects from boating access construction on the tricolored bat. Therefore, staff concludes that relicensing the project is not likely to jeopardize the continued existence of the tricolored bat, and no further action under the ESA is required.<sup>40</sup>

## **HISTORIC AND CULTURAL RESOURCES**

### **A. National Historic Preservation Act**

51. Under section 106 of the National Historic Preservation Act (NHPA)<sup>41</sup> and its implementing regulations,<sup>42</sup> federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (National Register), defined as historic properties, and afford the Advisory Council on Historic Preservation (Advisory Council) a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

52. To satisfy its responsibilities under section 106 of the NHPA, the Commission executed a Programmatic Agreement (PA) with the Vermont SHPO. The Advisory Council filed a letter on November 24, 2023, stating that their participation in the

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<sup>39</sup> Article 405 is more stringent than Vermont DEC's certification condition I (appendix A) during the period May 1 through July 31; therefore, Article 405 governs during this period. *See, e.g., Noah Corp.*, 57 FERC ¶ 61,170, at 61,601 (1991); *Carex Hydro*, 52 FERC ¶ 61,216, at 61,769 (1990) ("Pursuant to section 10(a) of the FPA, the Commission can impose in the license water quality conditions that are more stringent than those contained in a state's water quality certification." *Id.* at n.24).

<sup>40</sup> For species proposed for listing, a federal agency must confer with FWS only when the agency determines that its action would likely jeopardize the continued existence of the proposed species or destroy or adversely modify proposed critical habitat. 16 U.S.C. § 1536(a)(4).

<sup>41</sup> 54 U.S.C. § 306108.

<sup>42</sup> 36 C.F.R. pt. 800 (2023).

consultation to resolve adverse effects is not needed at this time, but that they can be contacted if needed.<sup>43</sup> GMP was invited to concur with the stipulations of the PA. The Vermont SHPO signed the PA on November 29, 2023. GMP concurred with the PA on December 8, 2023. A copy of the executed PA was issued on December 14, 2023.<sup>44</sup> The PA requires the licensee to develop an HPMP. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 408 requires the licensee to implement the PA and file for Commission approval an HPMP within one year of license issuance.

## **B. Tribal Consultation**

53. On August 29, 2018, GMP provided the notice of intent (NOI) and pre-application document (PAD) for the project's relicensing to state-recognized tribes for review and comment.<sup>45</sup> GMP also provided the final license application to these tribes and the federally recognized Saint Regis Mohawk Tribe for review and comment.

54. There are no federally recognized tribes in Vermont. However, for the Newbury Project relicensing, Commission staff initiated consultation with the Saint Regis Mohawk Tribe by a letter issued September 1, 2017. No response has been received. The Tribe did not respond to the initial consultation letter, file any comments in the record of the proceeding, or request additional studies.

## **ENVIRONMENTAL JUSTICE**

55. In conducting NEPA reviews of proposed hydropower projects, the Commission follows Executive Order 12898 and Executive Order 14096, which directs federal agencies to identify and address disproportionate and adverse human health or environmental effects of their actions on minority and low-income populations (*i.e.*, environmental justice communities).<sup>46</sup> Executive Order 14008 also directs agencies to

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<sup>43</sup> See November 17, 2023, Comments of Advisory Council on Historic Preservation.

<sup>44</sup> See December 14, 2023, Letter to Advisory Council on Historic Preservation et al. providing the Executed Programmatic Agreement for the Newbury Hydroelectric Project P-5261.

<sup>45</sup> GMP provided the documents to the Elnu Tribe of the Abenaki, Nulhegan Band of the Coosuk Abenaki Nation, Traditional Koasek Abenaki Nation of the Koas, and Abenaki Nation at Mississquoi.

<sup>46</sup> Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994); Exec. Order No. 14,096, 88, Fed. Reg. 25251 (Apr. 21, 2023). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless addresses

develop “programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”<sup>47</sup> Environmental justice is “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”<sup>48</sup> The term “environmental justice community” includes disadvantaged communities that have been historically marginalized and overburdened by pollution.<sup>49</sup>

56. In the EA, Commission staff identified two environmental justice communities within a 1-mile radius of the project boundary and considered how the communities may be affected by continued project operation and noise, visual, and traffic impacts of the potential construction of the hand-carry boating access area.<sup>50</sup>

57. In the EA,<sup>51</sup> staff found that any construction activities associated with the hand-carry boating access area would be of short duration and minor in scope and would not create substantial noise or excessive construction traffic or affect visual resources within the identified environmental justice communities. Additionally, no housing residences are located within 500 feet of the dam. Although recreation use at the Newbury Project could increase with the potential public access facility, the site is remote and unlikely to

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environmental justice in its analysis, in accordance with our statutory duties.

<sup>47</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619 (Feb. 1, 2021). The term “environmental justice community” includes disadvantaged communities that have been historically marginalized and overburdened by pollution. *Id.* The term also includes, but may not be limited to, minority populations, low-income populations, or indigenous peoples. *See* EPA, *EJ 2020 Glossary* (Sept. 7, 2022), <https://www.epa.gov/environmentaljustice/ej-2020-glossary>.

<sup>48</sup> EPA, *Learn About Environmental Justice* (Sep. 19, 2023), [https://www.epa.gov/environmentaljustice/learn-about-environmental-justice#:~:text=Environmental%20justice%20\(EJ\)%20is%20the,environmental%20laws%2C%20regulations%20and%20policies](https://www.epa.gov/environmentaljustice/learn-about-environmental-justice#:~:text=Environmental%20justice%20(EJ)%20is%20the,environmental%20laws%2C%20regulations%20and%20policies).

<sup>49</sup> Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples. *See* USEPA, *EJ 2020 Glossary* (Aug. 18, 2022), <https://www.epa.gov/system/files/documents/2024-02/ej-2020-glossary.pdf>.

<sup>50</sup> EA at 51.

<sup>51</sup> *Id.*

attract long-term and sustained increases in traffic or impacts to recreational fishing opportunities that would adversely affect the identified communities. Therefore, relicensing the project as conditioned in this license would not result in a disproportionate and adverse impact on the environmental justice communities present within the project area.

### **RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(J) OF THE FPA**

58. Section 10(j)(1) of the FPA<sup>52</sup> requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,<sup>53</sup> to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

59. No section 10(j) recommendations were filed with the Commission for the relicensing of the Newbury Project.

### **SECTION 10(a)(1) OF THE FPA**

60. Section 10(a)(1) of the FPA<sup>54</sup> requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

#### **A. Instantaneous Run-of-River Operation**

61. Vermont DEC’s certification condition B requires GMP to operate the project in an instantaneous run-of-river mode where outflow equals, rather than approximates, inflow. In the EA,<sup>55</sup> Commission staff did not recommend this requirement because staff found no indication that the project is technologically or mechanically capable of operating under conditions where outflow from the project *equals* inflow on an

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<sup>52</sup> 16 U.S.C. § 803(j)(1).

<sup>53</sup> 16 U.S.C. §§ 661 *et seq.*

<sup>54</sup> 16 U.S.C. § 803(a)(1).

<sup>55</sup> EA at H-4 to H-5.

instantaneous basis such that a perfectly stable reservoir elevation would be maintained at all times.<sup>56</sup>

62. Staff found that continuing to operate the project in a run-of-river mode where outflows approximate inflows at any given point in time would continue to minimize impoundment fluctuations, which would protect fish spawning areas from being dewatered, limit project related erosion along the impoundment shoreline, and ensure that downstream flows are similar to natural river flows.<sup>57</sup> Therefore, operating the project in a run-of-river mode such that outflow from the project *approximates* inflow would provide the same benefit to aquatic resources upstream and downstream of the project as operating the project in an instantaneous run-of-river mode as required by Vermont DEC certification condition B. Nonetheless, condition B is included in this license because it is mandatory under section 401(a) of the CWA.

### **B. Operation Compliance Monitoring**

63. GMP proposes to develop a flow management and monitoring plan, in consultation with the Vermont DEC, detailing how GMP will operate the project in run-of-river mode and comply with minimum flow and aesthetic spill flow requirements. Certification condition C requires that GMP develop a flow management and monitoring plan that includes the following: (1) a method for continuous monitoring and reporting of flow releases at the project (including spill flows, turbine discharge, impoundment levels, and inflows); (2) provisions for flow data to “be available on a near real-time basis”; and (3) procedures for reporting deviations from operating requirements to Vermont DEC within 15 days of a deviation.

#### *Flow Monitoring*

64. In the EA,<sup>58</sup> staff did not recommend continuous monitoring of flows or making flow data available on a “near-real time basis.” Staff determined that GMP’s existing SCADA system, which is capable of monitoring impoundment water surface elevations,

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<sup>56</sup> GMP maintains run-of-river operation by minimizing fluctuations in the impoundment using an automatic pond level control system, that measures changes in impoundment surface elevation and uses it as an indirect measure of flow. Because of these technical limitations and the inherent delay associated with the system adjusting project outflow to match inflow, regular, short-term deviations from instantaneous run-of-river are unavoidable. More typically, outflow from the project approximates inflow at any given point in time. EA at 22.

<sup>57</sup> EA at 22 and H-5.

<sup>58</sup> EA at H-1 and H-2.

tailrace elevation, and turbine output at 15-minute intervals, would be sufficient to monitor compliance with run-of-river operation, aesthetic spill flow, and minimum flow requirements. Staff determined that to comply with the certification condition C reporting requirements, GMP would need to install one new gage in the bypassed reach capable of continuously monitoring stream levels and transmit all flow release data in real time via the internet.<sup>59</sup> Staff estimated that installing and maintaining one new gage for monitoring bypassed reach flows and making all flow data available via the internet would add \$22,565 in annual costs compared to continuing to monitor impoundment levels using GMP's automated system, at an annual cost of \$500.<sup>60</sup> Because GMP's existing monitoring and control system would achieve the same compliance objectives at a lower cost, staff concluded that the benefits of the real-time flow monitoring would not be worth the higher costs. However, condition C is included in this license because it is mandatory under section 401(a) of the CWA.

#### *Flow Management and Monitoring Plan*

65. To enable the Commission to track compliance with the operating requirements of this license, in the EA,<sup>61</sup> staff recommended that GMP develop an operation compliance monitoring plan that includes a detailed description of how the licensee would monitor compliance with the operational requirements of the license (i.e., run-of-river operation, impoundment levels, minimum flow, aesthetic spill flow, timing of planned maintenance, etc.), maintain a log of project operation, and report deviations from operating requirements to the Commission and Vermont DEC. Staff estimated that developing an operation and compliance monitoring plan would have an annual cost of \$1,366 and concluded that the compliance benefits would be worth the cost.<sup>62</sup>

66. Article 402 requires that GMP include staff's recommended monitoring provisions in Vermont DEC's required flow management and monitoring plan. Article 402 also requires GMP to report deviations from operating requirements to the Commission in addition to Vermont DEC.

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<sup>59</sup> EA at 25-26 and H-1.

<sup>60</sup> In the EA, Commission staff estimated the annual cost of installing and maintaining one new gage for monitoring bypassed reach flows and making all flow data available via the internet to be \$23,065 and the cost of continuing to use GMP's automated system to be \$500.

<sup>61</sup> EA at 57.

<sup>62</sup> EA at H-1 – H-2.

### **C. Project Maintenance and Repairs**

67. GMP proposes to continue to conduct four planned annual drawdowns each year to install and remove the downstream fish passage chute, by lowering the impoundment by about 2.6 feet (surface elevation of 461.3 feet). GMP proposes to consult with the Vermont DEC on setting the timing and duration of the drawdowns in a manner that is protective of nearshore terrestrial and aquatic habitat. In addition, GMP proposes to consult with Vermont DEC prior to conducting project maintenance or repair work that has the potential to have an adverse effect on water quality.

68. In the EA,<sup>63</sup> Commission staff concluded that notifying and receiving feedback from Vermont DEC prior to conducting planned or unplanned drawdowns for maintenance or repairs would allow the agency to make recommendations to GMP to minimize erosion and sedimentation and adverse effects to water quality and aquatic resources that may result from such maintenance drawdowns. Therefore, Article 403 requires GMP to consult with Vermont DEC prior to conducting maintenance drawdowns or repair work that could adversely affect water quality and aquatic and nearshore terrestrial resources.

### **D. Downstream Fish Passage**

69. Vermont DEC's certification condition D requires GMP to operate the downstream fish passage chute with a flow of 25 cfs from April 1 to June 1 and from September 1 to November 15. GMP proposes to operate the downstream fish passage chute using a flow of 10 cfs, during the same time periods. In the EA,<sup>64</sup> staff did not recommend operation of the downstream fish passage chute at all because: (a) there is no evidence that operation of the fish passage chute currently provides any benefit to Atlantic salmon or would provide any benefit under any subsequent license issued for the project;<sup>65</sup> (b) all resident fish species found in the vicinity of the project can maintain populations entirely within freshwater, and none require downstream passage to complete their life-cycle; and (c) the likelihood of fish experiencing impingement, entrainment, and turbine mortality at the project with or without operation of the downstream fish passage chute, is low. Consequently, staff did not recommend operation of the downstream fish passage at the project, concluding that the estimated increase in annual cost for GMP's proposal (\$5,817), and Vermont DEC's certification condition D requirement (\$5,961),

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<sup>63</sup> EA at 17 and H-4.

<sup>64</sup> EA at H-5 and H-6

<sup>65</sup> There are currently no Atlantic salmon at the project and efforts to reintroduce Atlantic salmon into the Connecticut River basin have been terminated. *See* EA at 30.

would not be justified. Nonetheless, certification condition D is included in this license because it is mandatory under section 401(a) of the CWA.

**E. American Eel Passage**

70. Vermont DEC's certification condition E requires GMP to develop a plan within one year of American eel passage being installed at the Wilder Project (FERC Project No. 1892), to provide upstream and downstream American eel passage at the Newbury Project. Condition E requires that: (1) the plan be developed in consultation with Vermont ANR and FWS and include an implementation schedule; (2) the plan include provisions for monitoring studies and trap and truck, eel ramp installation, or other appropriate passage measures; and (3) any results of the plan be reviewed and approved by Vermont ANR and FWS.

71. In the EA,<sup>66</sup> staff determined that although there are some eels present upstream of the Wilder Project dam, there is no evidence that eels currently migrate to the Newbury Project, and therefore, eel passage is not warranted at this time. Staff also concluded that federal and state management efforts in the Connecticut River Basin will likely result in eels becoming more abundant over time and, should upstream eel passage be installed at the Wilder Project, eel abundance downstream of the Newbury Project may reach levels that would warrant installation of upstream and downstream eel passage during the term of any subsequent license issued.<sup>67</sup>

72. As noted above, this license requires that GMP develop a plan, within one year of American eel passage being installed at the Wilder Project, to provide upstream and downstream American eel passage at the Newbury Project pursuant to Vermont DEC's certification condition E because it is mandatory under section 401 of the CWA.

**F. Debris Disposal**

73. Vermont DEC's certification condition G requires that "debris associated with Project operations shall be disposed of in accordance with state laws and regulations." In the EA,<sup>68</sup> staff recommended that GMP develop a debris disposal plan in consultation with Vermont DEC to avoid misunderstandings with project personnel, and guide how and when GMP removes and disposes of debris. Staff estimated that developing the plan would have an estimated annual cost of \$361 and found that the operational and resource benefits would be worth the cost. Article 406 requires that GMP develop and file for

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<sup>66</sup> EA at 28.

<sup>67</sup> EA at 28-29.

<sup>68</sup> EA at H-2.



Commission approval a debris disposal plan that is consistent with the requirements of Vermont DEC's certification condition G and includes a detailed description of procedures for collecting, managing, and disposing of organic and inorganic debris at the project and an implementation schedule.

**G. Hand-Carry Boating Access Plan**

74. GMP proposes and American Whitewater recommends constructing a hand-carry boating access area for recreational boaters upstream of the project dam, if feasible, at a location to be determined. GMP also proposes to file an annual feasibility assessment with the Commission for a hand-carry boating access area until the access area is deemed infeasible or until construction of the area is completed. Vermont DEC's certification condition F requires that GMP develop and finalize designs for a boating access area located upstream of the project dam, in consultation with resource agencies, and that the access area be constructed within four years of the effective date of the issuance of a license.

75. In the EA, Commission staff determined that hand-carry boating access at the project impoundment would be beneficial, because there are no reasonable hand-carry take-outs for the 1.1-mile Lower Wells River whitewater run, located immediately upstream of the impoundment.<sup>69</sup> Staff concluded that developing a hand-carry boating access plan would provide public recreational boating access at the project and provisions for operating and maintaining the facility at the project over the term of a subsequent license.<sup>70</sup> Staff determined that provisions such as submitting annual feasibility assessments would help to foster the search for, and potential development of, adequate boating opportunities at the project.<sup>71</sup> Further, staff determined that to help minimize erosion and sedimentation during boating access construction, GMP should incorporate best management practices, including erosion and sedimentation controls, such as installing silt fencing along the banks of the river, and revegetating areas disturbed during construction using native species.<sup>72</sup> Additionally, staff determined that including wildlife protection measures in the plan would help ensure that the effects of construction and operation of the hand-carry boating access area on wildlife (including the federally

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<sup>69</sup> EA at 40-41.

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

<sup>72</sup> EA at 15.

endangered northern long-eared bat) and their habitats within the project area are minimized.<sup>73</sup>

76. Therefore, in the EA, staff recommended the development of a hand-carry boating access plan that includes: (1) provisions to develop and finalize designs, including site selection, for a hand-carry boating access area in consultation with resource agencies; (2) a design plan, including the estimated length, width, and composition of the proposed access area, parking area, trail, and stairway; (3) best management practices that include, erosion and sedimentation controls and revegetating areas disturbed during construction using native species; (4) methods for preventing the establishment of invasive plants and guidelines for detecting and treating invasive plant populations; and (5) an implementation and construction schedule that includes constructing the hand-carry boating access area within 4 years of license issuance.<sup>74</sup> Staff also recommended that the plan include a provision to submit annual feasibility assessments to the Commission for a hand-carry boating access area until the access area is deemed infeasible or until construction of the area is completed. To further assist recreationists at the site, the plan should include provisions for recreation signage. In the EA, staff estimated that the annual cost of developing a hand-carry boating access plan would be \$1,361 and concluded that the benefits of the plan outweigh the cost.<sup>75</sup> Therefore, Article 405 requires that GMP develop a hand-carry boating access plan at the Newbury Project.

#### **H. Aesthetic Spill Flows**

77. Vermont DEC's certification condition B requires, and GMP proposes to provide, a continuous aesthetic spill flow of 10 cfs over the dam, or inflow, whichever is less. GMP's proposed and Vermont DEC's required 10 cfs aesthetic spill flow is in accord with the consensus reached during a virtual aesthetic flow evaluation meeting held on March 4, 2021.

78. In the EA, staff concluded that the flow would provide aesthetic value, which would be an enhancement of aesthetic resources relative to current conditions under a 5-cfs spill flow.<sup>76</sup> Further, a 10-cfs aesthetic spill flow would contribute to a year-round flow over the dam into the bypassed reach, which would benefit viewers of the project and aquatic resources. Staff determined that providing a 10-cfs aesthetic spill flow year-round would have no additional cost above that already occurring by the 5-cfs spill flow,

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<sup>73</sup> EA at 37.

<sup>74</sup> EA at 57.

<sup>75</sup> EA at H-3.

<sup>76</sup> EA at 42-43.

and therefore, recommended a 10-cfs aesthetic spill flow. Therefore, Article 403 requires that GMP provide a year-round aesthetic spill flow over the dam of 10 cfs.

### **I. Vermont DEC Approval of Repairs**

79. In the EA,<sup>77</sup> staff did not recommend GMP obtain Vermont DEC approval prior to unplanned emergency maintenance repairs (condition H). Requiring such approvals before commencing work would provide no direct benefits to environmental resources and could limit GMP's ability to complete needed repairs in a timely fashion. However, condition H is included in this license, because it is mandatory under section 401(a) of the CWA.

### **PROJECT BOUNDARY**

80. Commission regulations require that all land and water necessary for the operation and maintenance of the project be included in the project boundary. Specifically, project boundaries enclose the project works that are to be licensed and are to include "only those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources."<sup>78</sup>

81. GMP proposes to modify the project boundary to remove all portions of a mill building that do not include generating equipment, and to fully enclose the project transmission lines. Staff estimates that the change would result in the net removal of 0.98 acres from the existing 14.44-acre project boundary. The project boundary would then include a total of 13.46 acres.<sup>79</sup> As noted in the EA,<sup>80</sup> the portion of the mill building proposed to be removed is not affected by project operation and does not serve any project purpose; therefore, the portion of the mill building proposed for removal should be removed from the project boundary. In addition, the transmission lines serve a project purpose and must be included in the project boundary.

82. Articles 203 and 205 require GMP to file revised Exhibits A and G, respectively, as discussed below in this order.

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<sup>77</sup> EA at H-4.

<sup>78</sup> 18 C.F.R. § 4.41(h)(2) (2023).

<sup>79</sup> EA at 9.

<sup>80</sup> EA at 41.

**ADMINISTRATIVE PROVISIONS****A. Annual Charges**

83. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA.

**B. Financial Assurance**

84. To confirm the importance of licensees maintaining sufficient financial reserves, Article 202 reserves the Commission's authority to require future measures to ensure that the licensee maintains sufficient financial reserves to carry out the terms of the license and Commission orders pertaining thereto.

**C. Exhibit A Project Description**

85. Commission regulations require that licensees file an Exhibit A as part of the license application to describe the project. The Exhibit A filed on March 25, 2022, is not approved as follows. Exhibit A does not reference elevations in a datum consistent with Exhibits F and G. Exhibit A references most elevations in mean sea level (msl) and should be revised to reference all elevations in NGVD 29, to be consistent with the Exhibit F drawings. Exhibit A identifies a factor to convert elevation from NAVD 88<sup>81</sup> to NGVD 29, which is not consistent with conversion factors provided in other exhibits, such as Exhibit G-1 and G-2 filed March 31, 2022. The conversion factor should be checked and clearly defined in a revised Exhibit A. Exhibit A does not identify a 7-foot section of the above ground transmission line and Exhibit A does not include the details provided in GMP's March 25, 2022 response to Commission staff's February 23, 2022 additional information request at item 1 about the transmission lines. Exhibit A also does not describe the 18-foot wide by 6-foot-deep baffle in front of the intake structure, which is identified in the Exhibit F drawings filed on February 2, 2022. Also, the pages of Exhibit A are footnoted with a February 2022 date, which does not match the March 25, 2022 filing date. Therefore, Article 203 requires the licensee to file, within 90 days of the issuance date of this license, a revised Exhibit A that addresses the issues described above and includes an updated submission date.

**D. Exhibit F and G Drawings**

86. The Exhibit F drawings filed on February 2, 2022, are approved, and made a part of the license (ordering paragraph C). The Commission requires licensees to file sets of

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<sup>81</sup> NAVD 88 refers to the North American Vertical Datum of 1988.

approved project drawings in electronic file format. Articles 204 and 205 require the filing of these drawings.

87. The Exhibit G-1 and G-2 maps, filed on March 31, 2022, are not approved as follows. The exhibits do not label the intake, minimum flow turbine unit, downstream fish passage chute, trash rack, bypassed reach, and gate house. The scales shown in the Exhibit G maps do not match the lengths of the transmission lines described in Exhibit A. The Exhibit G map labels the project boundary contour elevation for the west bank of the impoundment as 464.7 feet NGVD 29, which is not consistent with the normal pool elevation 463.9 feet NGVD 29, nor is it consistent with information provided in other exhibits. The Exhibit G-1 and G-2 maps provide a conversion factor for NAVD 88 to NGVD 29 which is not consistent with other exhibits such as the Exhibit A and Exhibit F drawings. The Exhibit G-2 map provides an incomplete conversion factor for converting NAVD 88 to NGVD 29. Article 205 requires the licensee to file, within 90 days of the issuance date of this license, revised Exhibit G drawings with the above clarifications and modifications.

**E. Modifications of Project Facilities**

88. Article 301 requires the licensee to coordinate with the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer on any proposed modifications resulting from environmental requirements that would affect project works, dam safety, or project operation.

**F. Commission Approval of Resource Plans and Filing of Amendments**

89. In Appendix A of this order, there are certain certification conditions that do not require the licensee to file certain plans with the Commission, or that contemplate future changes to the project facilities or operation without the opportunity for prior Commission review. Article 401 requires the licensee to file the plans with the Commission for approval and to file amendment applications with the Commission prior to making changes to project facilities or operations, as appropriate.

**G. Use and Occupancy of Project Lands and Waters**

90. Requiring a licensee to obtain prior Commission approval for every use and occupancy of project land would be unduly burdensome. Therefore, Article 409 allows the licensees to grant permission, without prior Commission approval, for the use and occupancy of project lands and waters for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

## **STATE AND FEDERAL COMPREHENSIVE PLANS**

91. Section 10(a)(2)(A) of the FPA,<sup>82</sup> requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.<sup>83</sup> Under section 10(a)(2)(A), Commission staff identified and reviewed 16 comprehensive plans relevant to this project.<sup>84</sup> No conflicts were found.

## **APPLICANT'S PLANS AND CAPABILITIES**

92. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,<sup>85</sup> Commission staff evaluated GMP's record as a licensee with respect to the following: (A) conservation efforts; (B) safe management, operation, and maintenance of the project; and (C) need for power. As discussed below, this order adopts staff's findings in each of the areas.

### **A. Conservation Efforts**

93. Section 10(a)(2)(C) of the FPA<sup>86</sup> requires the Commission to consider the applicant's electricity consumption improvement program, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. GMP coordinates its project operation with ISO New England to supply its energy to GMP's retail customers and has several programs to promote conservation and energy efficiency for residential, commercial, and industrial customers. These programs include: (1) incentives for switching transportation to an electric vehicle; (2) home energy storage; (3) home and yard care rebates; (4) home heating and cooling rebates; and (5) business innovation incentives.<sup>87</sup> Therefore, given GMP's long-range electric resource planning and efficiency program described above, the project will be operating in a manner consistent with section 10(a)(2)(C) of the FPA.

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<sup>82</sup> 16 U.S.C. § 803(a)(2)(A).

<sup>83</sup> Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19.

<sup>84</sup> The list of applicable plans can be found in section 5.3 of the EA.

<sup>85</sup> 16 U.S.C. §§ 803(a)(2)(C); 808(a).

<sup>86</sup> *Id.* § 803(a)(2)(C).

<sup>87</sup> See <https://greenmountainpower.com/rebates-programs/>

**B. Safe Management, Operation, and Maintenance of the Project**

94. Commission staff has reviewed GMP's record of management, operation, and maintenance of the Newbury Project pursuant to the requirements of 18 C.F.R. Part 12, the Commission's Engineering Guidelines, and the periodic Dam Safety Surveillance and Monitoring Reports. Commission staff concludes that the project works are in good condition, and that there is no reason to believe that GMP cannot continue to safely manage, operate, and maintain these facilities under a subsequent license.

**C. Need for Power**

95. To assess the need for power, staff looked at the needs in the operating region in which the project is located, which is the Northeast Power Coordinating Council's (NPCC) New England region of The North American Electric Reliability Corporation (NERC). NERC annually forecasts electric supply and demand nationally and regionally for a 10-year period. According to NERC's 2022 Long-Term Reliability Assessment, the net internal demand for this region is projected to increase by about 0.1% from 2022 to 2031.

96. Power generated at the Newbury Project would continue to help meet the power demand in the NPCC region in the short- and long-term. The project provides power that can displace non-renewable, fossil fuel-fired generation and contributes to a diversified generation mix. Displacing the operation of non-renewable facilities may avoid some power plant emissions and create an environmental benefit.

**PROJECT ECONOMICS**

97. In determining whether to issue a subsequent license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,<sup>88</sup> the Commission uses current costs to compare the costs of the project with the costs of the likely alternative source of power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

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<sup>88</sup> 72 FERC ¶ 61,027 (1995).

98. In applying this analysis to the Newbury Hydroelectric Project, Commission staff considered three options: a no-action alternative, GMP's proposal, and the project as licensed herein.<sup>89</sup>

99. Under the no-action alternative, the project would continue to operate as it does now. The project has an installed capacity of 0.365 MW, a capacity benefit of 0 MW,<sup>90</sup> and generates an average of 1,076 MWh of electricity annually. The alternative source of power's annual cost to produce the same amount of energy and provide the same capacity benefit is \$76,826 in 2022 dollars.<sup>91</sup> The average annual project cost is \$436,845. To determine whether the proposed project is currently economically beneficial, the project's cost is subtracted from the alternative source of power's cost. Therefore, the project costs \$360,019 more than the alternative source of power's cost.

100. As proposed by GMP, the project would have an installed capacity of 0.365 MW, a capacity benefit of 0 MW, and generate an average of 1,041 MWh of energy annually. The alternative source of power's cost to produce the same amount of energy and provide the same capacity benefit is \$74,363 in 2022 dollars. The total annual cost of operating the project as proposed by GMP would be \$447,193. Subtracting the total annual project cost from the alternative source of power's current cost, the project as proposed by GMP would cost \$372,831 more than the alternative source of power's cost.

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<sup>89</sup> Details of Commission staff's economic analysis for the project as licensed herein, and for the other two alternatives, are included in section 4 of the EA.

<sup>90</sup> The term "capacity benefit" is used to describe the benefit a project receives for providing capacity to the grid, which may be in the form of a dependable capacity credit or credit for monthly capacity provided. In this instance, the project does not often generate during the summer months; therefore, staff estimated a capacity benefit of 0 MW valued at \$0.

<sup>91</sup> The alternative source of power's cost is based on the current cost of providing the same amount of generation and capacity benefit from a natural gas-fired combined cycle plant, as reported by the most recent publication of The U.S. Energy Information Administration (EIA), *Annual Energy Outlook*. This analysis is based on The U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2023*, for the Division 1, New England Region. As reported in Section 4 of the EA, the alternative source of power's cost is a combination of the cost of energy, \$71.42/MWh, and the capacity benefit which staff estimates to be \$0 based on a dependable capacity of 0 MW for the project.



101. As licensed herein with mandatory conditions and Commission staff's measures, the project will have an installed capacity of 0.365 MW, a capacity benefit of 0 MW and generate an average of 1,041 MWh of energy annually. The alternative source of power's cost to produce the same amount of energy and provide the same capacity benefit is \$74,363 in 2022 dollars. The total annual cost of operating the project would be \$472,986. Subtracting the total annual project cost from the alternative source of power's current cost, the project as licensed herein would cost \$398,623, more than the alternative source of power's cost.

102. In considering public interest factors, the Commission takes into account that hydroelectric projects are a renewable resource and offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load, and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil fuel-based generating stations and put them back on line.

103. Although the analysis shows that the project as licensed herein would cost more to operate than our estimated cost of alternative power, it is the applicant who must decide whether to accept this license and any financial risk that it entails.

104. Although Commission staff's analysis does not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is a renewable resource and relatively insensitive to inflation compared to fossil-fueled generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

### **COMPREHENSIVE DEVELOPMENT**

105. Sections 4(e) and 10(a)(1) of the FPA<sup>92</sup> require the Commission to give equal consideration to power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued must be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

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<sup>92</sup> 16 U.S.C. §§ 797(e) and 803(a)(1).

106. The EA for the project contains background information, analysis of effects, and support for related license articles. Based on the record of this proceeding, including the EA and the comments thereon, licensing the Newbury Hydroelectric Project as described in this order will not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of the license.

107. Based on Commission staff's independent review and evaluation of the Newbury Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the EA, the project as licensed herein is selected and found to be best adapted to a comprehensive plan for improving or developing the Wells River.

108. This alternative is selected because: (1) issuing a subsequent license will serve to maintain a beneficial and dependable source of electric energy; (2) the required environmental measures will protect or enhance water quality, fish and wildlife resources, terrestrial resources, recreational and aesthetic resources, and cultural resources; and (3) the 0.365 MW of electric capacity comes from a renewable resource that does not significantly contribute to atmospheric pollution.

### **LICENSE TERM**

109. On October 19, 2017, the Commission established a 40-year default license term policy for licenses, effective as of October 26, 2017.<sup>93</sup> The License Term Policy Statement provides for exceptions to the 40-year default license term under certain circumstances: (1) establishing a shorter or longer license term if necessary to coordinate license terms for projects located in the same river basin; (2) deferring to a shorter or longer license term explicitly agreed to in a generally-supported comprehensive settlement agreement; and (3) establishing a longer license term upon a showing by the license applicant that substantial voluntary measures were either previously implemented during the prior license term, or substantial new measures are expected to be implemented under the subsequent license.

110. Because none of the above exceptions apply in this case, a 40-year license for the Newbury Project is appropriate.

### **The Director orders:**

(A) This license is issued to Green Mountain Power Corporation (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to

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<sup>93</sup> *Policy Statement on Establishing License Terms for Hydroelectric Projects*, 161 FERC ¶ 61,078 (2017) (Policy Statement).

operate and maintain the Newbury Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, described in the project description and the project boundary discussion of this order.

(2) Project works consisting of: (a) a 26-foot high, 90-foot-long concrete gravity structure with a 11.4-acre impoundment at a normal water surface elevation of 463.9 feet;<sup>94</sup> (b) a 73.3-foot-long spillway with a crest elevation of 458.9 feet, topped with two 5-foot-high (463.9 feet) pneumatic crest gates; (c) a 4-foot-wide, 8-foot-long steel sluice box, on the south side of the spillway and adjacent to the crest gates, providing seasonal flows for downstream fish passage; (d) an 11.2-foot-wide, 9-foot-long intake structure, with an 18-foot-wide, 6-foot-deep baffle, a 10-foot-wide, 18.5-foot-high angled trash rack, and a 6-foot-wide by 6-foot-high slide gate which is automatically operated based on the impoundment elevation; (e) a 5-foot diameter, 435-foot-long underground main penstock that connects to generating unit no. 1; (f) a 2.5-foot-diameter, 25-foot-long penstock that bifurcates off the main penstock and connects to generating unit no. 2; (g) a powerhouse located inside a brick masonry mill building, with a 0.315-megawatt (MW) horizontal Ossberger crossflow turbine (unit no. 1) and synchronous Hitzinger generator, with a minimum hydraulic capacity of 20 cubic feet per second (cfs) and maximum hydraulic capacity of 134 cfs discharged into a tailrace; (h) a 0.05 MW vertical fixed blade propeller minimum flow turbine and Induction Marathon generator (unit no. 2), with a hydraulic capacity of 30 cfs, discharged into the bypassed reach 75 feet downstream from the dam; (i) a 5-foot-wide by 7-foot-high knife gate that regulates flows through the minimum flow turbine; (j) a 590-foot-long bypassed reach between the dam and the project tailrace; and (k) a transmission line consisting of: (i) a 410-foot long, 480-volt underground transmission line, connecting the minimum flow turbine generator unit to a pole mounted step-up transformer bank located adjacent to a non-project section of the mill building; (ii) a 130-foot-long, 480-volt underground line connecting the powerhouse to the pole-mounted transformer bank; and (iii) a 7-foot-long, above-ground line connecting the transformer bank to the grid at a utility pole.

The project works generally described above are more specifically shown and described by those portions of Exhibit F shown below:

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<sup>94</sup> Unless otherwise noted, all elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

Exhibit F: The following Exhibit F drawings filed on February 2, 2022:

<b><u>Exhibit No.</u></b>	<b><u>FERC Drawing No.</u></b>	<b><u>Drawing Title<sup>95</sup></u></b>
F-1	P-5261-1001	Site Plan and Penstock Profile
F-2	P-5261-1002	Turbine Room Plan and Section
F-3	P-5261-1003	Fish Passage Plan
F-4	P-5261-1004	Dam and Minimum flow unit

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibit F drawings described above are approved and made part of this license. The Exhibit A and Exhibit G filed as part of the application for license do not conform to the Commission's regulations and are not approved.

(D) The following sections of the Federal Power Act are waived and excluded from the license for this minor project:

Sections 4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the FPA that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the conditions submitted by the Vermont Department of Environmental Conservation under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), as those conditions are set forth in Appendix A to this order.

(F) This license is also subject to the articles set forth in Form L-12, (October 1975), entitled "Terms and Conditions of License for Constructed Minor Project

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<sup>95</sup> These exact drawing titles must be used in the filename when filing the electronic file format drawings required in license Article 204. Commission staff shortened the drawing titles due to filename character limits. There is no need to modify the titles as they appear on the drawings.

Affecting the Interests of Interstate or Foreign Commerce” (see 54 F.P.C. 1792, *et seq.*), as reproduced at the end of this order, and the following additional articles:

Article 201. *Administrative Annual Charges.* The licensee must pay the United States annual charges, effective the first day of the month in which this license is issued, and as determined in accordance with provisions of the Commission’s regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 0.365 megawatts (MW). Under the regulations currently in effect, projects with authorized installed capacity of less than or equal to 1.5 MW will not be assessed an annual charge.

Article 202. *Reservation of Authority to Require Financial Assurance Measures.* The Commission reserves the right to require future measures to ensure that the licensee maintains sufficient financial reserves to carry out the terms of the license and Commission orders pertaining thereto.

Article 203. *Exhibit A - Project Description.* Within 90 days of the issuance date of this license, the licensee must file, for Commission approval, a revised Exhibit A describing all principal project works necessary for operation and maintenance of the project. The revised Exhibit A must comply with section 4.61(c) of the Commission’s regulations, and include the following: (1) all elevations should be reported in National Geodetic Vertical Datum of 1929 (NGVD 29), and be checked to be consistent with the Exhibit F drawings; (2) clear identification of the factor to convert elevations from North American Vertical Datum of 1988 (NAVD 88) to NGVD 29 at the project location; (3) a description of the 7-foot-long, above ground transmission line from the transformer bank to the grid interconnection point; (4) the 18-foot wide by 6-foot deep baffle in front of the intake structure; (5) a detailed description of the transmission lines included in the March 25, 2022 response to Commission staff’s February 23, 2022 additional information request at item 1; and (6) revised dates in the Exhibit A footnotes to match the filing date. The licensee must revise the Exhibit A filed on March 25, 2022, and provide the Exhibit A in two forms: (1) a strikethrough format (i.e., strikethrough items to be removed and underline or bold items to be added to the exhibit) and (2) a final, clean copy incorporating the changes (i.e., without the strikethrough, underline, and bold notations).

Article 204. *Exhibit F Drawings.* Within 45 days of the date of issuance of this license, as directed below, the licensee must file the approved exhibit drawings in electronic file format.

The licensee must prepare digital images of the approved exhibit drawings in electronic format. Prior to preparing each digital image, the licensee must add the FERC Project-Drawing Number (i.e., P-5261-1001 through P-5261-1004) in the margin below the title block of the corresponding approved drawing. The licensee must **label and file**

**the Exhibit F drawings as Critical Energy Infrastructure Information (CEII) material under 18 C.F.R. §388.113.** The submission should consist of: (1) a public portion consisting of a cover letter; and (2) a CEII portion containing only the Exhibit F drawings. Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit Number, Drawing Title, date of this order, and file extension in the following format [P-5261-1001, F-1, Site Plan and Penstock Profile, MM-DD-YYYY.TIFF]. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY: black and white raster file

FILE TYPE: Tagged Image File Format (TIFF), CCITT Group 4  
(also known as T.6 coding scheme)

RESOLUTION: 300 dots per inch (dpi) desired, (200 dpi minimum)

DRAWING SIZE: 22" x 34" (minimum), 24" x 36" (maximum)

FILE SIZE: less than 1 megabyte desired

Article 205. Exhibit G Drawings. Within 90 days of license issuance, the licensee must file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary, and labeling, all principal project works necessary for operation and maintenance of the project. Exhibit G must identify the intake, minimum flow turbine unit, downstream fish passage chute, trash rack, bypassed reach, and gate house. The Exhibit G drawings must be revised to reflect an appropriate scale that matches the transmission line measurements described in Exhibit A filed on March 25, 2022, and labeled appropriately where the lines are above ground or underground. All elevations in Exhibit G must be referenced to National Geodetic Vertical Datum of 1929 (NGVD 29). The Exhibit G drawings must provide the factor to convert North American Vertical Datum of 1988 (NAVD 88) to NGVD 29, and be consistent with Exhibits A and F, or provide justification for any differences noted. The project boundary contour elevation for the west bank of the impoundment must be checked for consistency with Exhibits A and F and be clearly labeled on the Exhibit G maps in NGVD 29. Exhibit G must include the topographic contour lines for ground elevation, list the vertical datum, and identify the spillway elevation. The Exhibit G drawings must comply with sections 4.39 and 4.41(h) of the Commission's regulations.

Article 301. Project Modification Resulting from Environmental Requirements. If environmental requirements under this license require modifications that may affect the project works or operations, the licensee must consult with the Commission's Division of Dam Safety and Inspections – New York Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Article 401. Commission Approval and Filing of Amendments

(a) Requirement to File Plans for Commission Approval.

Certain conditions of the Vermont Department of Environmental Conservation's (Vermont DEC) water quality certification (certification) issued pursuant to section 401 of the Clean Water Act (Appendix A) require the licensee to prepare plans in consultation with other entities for approval, and to implement specific measures without prior Commission approval. The following plans must be submitted to the Commission for approval by the deadline specified:

<b>Vermont DEC Certification Condition</b>	<b>Plan Name</b>	<b>Consulting Agencies</b>	<b>Commission Due Date</b>
C	Flow Management and Monitoring Plan	Vermont DEC	Within 9 months of the effective date of the license
E	American Eel Passage Plan	Vermont Agency of Natural Resources (Vermont ANR) and U.S. Fish and Wildlife Service (FWS)	Within 14 days of Vermont ANR and FWS approval of the American Eel Passage Plan

With each plan filed with the Commission, the licensee must include documentation that it developed the plan in consultation with the above-listed agencies and provide copies of any comments received, as well as its responses to each comment. The Commission reserves the right to make changes to any plan filed. Upon Commission approval, the plan becomes a requirement of the license, and the licensee must implement the plan, including any changes required by the Commission. Any changes to the above schedule or plans require approval by the Commission before implementing the proposed change.

(b) Requirement to File Amendment Applications.

Certain conditions of Vermont DEC's certification (Appendix A) contemplate long-term changes to project operations or facilities (e.g., conditions C, D). These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. In any amendment request, the licensee must identify related project requirements and request corresponding amendments or extensions of time as needed to maintain consistency among requirements.

Article 402. Flow Management and Monitoring Plan. The flow management and monitoring plan required by Vermont Department of Environmental Conservation's (Vermont DEC) water quality certification (certification) condition C (Appendix A) must include the following additional provisions:

- (1) a detailed description of how the licensee will monitor compliance with the operational requirements of Article 403 (*Project Operation*), including descriptions of the mechanisms and instrumentation or gages used (*i.e.*, type and exact locations of all flow and impoundment elevation monitoring equipment), impoundment elevations needed during run-of-river operation to provide the bypassed reach minimum flow, aesthetic spill flow, and flows



through the downstream fish passage chute, and procedures for maintaining and calibrating all compliance monitoring equipment;

(2) a provision to maintain a log of project operation; and

(3) an implementation schedule.

The licensee must obtain Vermont DEC's approval of the plan as required by Vermont DEC's certification condition C, and Article 401.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 403. Project Operation and Maintenance. In addition to implementing the run-of-river operation, bypassed reach minimum flow, and aesthetic spill flow requirements of Vermont Department of Environmental Conservation's (Vermont DEC) water quality certification (certification) condition B (Appendix A), the licensee must consult with Vermont DEC prior to conducting planned or unplanned maintenance drawdowns and prior to repair work that could affect water quality and aquatic and nearshore terrestrial resources.

#### Reporting of Planned Deviations

Run-of-river operation, bypassed reach minimum flow, and aesthetic spill flow requirements of Vermont DEC certification condition B (Appendix A) may be temporarily modified for short periods, of up to 3 weeks, after mutual agreement among the licensee and Vermont DEC and Vermont Fish and Wildlife Department (collectively, resource agencies). After concurrence from the resource agencies and filing a report with Vermont DEC as required by Vermont DEC certification conditions C and H (Appendix A), the licensee must file a report with the Secretary of the Commission as soon as possible, but no later than 14 days after the onset of the planned deviation. Each report must include: (1) the reasons for the deviation and how project operations were modified, (2) the duration and magnitude of the deviation, (3) any observed or reported environmental effects and how potential effects were evaluated, and (4) documentation of consultation with the resource agencies. For planned deviations exceeding 3 weeks, the licensee must file a report with Vermont DEC and receive approval from Vermont DEC as required by Vermont DEC certification conditions C and H (Appendix A) and must file an application for a temporary amendment of the operational requirements and receive Commission approval prior to implementation.

### Reporting of Unplanned Deviations

Run-of-river operation, bypassed reach minimum flow, and aesthetic spill flow requirements of Vermont DEC water quality certification condition B (Appendix A) may be temporarily modified if required by operating emergencies beyond the control of the licensee (*i.e.*, unplanned deviations). In addition to filing a report with Vermont DEC as required by Vermont DEC certification condition C (Appendix A), for any unplanned deviation from run-of-river operation, bypassed reach minimum flow, and aesthetic spill flow requirements that lasts longer than 3 hours or results in visible environmental effects such as a fish kill, turbidity plume, bank erosion, or downstream flooding, the licensee must notify the resource agencies within 24 hours, and the Commission within 14 days, and file a report as soon as possible, but no later than 30 days after each such incident. The report must include: (1) the cause of the deviation, (2) the duration and magnitude of the deviation, (3) any pertinent operational and/or monitoring data, (4) a timeline of the incident and the licensee's response, (5) any comments or correspondence received from the resource agencies, or confirmation that no comments were received from the resource agencies, (6) documentation of any observed or reported environmental effects and how potential effects were evaluated, and (7) a description of measures implemented to prevent similar deviations in the future.

In addition to filing a report with Vermont DEC as required by Vermont DEC certification condition C (Appendix A), for unplanned deviations from run-of-river operation, bypassed reach minimum flow, and aesthetic spill flow requirements lasting 3 hours or less that do not result in visible environmental effects, the licensee must file an annual report, by March 1, describing each incident that occurred during the prior January 1 through December 31 time period. The report must include for each 3 hours or less deviation: (1) the cause of the deviation, (2) the duration and magnitude of the deviation, (3) any pertinent operational and/or monitoring data, (4) a timeline of the incident and the licensee's response to each deviation, (5) any comments or correspondence received from the resource agencies, or confirmation that no comments were received from the resource agencies, and (6) a description of measures implemented to prevent similar deviations in the future.

Article 404. Protection of Tri-colored Bats. The licensee must not remove or trim trees on project lands from May 1 through July 31 to protect tricolored bats during their roosting season. Tree removal to ensure public or project safety during this period is not prohibited.

Article 405. Boating Access Plan. Within one year of license issuance, the licensee must file a report on the feasibility of constructing a hand-carry boating access area within the project boundary prepared in consultation with the Vermont State Historic Preservation Office (Vermont SHPO), Vermont Agency of Natural Resources (Vermont ANR), U.S. Fish and Wildlife Service (FWS), and Vermont Department of Environmental Conservation (Vermont DEC).

At a minimum, the report must include a description of each potential site considered, including each site's existing resources and uses, means of vehicular access, location, size, property owner, any specific property interests required by the licensee to develop and maintain the site, and any cultural resources that may be present on the site. The report must also include the licensee's findings on the feasibility of constructing a boating access area at each potential site.

Within two years of license issuance, the licensee must file with the Commission for approval, an upstream hand-carry boating access plan that includes the requirements of Vermont DEC's water quality certification condition F (appendix A of this license). The upstream hand-carry boating access plan must include, at a minimum, the following:

- (1) provisions to develop and finalize designs, including site selection, for the hand-carry boating access area in consultation with Vermont SHPO, Vermont ANR, and FWS, as required by Vermont DEC water quality certification condition F;
- (2) design plans that consider the needs of persons with disabilities;
- (3) estimates of the length, width, and composition of the proposed access area, including, but not limited to, a parking area (including any road access), signage, and trails;
- (4) a provision to implement best management practices that include erosion and sedimentation controls and revegetating areas disturbed during construction using native species;
- (5) a provision to, prior to commencing construction of the access site, secure the property rights for the site from a willing seller (if the land to be used is not owned by the licensee) in perpetuity;
- (6) prescribe methods for preventing the establishment of invasive plants and guidelines for detecting and treating invasive plant populations; and
- (7) include an implementation and construction schedule for constructing the hand-carry boating access area, pending landowner approval, within 4 years of

license issuance, as required by Vermont DEC water quality certification condition F.

The licensee must prepare the plan with the FWS, Vermont SHPO, Vermont DEC and Vermont ANR (collectively, the agencies). The licensee must include with the plan documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated in the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons based on project-specific reasons.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 406. Debris Disposal Plan. Within six months of license issuance, the licensee must file, for Commission approval, a debris disposal plan that is consistent with the requirements specified in the Vermont Department of Environmental Conservation's (Vermont DEC) water quality certification condition G (Appendix A) and includes the following provisions:

- (1) a detailed description of the licensee's procedures for collecting, managing and disposing of organic and inorganic debris at the project; and
- (2) an implementation schedule.

The licensee must prepare the plan after consultation with the Vermont DEC and the Vermont Fish and Wildlife Department (collectively, agencies). The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 407. Reservation of Authority to Prescribe Fishways. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 408. Programmatic Agreement and Historic Properties Management Plan. The licensee must implement the “Programmatic Agreement Between the Federal Energy Regulatory Commission and the Vermont State Historic Preservation Officer for Managing Historic Properties that May be Affected by Issuance of a New License to Green Mountain Power for the Continued Operation of the Newbury Hydroelectric Project in Orange County, Vermont (FERC No. 5261-023),” executed on November 29, 2023, and including but not limited to the Historic Properties Management Plan (HPMP) for the project. Pursuant to the requirements of the Programmatic Agreement, the licensee must file, for Commission approval, an HPMP within one year of license issuance.

The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. In the event that the Programmatic Agreement is terminated, the licensee must continue to implement the provisions of its approved HPMP.

Article 409. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and

facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee must require multiple use and occupancy of facilities for access to project lands or waters. The licensee must also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee must file with the Commission a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed. No report filing is required if no conveyances were made under paragraph (c) during the previous calendar year.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or

waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project lands or waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental

values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article must not apply to any part of the public lands and reservations of the United States included within the project boundary.

(G) The licensee must serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

(H) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 825l, and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2021). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing constitutes acceptance of this order.

for  
Terry Turpin  
Director  
Office of Energy Projects



**Form L-12**  
(October, 1975)

**FEDERAL ENERGY REGULATORY COMMISSION**

**TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED  
MINOR PROJECT AFFECTING THE INTERESTS OF  
INTERSTATE OR FOREIGN COMMERCE**

**Article 1.** The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

**Article 2.** No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

**Article 3.** The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

**Article 4.** The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not

conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

**Article 5.** The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

**Article 6.** The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams

on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

**Article 7.** The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

**Article 8.** The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

**Article 9.** The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

**Article 10.** On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its

reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

**Article 11.** The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

**Article 12.** Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

**Article 13.** So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including

fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

**Article 14.** In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon the request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

**Article 15.** The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

**Article 16.** If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

**Article 17.** The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new

license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

**Article 18.** The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

## **APPENDIX A**

### **Water Quality Certificate Conditions Issued by the Vermont Department of Environmental Conservation (Issued May 11, 2023)**

#### **Decision and Certification**

The Department has examined the Project application and other pertinent information deemed relevant by the Department in order to issue a decision on this certification application pursuant to the Department's responsibilities under Section 401 of the federal Clean Water Act and 10 V.S.A. § 1253(h). After examination of these materials, the Department certifies that there is reasonable assurance that operation of the Project in accordance with the following conditions will not violate Standards; will not have a significant impact on use of the affected waters by aquatic biota, fish or wildlife, including their growth, reproduction, and habitat; will not impair the viability of the existing populations; will not result in a significant degradation of any use of the waters for recreation, fishing, water supply or commercial enterprises that depend directly on the existing level of water quality; and will be in compliance with sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, 33 U.S.C. section 1341, and other appropriate requirements of state law:

- A. **Compliance with Conditions.** The Applicant shall operate and maintain this Project consistent with the findings and conditions of this certification. The Applicant shall not make any changes to the Project or its operations that would have a significant or material effect on the findings, conclusions or conditions of this Certification without approval of the Department.

*See finding 114 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-101.*

- B. **Flow Management.** The Project shall be operated in instantaneous run-of-river mode. Instantaneous run-of-river operation means no utilization of impoundment storage and that outflow from the facility is equal to inflow to the impoundment on an instantaneous basis except for short term, unavoidable deviations.

The Applicant shall provide 37 cfs, or inflow if less, into the bypassed reach year-round. This flow shall not be interrupted. When generating, the Project shall spill 10 cfs continuously year-round in the bypass reach unless otherwise indicated in the flow management and monitoring plan (condition C). When the Project is not operating, all flow shall be spilled at the dam.

*See findings 42, 43, 77, 106, 107, 129-133, and 147-151 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-304 & § 29A-306 (b)(3)(B) & § 306 (c)(3)(B)(i).*

- C. **Flow Management and Monitoring Plan.** The Applicant shall develop within 180 days of the effective date of the FERC license, a flow management and monitoring plan detailing how the Project will operate in instantaneous run-of-river mode and manage flow seasonally to comply with the conservation flow requirements. The plan will also include a method for continuous monitoring and reporting (to allow records to be furnished upon request) of flow releases at the Project (conservation flow, spillage, and turbine discharge), impoundment levels and inflows. The plan shall include provisions for the flow data to be available on a near real-time basis.

The plan will include procedures for reporting deviations from prescribed operating conditions to the Department. Reports shall be made within 15 days after a deviation and will include, if possible, the causes, severity and duration of the deviation, observed or reported adverse environmental impacts from the incident, pertinent data, and measures to be taken to avoid recurrences.

The plan shall be subject to Department approval. The department reserves the right to review and approve any material changes made to the plan.

*See findings 42, 43, 77-80, 105-107, 129-134, and 147-151 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-304 & § 29A-306(b).*

- D. **Fish Passage.** The Applicant shall install and maintain the downstream fish passage facility from April 1st- June 1st and from September 1st – November 15th and maintaining additional measures (finding 127). Prior to replacement of the fish passage chute, the Applicant shall consult with the Fish and Wildlife Department and FWS with respect to the design, to determine the appropriate design meets requirements for safe, timely, and effective fish passage. The Applicant shall file the design information with the Department of Environmental Conservation for approval prior to commencement of work.

*See findings 44, 59-69, and 120- 128 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306(a-b).*

- E. **American Eel Passage.** Within one year of American eel Passage being installed at the Wilder Hydroelectric Project on the mainstem of the Connecticut River, the Applicant shall initiate plans to develop passage. Before developing



the plan, the Applicant will consult with the Vermont Agency of Natural Resources and the FWS. The results of the plan will be reviewed and approved by the Vermont Agency of Natural Resources and the FWS. In addition to the method of passage, the Applicant shall include an implementation schedule which can include monitoring studies. The plan can include but is not limited to, a trap and truck program or eel ramp installation, or other appropriate measures.

*See findings 59-69, and 120- 128 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306(a).*

- F. **Recreation.** The Applicant shall develop and finalize designs for a hand carry access area located upstream of the Newbury Hydroelectric dam (pending private landowner approval and consultation surrounding cultural resources). The designs shall be done in consultation with appropriate stakeholders. The Applicant shall construct recreation access improvements within 4 years of the effective date of the FERC license (pending landowner and permit approvals).

*See findings 47, 100, 101, and 141- 145 for a statement of necessity 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A- 103(b)(1)(G).*

- G. **Debris Disposal.** Debris associated with Project operations shall be disposed of in accordance with the Standards and applicable state laws and regulations.

*See findings 10, 102, 103, and 146 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-303(1).*

- H. **Maintenance and Repair Work.** For any Project maintenance or repair work, including drawdowns below the normal operating level to facilitate repair/maintenance work, plans shall be filed with the Department for prior review and approval, if said work may result in a discharge, have a material adverse effect on water quality, or cause less-than-full support of an existing use or a beneficial values or use of State waters.

*See findings 62, 77, 95, 113, 122, and 139 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-103(a), § 29A-306(b) and § 29A-304(b).*

- I. **Threatened and Endangered Species.** For activities requiring the clearing of trees 3-inches diameter breast height or greater, GMP shall abide by seasonal tree clearing restrictions and only clear trees between November 1st- April 14th to avoid any roost disruption of the Northern long-eared bat. Should tree clearing be required during the restricted time period (April 15th- October 31st), GMP will consult with the USFWS and VTFWD regarding removal.

*See findings 46, 91-93, and 137-139 for a statement of necessity. 10 V.S.A. § 5403.*

- J. **Compliance Inspection by Department.** The Applicant shall allow the Department to inspect the Project area at any time to monitor compliance with certification conditions.

*See finding 114 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-104(a).*

- K. **Posting of Certification.** A copy of the certification shall be prominently posed within the Project powerhouse.

*See finding 114 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-104(a).*

- L. **Modification of Certification.** The Department may request, at any time, that FERC reopen the license to consider modifications to the license as necessary to assure compliance with Vermont Water Quality Standards.

*See finding 114 for a statement of necessity. 10 V.S.A § 1258 & Vt. Code R. 12 0330 026 § 29A-104(a).*



August 28, 2024

Debbie-Anne A. Reese  
Acting Secretary  
ATTN: OEP/DHAC  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

***Via FERC E-Filing***

Re: Project No. 5261, Newbury Hydroelectric Project, License Article 406-Requirement to File Debris Disposal Plan.

Dear Secretary Reese:

Green Mountain Power Corporation (GMP) hereby files with the Federal Energy Regulatory Commission (FERC or Commission) for approval its Debris Disposal Plan in accordance with Article 406 of the Newbury Hydroelectric Project (FERC No. 5261) Order Issuing Subsequent License, issued March 28, 2024.

As required by Article 406, GMP consulted with the Vermont Department of Environmental Conservation and Vermont Fish and Wildlife Department on the plan's development. The consultation record is summarized in Appendix A of the plan.

Please contact me at (802) 655-8753, via email at [John.Tedesco@greenmountainpower.com](mailto:John.Tedesco@greenmountainpower.com), or at the address below, if you have any questions or concerns related to this matter.

Sincerely,

A handwritten signature in black ink that reads "John Tedesco".

John Tedesco  
Generation Project Coordinator  
Green Mountain Power Corporation  
163 Acorn Lane  
Colchester, VT 05446

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Green Mountain Power Corporation

Project No. 5261-025

ORDER APPROVING REVISED EXHIBITS A AND G PURSUANT TO  
ARTICLES 203 AND 205

(Issued October 1, 2024)

1. On June 24, 2024, Green Mountain Power Corporation, licensee for the Newbury Hydroelectric Project No. 5261,<sup>1</sup> filed revised Exhibits A and G pursuant to Articles 203 and 205 of the license, respectively. The project is located on the Wells River in the town of Newbury in Orange County, Vermont and does not occupy federal land.

**Background**

2. On March 28, 2024, Commission staff issued a subsequent license for the project. Article 203 of the license requires the licensee to file, within 90 days of the issuance date of the license, for Commission approval, a revised Exhibit A describing all principal project works necessary for operation and maintenance of the project. The revised Exhibit A must comply with section 4.61(c) of the Commission's regulations, and include the following: (1) all elevations should be reported in National Geodetic Vertical Datum of 1929 (NGVD 29), and be checked to be consistent with the Exhibit F drawings; (2) clear identification of the factor to convert elevations from North American Vertical Datum of 1988 (NAVD 88) to NGVD 29 at the project location; (3) a description of the 7-foot-long, above ground transmission line from the transformer bank to the grid interconnection point; (4) the 18-foot wide by 6-foot deep baffle in front of the intake structure; (5) a detailed description of the transmission lines included in the March 25, 2022 response to Commission staff's February 23, 2022 additional information request at item 1; and (6) revised dates in the Exhibit A footnotes to match the filing date. The licensee must revise the Exhibit A filed on March 25, 2022, and provide the Exhibit A in two forms: (1) a strikethrough format (i.e., strikethrough items to be removed and underline or bold items to be added to the exhibit) and (2) a final, clean copy incorporating the changes (i.e., without the strikethrough, underline, and bold notations).

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<sup>1</sup> *Green Mountain Power Corporation*, 186 FERC ¶ 62,163 (2024).

3. Article 205 of the license requires the licensee to file, within 90 days of license issuance, for Commission approval, revised Exhibit G drawings enclosing within the project boundary, and labeling, all principal project works necessary for operation and maintenance of the project. Exhibit G must identify the intake, minimum flow turbine unit, downstream fish passage chute, trash rack, bypassed reach, and gate house. The Exhibit G drawings must be revised to reflect an appropriate scale that matches the transmission line measurements described in Exhibit A filed on March 25, 2022, and labeled appropriately where the lines are above ground or underground. All elevations in Exhibit G must be referenced to NGVD 29. The Exhibit G drawings must provide the factor to convert NAVD 88 to NGVD 29, and be consistent with Exhibits A and F, or provide justification for any differences noted. The project boundary contour elevation for the west bank of the impoundment must be checked for consistency with Exhibits A and F and be clearly labeled on the Exhibit G maps in NGVD 29. Exhibit G must include the topographic contour lines for ground elevation, list the vertical datum, and identify the spillway elevation. The Exhibit G drawings must comply with sections 4.39 and 4.41(h) of the Commission's regulations.

### **Review**

4. The licensee filed a revised Exhibit A to reflect the subsequent license and address the items identified in Article 203 of the license. Commission staff reviewed the revised Exhibit A and the licensee accurately revised the exhibit. The Exhibit A conforms to the Commission's rules and regulations and therefore should be approved. Commission staff confirmed that no revisions are necessary to the project description in ordering paragraph (B)(2) of the license nor annual charges pursuant to Article 201 of the license.

5. Commission staff's review of the revised Exhibit G drawings found that the licensee revised the drawings consistent with Article 205 of the license. Commission staff georeferenced the Exhibit G drawings and found them to be in agreement with our current mapping requirements. The drawings conform to the Commission's rules and regulations and should be approved. In ordering paragraph (C), Commission staff are requiring the licensee to file the approved exhibit drawings and associated geographic information system data in electronic file format.

### **The Director orders:**

(A) Green Mountain Power Corporation's revised Exhibit A, filed on June 24, 2024, conforms to the Commission's rules and regulations, and this order approves the Exhibit A and makes it part of the license.

(B) The following Exhibit G drawings, filed on June 24, 2024, conform to the Commission's rules and regulations, and this order approves the drawings and makes them part of the license.

Exhibit	FERC Drawing No.	Drawing Title
G-1	P-5261-1005	Project Boundary Map
G-2	P-5261-1006	Project Boundary Map

(C) Within 45 days of the date of issuance of this order, as directed below, the licensee must file the approved exhibit drawings and geographic information system (GIS) data in electronic file format.

a) The licensee must prepare digital images of the approved exhibit drawings in electronic format. Prior to preparing each digital image, the licensee must add the FERC Project-Drawing Number (*i.e.*, P-5261-1005 and P-5261-1006) in the margin below the title block of the corresponding approved drawing. Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit Number, Filename Title, date of this order, and file extension in the following format [P-5261-1005, G-1, Project Boundary Map, MM-DD-YYYY.TIFF].

Each Exhibit G drawing that includes the project boundary must contain a minimum of three known reference points (*i.e.*, latitude and longitude coordinates or state plane coordinates), arranged in a triangular format for GIS georeferencing the project boundary drawing to the polygon data. The licensee must identify the spatial reference for the drawing (*i.e.*, map projection, map datum, and units of measurement) on the drawing and label each reference point. In addition, a registered land surveyor must stamp each project boundary drawing. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY:	black & white raster file
FILE TYPE:	Tagged Image File Format, (TIFF) CCITT Group 4 (also known as T.6 coding scheme)
RESOLUTION:	300 dots per inch (dpi) desired, (200 dpi minimum)
DRAWING SIZE:	22" x 34" (minimum), 24" x 36" (maximum)
FILE SIZE:	less than 1 megabyte desired

b) Project boundary GIS data must be in a georeferenced electronic file format (such as ArcGIS shapefiles, GeoMedia files, MapInfo files, or a similar GIS format). The filing must include both polygon data and all reference points shown on the individual project boundary drawings. Each project development must have an electronic boundary polygon data file(s). Depending on the electronic file format, the polygon and point data can be included in single files with multiple layers. The georeferenced electronic boundary data file must be positionally accurate to  $\pm 40$  feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale. The file name(s) must include: FERC Project Number, data description, date of this order, and file extension in

the following format [P-5261, boundary polygon or point data, MM-DD-YYYY.SHP]. The filing must include a separate text file describing the spatial reference for the georeferenced data: map projection used (*i.e.*, UTM, State Plane, Decimal Degrees, *etc.*), the map datum (*i.e.*, North American 27, North American 83, *etc.*), and the units of measurement (*i.e.*, feet, meters, miles, *etc.*). The text file name must include: FERC Project Number, data description, date of this order, and file extension in the following format [P-5261, project boundary metadata, MM-DD-YYYY.TXT].

(D) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825l, and the Commission's regulations at 18 C.F.R. § 385.713 (2024). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Kelly Houff  
Chief, Engineering Resources Branch  
Division of Hydropower Administration  
and Compliance

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Green Mountain Power Corporation

Project No. 5261-023

ORDER GRANTING EXTENSION OF TIME TO FILE THE FLOW MANAGEMENT  
AND MONITORING PLAN PURSUANT TO ARTICLE 401

(Issued December 19, 2024)

1. On November 20, 2024, Green Mountain Power Corporation, licensee for the Newbury Hydroelectric Project No. 5261,<sup>1</sup> filed an extension of time request to file a Flow Management and Monitoring Plan, pursuant to Article 401 of the project license. The project is located on the Wells River in the town of Newbury in Orange County, Vermont and does not occupy federal land.

**Background**

2. The Commission issued a subsequent license for the project on March 28, 2024. Article 401 of the license, in part, requires the licensee to file a Flow Management and Monitoring Plan (Plan), for Commission approval, within nine months of the effective date of license, consistent with the Vermont Department of Environmental Conservation's (Vermont DEC) water quality certification (WQC) condition C.<sup>2</sup> The licensee must include documentation that it developed the Plan in consultation with the Vermont DEC and provide copies of any comments received, as well as its responses to each comment. The Commission reserves the right to make changes to any plan filed. Upon Commission approval, the Plan becomes a requirement of the license, and the licensee must implement the Plan, including any changes required by the Commission. Any changes to the above schedule or Plan requires approval by the Commission before implementing the proposed change.

3. Article 402 of the license requires that the Plan include the following additional provisions:

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<sup>1</sup> *Green Mountain Power Corporation*, 186 FERC ¶ 62,163 (2024).

<sup>2</sup> Ordering paragraph (E) of the license subjects the license to the conditions submitted by the Vermont Department of Environmental Conservation under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), as those conditions are set forth in Appendix A to the license.



- a detailed description of how the licensee will monitor compliance with the operational requirements of Article 403 (*Project Operation*), including descriptions of the mechanisms and instrumentation or gages used (*i.e.*, type and exact locations of all flow and impoundment elevation monitoring equipment), impoundment elevations needed during run-of-river operation to provide the bypassed reach minimum flow, aesthetic spill flow, and flows through the downstream fish passage chute, and procedures for maintaining and calibrating all compliance monitoring equipment;
- a provision to maintain a log of project operation; and
- an implementation schedule.

4. The licensee must obtain Vermont DEC's approval of the Plan as required by condition C of the WQC, and Article 401. The Commission reserves the right to require changes to the Plan. The licensee must not begin implementing the Plan until the Commission notifies the licensee that the Plan is approved. Upon Commission approval the licensee must implement the Plan, including any changes required by the Commission.

#### **Extension of Time Request**

5. The extension request explains that on October 4, 2024, the licensee received approval from Vermont DEC for the Plan. However, further consultation with Vermont DEC is necessary to amend the current WQC to clarify flow requirements for the downstream fish passage chute. Completing the WQC amendment process is expected to take several months, and would include a public comment period. Therefore, the licensee requests an extension, until June 30, 2025, to complete the WQC amendment process with the Vermont DEC, and file the Plan for Commission approval. Additionally, the licensee provided documentation of correspondence with the Vermont DEC, concurring with the extension of time request.

#### **Review**

6. The licensee requests, until June 30, 2025, to complete the WQC amendment process, and file the Plan for Commission approval. The licensee consulted with the Vermont DEC on the extension request. The licensee provided adequate justification for the extension of time and filed the request before the deadline; and therefore, the request should be approved.

#### **The Director orders:**

(A) Green Mountain Power Corporation's November 20, 2024 request for an extension of time, to file a Flow Management and Monitoring Plan, pursuant to Article

401 of the project license, is approved. The extended deadline to file the Flow Management and Monitoring Plan is June 30, 2025.

(B) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825l, and the Commission's regulations at 18 C.F.R. § 385.713 (2024). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Kelly Houff  
Chief, Engineering Resources Branch  
Division of Hydropower Administration  
and Compliance