

September 20, 2022

Ms. Shannon Ames Executive Director Low Impact Hydropower Institute 329 Massachusetts Avenue, Suite 2 Lexington, MA 02420

Re: Low Impact Hydropower Institute Application for the Rollinsford Hydroelectric Project (FERC Project No. 3777).

Dear Ms. Ames:

On behalf of the Town of Rollinsford, New Hampshire (the Licensee), Green Mountain Power Corporation (GMP) submits the attached Application for the Rollinsford Hydroelectric Project located on the Salmon Falls River in New Hampshire and Maine. GMP is respectfully requesting certification of this facility.

The application includes the following required components.

- Introduction
- Project Description and Low Impact Hydropower Institute Table B-1.
- Zones of Effect descriptions and overview maps and images.
- Matrix of Alternative Standards for each Zone of Effect identified evaluating the Low Impact Hydropower Institute certification standards for each requisite criterion including water quality, fish passage and recreation.
- Facility Contacts Form.
- Sworn Statement and Waiver Form.

If there are any questions or comments regarding the application, please contact me at (802) 770-2195, via email at John.Greenan@greenmountainpower.com, or at the address below.

Sincerely,

John C. Greenan 19 16:18:41 -04'00

John C. Greenan, P.E. Engineer Green Mountain Power 1252 Post Road Rutland, VT 05701

LOW IMPACT HYDROPOWER INSTITUTE CERTIFICATION APPLICATION ROLLINSFORD HYDROELECTRIC PROJECT FERC PROJECT NO. 3777



GREEN MOUNTAIN POWER CORPORATION



ON BEHALF OF THE TOWN OF ROLLINSFORD, NH

September 2022

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LIST OF ABBREVIATIONS AND ACRONYMS

cfs	cubic feet per second
DOC	Department of Commerce
DOI	Department of the Interior
ESA	Endangered Species Act
FEMP	Fishway Effectiveness Monitoring Plan
FERC or Commission	Federal Energy Regulatory Commission
FOMP	Fishway Operations and Maintenance Plan
GMP	Green Mountain Power Corporation
HPMP	Historic Properties Management Plan
IPAC	Information for Planning and Consultation
kW	kilowatt
kWh	Kilowatt-hours
Licensee	Town of Rollinsford
LIHI	Low Impact Hydropower Institute
MDEP	Maine Department of Environmental Protection
MDMR	Maine Department of Marine Resources
MDIFW	Maine Department of Inland Fisheries and Wildlife
MHPC	Maine Historic Preservation Commission
mi ²	Square miles
msl	Mean sea level
MW	Megawatt
MWh	Megawatt-hours
NHDES	New Hampshire Department of Environmental Services
NHFGD	New Hampshire Fish and Game Department
NHNHB	New Hampshire Natural Heritage Bureau
NLEB	Northern longed-eared bat
NLF	Nature-Like Fishway
PLC	Programmable Logic Controller
Prescription	Department of Interior Modified Fishway Prescription
Project	Rollinsford Hydroelectric Project
RM	River mile
rpm	Revolutions per minute
SHPO	State Historic Preservation Officer
USFWS	United States Fish and Wildlife Service
WQC	Water Quality Certification
WQMEP	Water Quality Mitigation and Enhancement Plan
ZOE	Zone of Effect

1 PROJECT DESCRIPTION

1.1 Project Location

The Town of Rollinsford (the Licensee) owns the 1.5-megawatt (MW) Rollinsford Hydroelectric Project (the Project), which is operated and managed by Green Mountain Power Corporation (GMP), under a lease agreement with the Licensee. The Project is located on the Salmon Falls River, which also serves as the border between Maine and New Hampshire. Most of the infrastructure associated with the Project, including the intake, penstock, and powerhouse, is located within the Town of Rollinsford, Strafford County, New Hampshire. The left abutment of the dam is in the Town of South Berwick, York County, Maine. A Project location map is shown in Figure 1.1-1. At the Project dam, the total drainage area is approximately 232 square miles (mi²), which is about 98.3% of the Salmon Falls drainage area (236 mi²).

The Project dam is located at approximately river mile (RM) 0.90 and is the second dam on the mainstem of the Salmon Falls River. Historically, there have been 24 dams along the mainstem of the river, but some have been removed, breached, or are now in ruins. <u>Table 1.1-1</u> details the name, status, location, and attributes of all dams along the Salmon Falls River from downstream to upstream. The dam locations are shown in <u>Figure 1.1-2</u>.

The following sections describe the Project structures, features, and mode of operation. Project information is also summarized in <u>Table 1.1-2</u>.

1.2 Project Facilities

Key structures and features of the Project are shown in <u>Figure 1.2-1</u>. Photographs of the Project structures and features are included in <u>Appendix A</u>.

The Project dam (Figure A-1) has been in place since 1910 and has a total length of 317 feet, which consists of a 12-foot-long left abutment, a 247-foot-long spillway section, a 22-foot-long right abutment, and a 36-foot-long gated section containing five (5) vertical lift gates. The crest elevation is at approximately 70.0 feet, mean sea level (msl). The spillway has a flood discharge capacity of 17,300 cfs. The dam is topped with 15-inch-high flashboards, resulting in a normal pond elevation of 71.25 feet, msl, at the crest of the flashboards. The only means of flow conveyance at the Project dam is over the spillway; there are no low-level gates at the Project dam.

The Project impoundment (Figure A-2) has a gross volume of 456 acre-feet with a surface area of 84 acres at the normal pond elevation of 71.25 feet, msl. Since the Project operates as a run-of-river facility, the useable storage volume is negligible.

The intake headworks is approximately 52 feet wide by 82 feet long and is constructed of reinforced concrete. There are a series of five (5) vertical lift gates located at the entrance to the intake headworks (Figure A-3). Each gate is approximately 5.5 feet high and 5.5 feet wide. These gates are typically left in the fully open position and are only closed during maintenance activities that require dewatering of the intake headworks. The vertical lift gates are manually operated. Two (2) of the gates are operated with Rodney Hunt crank actuators, and the remaining three (3) gates are operated with Rodney Hunt handwheel actuators. The penstock intake is equipped with trashracks that have dimensions of 17.6 feet high by 22.8 feet wide with 2.5-inch bar spacing (Figure A-4). The dimensions at the mouth of the intake opening are 22.8 feet wide by 15.7 feet high. From this point, the intake opening tapers along a longitudinal distance of 15 feet to the mouth of the 10-foot square penstock opening. The intake headworks also has an 8-foot-wide skimmer waste gate section with a sill elevation of 69.3 feet, msl that conveys flow to the bypass reach, when it is open (Figure A-5). In addition, there is a gate opening 4 feet wide by 4 feet high with a sill

elevation of approximately 60.0 feet msl, below the skimmer waste gate. This gate opening was sealed with a steel plate during Project construction in the early 1980s, and currently does not function to convey water.

The existing penstock was constructed in 1923. The penstock is concrete, 10 square feet by 600 feet long, and travels from the intake headworks structure to the forebay at the powerhouse (Figure A-6). During Project redevelopment in the early 1980's, a 9-foot diameter steel liner was installed within the lower 250 feet of the penstock. The steel liner is approximately 3/8-inch thick.

The forebay is approximately 40 feet wide and 30 feet long and is constructed of reinforced concrete with a crest elevation at 73.0 feet msl (Figure A-7).

The powerhouse is located approximately 660 feet downstream of the Project dam and is of brick masonry construction and is approximately 60 feet wide and 38 feet long (Figure A-8). The powerhouse contains two (2) identical vertical 750-kilowatt (kW) (833 kVA at 0.9 Power Factor) Siemens Allis synchronous generators each with an output voltage of 4,160 volts and two (2) identical vertical James Leffel Co. Type "Z" Francis turbines, each having a rated output of 1,000 horsepower (hp) and operating at 360 revolutions per minute (rpm) at a rated flow of 228 cubic feet per second (cfs) and an average head of 45 feet. The minimum hydraulic capacity of each turbine unit is approximately 80 cfs. The existing hydropower generating units were installed in 1983. The Project's average annual generation from 2005-2018 was 5,837 megawatt-hours (MWh).

Power is fed from the generator leads to a 100-foot-long underground transmission line to a 2000 kVA 4.16/13.8 kV step-up transformer located adjacent to the powerhouse (Figure A-9).

The Project has one tailrace that is approximately 34 feet wide and 38 feet long (Figure A-10). A 680-footlong bypass reach extends between the Project dam and the tailrace. The bypass reach width varies from a maximum of approximately 265 feet just below the Project dam, to a minimum of approximately 120 feet at the lower end of the bypassed reach near the Project powerhouse.

1.3 Project Operations

The Project is operated in automatic mode as a run-of-river facility with no storage or flood control capacity. A pond level sensor is installed near the intake to monitor and ensure the Project impoundment is maintained at the flashboard crest elevation of 71.25 feet, msl, and to regulate the turbine operation. The Project maintains a continuous minimum bypass flow of 35 cfs or inflow, whichever is less. The Project is operated under an average head of 45 feet.

The flashboards on the spillway crest are constructed of wood and held in place with steel pins. Flashboards are typically replaced as-needed after high-flow events. During installation/repair of the spillway flashboards, the Project impoundment is temporarily drawn down by increasing generation flows above inflow rates, during a time when streamflow conditions allow. The impoundment level is lowered just below the spillway crest to allow operations personnel to safely work on the spillway crest. Flashboards and pins are then repaired or replaced as needed. When restoring the elevation of the impoundment, most of the inflow is passed through the Project turbines, allowing the impoundment to slowly rise and prevent dewatering of the river reach below the dam.

1.4 Regulatory and Other Requirements

The Federal Energy Regulatory Commission (FERC or Commission) issued a 40-year license for the Project on June 16, 2022, with an expiration date of June 1, 2062¹. In addition, on June 10, 2021, the Licensee was granted a 401 Water Quality Certification (WQC) from the New Hampshire Department of Environmental Services² (NHDES) and the Maine Department of Environmental Protection³ (MDEP) issued a 401 WQC for the Project on June 11, 2021. Both 401 WQCs were incorporated into the FERC License.

- Article 401 requires the Licensee to file various plans, reports, schedules, and amendments for Commission approval that are required by the 401 WQCs and the U.S. Department of the Interior's (DOI) section 18 fishway prescription. Article 401 also requires the Licensee to notify the Commission of any planned or unplanned deviations from the mandatory license conditions related to operation.
- Article 402 reserves authority to the Commission to require fishways at the Project that be prescribed by DOI or the Department of Commerce (DOC).
- Article 403 requires the License release a minimum bypass flow of 35 cfs or inflow if less through a notch in the flashboards at the Project dam. Should upstream anadromous fish passage facilities be installed at the Project, a minimum bypass flow of 35 cfs or inflow if less is required from July 16 through April 14 from the downstream fish passage facility and 60 cfs is required from April 15 through July 15 from a combination of the downstream fish passage facility and upstream fish passage facility at the dam.
- Article 404 requires the Licensee to file within one year of license issuance, for Commission approval, a downstream fish passage plan that provides for the installation of downstream fish passage facilities at the Project for downstream migrating anadromous fish species and American eels. The downstream fish passage facilities must consist of: (1) a full-depth diversionary guidance boom placed upstream of the headgates; (2) a 3-foot-wide surface weir at the dam that has a hydraulic capacity of 35 cfs and provides a water depth of 2 feet; and (3) a 4-foot-deep plunge pool located downstream of the dam. The downstream fish passage facilities must be operational by June 1 of the third year after license issuance.
- Article 405 requires a seasonal restriction on tree removal to protect the federally listed northern long-eared bat during its active season (April 1 to October 1). The Licensee must limit non-hazardous tree removal to the period of October 2 through March 31. Tree removal is defined as cutting down, harvesting, destroying, trimming, or manipulating in any other way the non-hazardous trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bats (i.e., woody vegetation greater than or equal to 3 inches diameter at breast height).
- Article 406 requires the Licensee implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission, the New Hampshire State Historic Preservation Office, and the Maine State Historic Preservation Office for Managing Historic Properties that May be Affected by Issuing a Subsequent License to the Town of Rollinsford, New Hampshire for the Continued

¹ FERC Accession Number. 20220616-3081: <u>https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220616-3081</u>.

² FERC Accession Number: 20210611-5022: <u>https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20210611-5022</u>.

³FERC Accession Number: 20210611-5073: <u>https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20210611-5073</u>.

Operation of the Rollinsford Hydroelectric Project in Strafford County, New Hampshire and York County, Maine (FERC No. 3777-011)," executed on January 10, 2022, and including but not limited to the Historic Properties Management Plan (HPMP) for the Project. As part of the Programmatic Agreement, the Licensee must file, for Commission approval, a HPMP within one year of issuance. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the Licensee must obtain approval from the Commission and the New Hampshire and Maine State Historic Preservation Officers, before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the Project's areas of potential effects.

• Article 407 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.

1.5 Zones of Effect

The Project is delineated into three Zones of Effect (ZOE): Impoundment, Bypass Reach and Downstream as shown in <u>Figure 1.5-1</u> and discussed in greater detail below.

- ZOE 1 starts at the most upstream point of the Project boundary (RM 3.0) on the Salmon Falls River in the Project impoundment and ends at the Project dam (RM 0.9). The approximate length of the 84-acre impoundment is 2.1 RM. The normal pond elevation of 71.25 feet, msl.
- The Project dam discharges to Salmon Falls River, designated as ZOE 2 Bypass Reach. The Project bypass reach is approximately 0.1 RM in length.
- The Project bypass reach and powerhouse discharge to the Salmon Falls River in a reach designated as ZOE 3 Downstream. This ZOE extends downstream of the Project powerhouse approximately 0.15 RM to where Driscoll Brook enters the Salmon Falls River.

Name	Status	Town	FERC No.	Owner	River Mile	Downstream Fish Passage Facility
South Berwick Dam	Active	Rollinsford	11163	Salmon Falls Hydro, LLC (GMP)	0.0	Yes
Rollinsford Dam	Active	Rollinsford	3777	Town of Rollinsford (operated by GMP)	0.9	Expected (2025)
Lower Great Falls Dam	Active	Somersworth	4451	City of Somersworth & GMP	3.1	Expected (2026)
Back Dam	Active	Somersworth	-	Aclara Technologies, Inc.	4.1	No
Stone Dam	Active	Somersworth	3820	Aclara Technologies, Inc.	4.4	No
Mast Point Dam	Removed	Somersworth	-	General Electric Co.	7.2	
Boston Felt Dam	Active	Rochester	4542	Salmon Falls Power and Light Co	13.7	No
Salmon Falls II Dam	Ruins	Rochester	-	Cocheco Woolen	13.8	NA
Spaulding Pond Dam	Active	Rochester	3985	Spaulding Ave Industrial Complex, LLC	18.8	No
Salmon Falls River I Dam	Ruins	Milton	-	Spaulding Fiber Company	20.1	NA
South Milton Dam	Active	Milton	3984	SFR Hydro Co.	20.8	No
Milton Leather Board Lower Dam	Removed	Milton	-	Mr. John Jamesom	21.0	NA
Milton Leather Board Dam	Active	Milton	-	Milton Land Corp	21.1	No
Salmon Falls River V Dam	Removed	Milton	-	PSNH	21.3	NA
Milton Three Ponds Dam	Active	Milton	-	NHDES Water Division	21.4	No
Salmon Falls River VII	Active	Milton	-	Mr. David Aubert	28.6	Yes (eel)
Waumbek Dam	Active	Milton	5872	NHDES Water Division	28.8	No
Salmon Falls River VIII Dam	Breached	Milton	-	PSNH	28.9	NA
Salmon Falls River VIX Dam	Ruins	Milton	-	PSNH	29.2	NA
Rowe Dam	Active	Milton	-	NHDES Water Division	29.5	No
Salmon Falls River XII Dam	Ruins	Milton	-	Mr. L E Wiggin	31.2	NA
Salmon Falls River XI Dam	Ruins	Milton	-	Mr. Carr Horn	31.6	NA
Horn Pond Dam	Active	Wakefield	-	NHDES Water Division	33.5	No
Great East Lake Dam	Active	Wakefield	-	NHDES Water Division	35.0	No

TABLE 1-1: CURRENT AND HISTORIC DAMS ON THE SALMON FALLS RIVER

Item	Information Requested	<i>Response (include references to further details)</i>	
Name of the Facility	Facility name (use FERC project name or other legal name)	Rollinsford Hydroelectric Project	
Reason for applying for LIHI Certification	To participate in state RPS program To participate in voluntary REC market (e.g., Green-e) To satisfy a direct energy buyer's purchasing requirement To satisfy the facility's own corporate sustainability goals For the facility's corporate marketing purposes Other (describe)	 (select and describe only applicable reasons) 1. ⊠ State Program: GMP is applying to participate in the NEPOOL State REC Program: NF Class IV, RI Existing, VT Tier I, CT CEC 2. □ 3. □ 4. □ 5. □ 6. ⊠ describe: Sell into NH IV REC market to offset rates 	
	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	Amount of MWh participating: ~5,837 MWh % of total MWh generated: <u>100%</u>	
<i>Location</i> River name (USGS proper name)		Salmon Falls 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: <u>https://water.usgs.gov/wsc/map_index.html</u> Nearest town(s), <u>county(ies)</u> , and state(s) to dam	01060003 Town of Rollinsford, Strafford County, NH and Town of South Berwick, York	
		County, ME	
	River mile of dam above mouth		
	Geographic latitude and longitude of dam	Lat: 43°14'9.60" north Long: 70°49'1.20" west	
Facility Owner	Application contact names	John Greenan, P.E.	
	Facility owner company and authorized owner representative name.For recertifications: If ownership has changed since last certification, provide the effective	Town of Rollinsford, NH, Green Mountain Power Corporation	
	date of the change.		

TABLE 1.2-2: FACILITY INFORMATION

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Item	Information Requested	Response (include references to further details)
	FERC licensee company name (if different from	NA
	owner)	
Regulatory Status	FERC Project Number (e.g., P-xxxx), issuance	P-3777, date of issuance 6/16/2022, date
	and expiration dates, or date of exemption	of expiration 6/1/2062
	FERC license type (major, minor, exemption) or	Minor
	special classification (e.g., "qualified conduit",	
	"non-jurisdictional")	
	Water Quality Certificate identifier, issuance date,	WQC #L-17487-33-M-N, Issued June 11,
	and issuing agency name. Include information on	2021 by the Maine Department of
	amendments.	Environmental Protection and WQC
		2021-FERC-001, Issued June 10, 2021 by
		the New Hampshire Department of
		Environmental Services
	Hyperlinks to key electronic records on FERC e-	FERC License Order with MDEP and
	Library website or other publicly accessible data	NHDES WQC and USFWS Modified
	repositories ⁴	Fishway Prescription as attachments:
		https://elibrary.ferc.gov/eLibrary/filelist?
		accession_number=20220616-3081.
		Hyperlinks are provided throughout
		various sections of this document for other
		pertinent FERC Orders and related
		regulatory documents as they are
Powernouse	Date of initial operation (past of future for pre-	Date of initial operation-1983, Installed
	Total installed consoity (MW)	capacity=1.5 WW
	For recordifications: Indicate if installed	
	conacity has changed since last cartification	
	Average annual generation (MWh) and period of	5.873 MWh for the period 2005-2018
	record used	5,875 WWW for the period 2005-2018.
	For recertifications: Indicate if average annual	
	generation has changed since last certification	
	Mode of operation (run-of-river peaking pulsing	Run-of-river
	seasonal storage, diversion etc.)	
	For recertifications: Indicate if mode of	
	operation has changed since last certification	

⁴ For example, the FERC license or exemption, recent FERC Orders, Water Quality Certificates, Endangered Species Act documents, Special Use Permits from the U.S. Forest Service, 3rd-party agreements about water or land management, grants of right-of-way, U.S. Army Corps of Engineers permits, and other regulatory documents. If extensive, the list of hyperlinks can be provided separately in the application.

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	Two (2) identical vertical James Leffel Co. Type "Z" Francis turbines and Two (2) identical vertical 750 kW Siemens Allis synchronous generators. contains Maximum hydraulic capacity = 228 cfs per unit. Minimum hydraulic capacity 80 cfs per unit. Maximum output = 750 kW per unit. Minimum output = 200 kW per unit.	
	Trashrack clear spacing (inches) for each trashrack	2.5 inches	
	Approach water velocity (ft/s) at each intake if known	1.3 ft/s	
	Dates and types of major equipment upgrades For recertifications: Indicate only those since last certification	NA	
	Dates, purpose, and type of any recent operational changes For recertifications: Indicate only those since	NA	
last certification			
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	NA	
Dam or Diversion	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	Dam was originally constructed in 1910. No major modifications have occurred since	
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	Dam length = 317 ft. Dam height = ft. Flashboard height = 1.25 feet.	
	Spillway maximum hydraulic capacity	17,300 cfs	
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	One 9-foot diameter steel penstock with a length of 660-feet.	
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power generation	
Conduit Facilities Only	Date of conduit construction and primary purpose of conduit	NA	
	Source water	NA	
	Receiving water and location of discharge	NA	

Item	Information Requested	Response (include references to further details)		
Impoundment and Watershed	Authorized maximum and minimum impoundment water surface elevations For recertifications: Indicate if these values have changed since last certification	No maximum. Minimum = 70.0 ft, msl- flashboards down.		
	have changed since last certificationNormal operating elevations and normalfluctuation rangeFor recertifications: Indicate if these valueshave changed since last certificationGross storage volume and surface area at full poolFor recertifications: Indicate if these valueshave changed since last certificationUsable storage volume and surface areaEag recertifications: Indicate if these values	Normal full pond = 71.25 ft, msl- flashboards up. Normal full pond = 70.0 ft, msl-flashboards down. Gross Storage Volume = 456 acre-ft. Surface Area = 84 acres. Negligible-Project is run-of-river.		
	have changed since last certification Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Per water quality certification and FERC license (See Section 1.3).		
	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.	Next upstream dam is the Lower Great Falls Hydroelectric Project (P-4511), owned by GMP and the City of Somersworth. River mile 3.1. The Lower Great Falls Project will have downstream fish passage facilities (expected 2026) as a condition of its new FERC License, expected to be issued in 2023. See Table 1-1 for other dams on the Salmon Falls River.		
	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 Operating agreements with upstream or downstream facilities that affect water availability and facility operation	Next downstream dam is the South Berwick Hydroelectric Project (P-11163). Owned by GMP. River mile 0.0. Upstream and downstream fish passage facilities were constructed in 2001. NA		
Hydrologic Setting	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. Average annual flow at the dam, and period of	4 acres of land. 84 acres of water. All land within the Project boundary is fee-owned property. 407 cfs. Period of Record: 1968-2005;		
	record used	2011-2018.		

Item	Information Requested	Response (include references to further	
		details)	
	Average monthly flows and period of record used	January: 388 cfs February: 389 cfs,	
		March: 635 cfs, April: 914 cfs, May: 477	
		cfs, June: 297 cfs, July: 143 cfs, August:	
		138 cfs, September: 156 cfs, October: 392	
		cfs, November: 446 cfs, December: 494	
		cfs. Period of Record: 1968-2005; 2011-	
		2018.	
	Location and name of closest stream gaging	Upstream: Salmon Falls near Milton, NH	
	stations above and below the facility	gage (USGS gage number 01072100). Downstream: NA	
	Watershed area at the dam (in square miles).	Watershed area at the dam: 232 square	
	Identify if this value is prorated from gage	miles. Flow data from the Salmon Falls	
	locations and provide the basis for proration	near Milton, NH gage (USGS gage	
	calculation.	number 01072100) was multiplied by a	
		ratio of the drainage areas at each point	
		(232 mi2/108 mi2).	
	Other facility specific hydrologic information	NA	
	(e.g., average hydrograph)	<u> </u>	
Designated Zones	Numbers and names of each zone of effect (e.g.,	Zone 1-Impoundment, Zone 2-Bypass	
of Effect	"Zone 1: Impoundment")	Reach, Zone 3-Downstream.	
	River mile of upstream and downstream limits of	Zone 1-Impoundment: RM 3.0-0.9, Zone	
	each zone of effect	2-Bypass Reach: RM 0.9-0.89, Zone 3-	
	(e.g., "Zone 1 Impoundment: RM 6.3 - 5.1")	Downstream: RM 0.89-0.875	
Pre-Operational Faci	lities Only		
Expected	Date generation is expected to begin	NA	
operational date			
Dam, diversion	Description of modifications made to a pre-	NA	
structure or conduit	existing conduit, dam or diversion structure		
modification	needed to accommodate facility generation. This		
	includes installation of flashboards or raising the		
	flashboard height.		
	Date the modification is expected to be completed		
Change in water	Description of any change in impoundment levels,	NA	
flow regime	water flows or operations required for new		
	generation		



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2 STANDARDS MATRICES

	Zone:	1: Impoundment	2: Bypassed Reach (if applicable)	3. Downstream Reach	
	River Mile at upper and lower extent of Zone:	3.0-0.9 0.9-0.89		0.89-0.875	
Criter	ion	Standard Selected (type in one numbered standard and PLUS if applicable)			
Α	Ecological Flows	2	2	2	
В	Water Quality	2	2	2	
С	Upstream Fish Passage	1	2	2	
D	Downstream Fish Passage	2	2	1	
Е	Shoreline and Watershed Protection	1	1	1	
F	Threatened and Endangered Species	3	3	3	
G	Cultural and Historic Resources	2	2	2	
Н	Recreational Resources	1	1	1	

3 SUPPORTING INFORMATION

3.1 Ecological Flow Standards

3.1.1 Ecological Flows Standards—Impoundment and Downstream ZOE

(Criterion	Standard	Instructions
А	2	Agency Recommendation:
		 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). 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. Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. 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).

Both the Impoundment (Zone 1) and Downstream (Zone 3) ZOE are using standard 2 to justify meeting the ecological flow standard.

- Condition E-10a of the NHDES WQC and Condition 1A of the MDEP WQC requires that the Project be operated in a run-of-river mode, such that outflow from the Project approximates inflow. A pond level sensor is installed near the Project intake to monitor and ensure the Project impoundment is maintained at the flashboard crest elevation of 71.25 feet, msl, and to regulate turbine operation.
- Condition E-10d of the NHDES WQC requires that after drawdown of the Project impoundment for maintenance or emergencies, the Licensee release 90 percent of the inflow downstream to the Salmon Falls River and utilize the remaining 10% of inflow to refill the impoundment.
- Condition E-10e of the NHDES WQC requires that when drawing the water level in the impoundment down for scheduled maintenance, the Licensee lower the impoundment water level no more than six (6) inches per day.
- Condition E-12 of the NHDES WQC and Condition 1B of the MDEP WQC require the development of a Flow/Impoundment Compliance Monitoring Plan and Operation Monitoring Plan, respectively to ensure compliance with impoundment level and bypass flow requirements, as well as reporting of Project operational parameters (i.e., generation, turbine flow, etc.). Article 401 of the License requires the plans to be filed with the Commission for approval by November 19, 2022.
- To achieve compliance with the run-of-river operational requirements a Programmable Logic Controller (PLC) is utilized to accept various operational inputs and to direct operational outputs. The primary purpose of the PLC is to control headpond water level as river flows vary by modulating the turbine gate setting. A pressure transducer is utilized in the impoundment to determine the water level and transmit the information to the PLC for appropriate action. On-site computers enable electronic data collection and storage and facilitate report printing for monitoring purposes.

- There are no formal agreements with upstream facilities to regulate inflow or outflow at the Project. However, GMP does operate the downstream South Berwick Hydroelectric Project, FERC No. 11163 and the upstream Lower Great Falls Hydroelectric Project, FERC No. 4451, which provides some level of coordination, if necessary, even though each of the three facilities operate in a run-of-river mode.
- The Project's run-of-river operation provides a stable impoundment level and a natural flow regime below the Project to protect aquatic and riparian habitats.

3.1.2 Ecological Flows Standards-- Bypass Reach ZOE

(Criterion	Standard	Instructions
А	2	Agency Recommendation:
		 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). 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. Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate and drives and enjaged enjaged in instream flows, ramping).
		rate conditions, and seasonal and episodic instream flow variations).

The Bypass Reach (Zone 2) ZOE is using standard 2 to justify meeting the ecological flow standard.

- Minimum bypass flow requirements at the Project are based upon a 2018 IFIM study conducted by the Licensee during relicensing to evaluate the relationship between aquatic habitat and flow within the bypass reach.
- Condition E-10b of NHDES WQC and Condition 2A of MDEP WQC require the following.
 - When the Project is generating power from July 16 through April 14, a continuous conservation flow of at least 35 cfs or inflow, whichever is less, shall be released to the bypass reach.
 - When the Project is generating power from April 15 through July 15, prior to implementation of volitional upstream alosine passage at the Project, a continuous conservation flow of at least 35 cfs or inflow, whichever is less, shall be released to the bypass reach.
 - When the Project is generating power from April 15 through July 15, after implementation of volitional upstream alosine passage at the Project, the bypass reach flow and the manner it is released to the bypass reach, will be determined by the USFWS in accordance with the USFWS's fish passage design guidelines, and after consultation with the NHDES, New Hampshire Fish and Game Department (NHFGD), MDEP, Maine Department of Marine Resources (MDMR) and Maine Department of Inland Fisheries and Wildlife (MDIFW).
 - When the Project is not operating, 100 percent of inflow will be passed over the spillway and into the bypass reach.
- The bypass minimum flow requirements protect water quality and aquatic habitat, and also provide for zone of passage for migratory fish species.

3.2 Water Quality Standards

3.2.1	Water Quality S	Standards-Impour	ndment, Bypass	Reach, and	Downstream ZO
	Water Quality	standar as impour	functive, Dy pubb	iteacity und	

Criterion	Standard	Instructions
В	2	Agency Recommendation:
		 Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter or email from the agency). Identify any other agency recommendations related to water quality and explain their scientific or technical basis. Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

The Impoundment (Zone 1), Bypass Reach (Zone 2) and Downstream (Zone 3) ZOE are using standard 2 to justify meeting the water quality standard.

- The Project received WQCs from the States of New Hampshire⁵ and Maine⁶ on June 10, 2021, and June 11, 2021, respectively.
- Both New Hampshire and Maine have regulatory authority over water quality in the Salmon Falls River. The Salmon Falls River at the Project is classified as Class B in New Hampshire and Class C in Maine. In New Hampshire, Class B water bodies are considered acceptable for fishing, swimming, and other recreational purposes, and after treatment, are potential water supplies. In Maine, Class C water must ensure suitability for designated uses of drinking water, fishing, agriculture, recreation, industrial processes, cooling water, hydroelectric power generation, navigation, and habitat for fish and other aquatic life.
- In New Hampshire, the Project impoundment is listed on the Clean Water Act section 303(d) list of impaired waters for pH, mercury, non-native aquatic plants and riverine segment immediately downstream of the Project dam is listed for dissolved oxygen and mercury⁷. In Maine, the section of river in which the Project is located is listed on the Clean Water Act section 303(d) list of impaired waters for the following impairments: Escherichia coli, ammonia, eutrophication, dissolved oxygen, phosphorus, and biochemical oxygen demand⁸.
- During Project relicensing, the Licensee conducted water quality monitoring for dissolved oxygen and temperature within the Project impoundment, bypass reach, and tailwater. The monitoring showed that the impoundment exhibited low dissolved oxygen levels, below state standards during low flow periods. Low dissolved oxygen levels were attributed to the stratification that occurs in the impoundment during low flow in the summer months. To improve water quality in the Project impoundment during low flow, the Licensee submitted a draft Water Quality Mitigation and Enhancement Plan (WQMEP) to NHDES and MDEP. Condition E-14 of the NHDES WQC and

⁵ FERC Accession Number: 20210611-5022: <u>https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20210611-5022</u>.

⁶FERC Accession Number: 20210611-5073: <u>https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20210611-5073</u>.

⁷ <u>https://www.epa.gov/sites/default/files/2020-10/documents/2018-nh-303d-list.pdf</u>. See pages 4 and 14.

⁸ https://www.epa.gov/sites/default/files/2018-03/documents/2016-me-integrated-rpt-list.pdf. See pages 55, 98, and 144.

Condition 5A of the MDEP WQC requires the Licensee to consult with NHDES and MDEP regarding finalization of the WQMEP within 60 days of license issuance. Article 401 of the License requires, the Licensee to file the final plan with the Commission for approval by September 22, 2022.

- Condition 5B of the MDEP WQC requires that the Licensee monitor dissolved oxygen in the Project impoundment during low flows in the summer months for two years following license issuance, if the monitoring shows that dissolved oxygen level fall below state standards, then the WQMEP will be implemented in the third year after license issuance.
- Condition E-15 of the NHDES WQC also requires long term water quality monitoring and reporting every five years beginning the fifth year after license issuance and ending five years prior to the expiration of the new license. The purpose of the monitoring is to 1) determine the future effects of Project operation during the duration of the new license, on water temperature and dissolved oxygen, 2) to compare results to water quality standards, and 3) to determine if additional changes in Project operation are necessary to comply with surface water quality standards. Should monitoring indicate that water quality standard exceedances exist, the Licensee will consult with NHDES regarding changes to Project operation to improve water quality, and then implement the NHDES approved revisions to Project operation.
- Condition E-10a of the NHDES WQC and Condition 1A of the MDEP WQC requires that the Project be operated in a run-of-river mode, such that outflow from the Project approximates inflow. A pond level sensor is installed near the Project intake to monitor and ensure the Project impoundment is maintained at the flashboard crest elevation of 71.25 feet msl, and to regulate turbine operation.
- Condition E-10b of NHDES WQC and Condition 2A of MDEP WQC require the following.
 - When the Project is generating power from July 16 through April 14, a continuous conservation flow of at least 35 cfs or inflow, whichever is less, shall be released to the bypass reach.
 - When the Project is generating power from April 15 through July 15, prior to implementation of volitional upstream alosine passage at the Project, a continuous conservation flow of at least 35 cfs or inflow, whichever is less, shall be released to the bypass reach.
 - When the Project is generating power from April 15 through July 15, after implementation of volitional upstream alosine passage at the Project, the bypass reach flow and the manner it is released to the bypass reach, will be determined by the USFWS in accordance with the USFWS's fish passage design guidelines, and after consultation with the NHDES, New Hampshire Fish and Game Department (NHFGD), MDEP, Maine Department of Marine Resources (MDMR) and Maine Department of Inland Fisheries and Wildlife (MDIFW).
 - When the Project is not operating, 100 percent of inflow will be passed over the spillway and into the bypass reach.

3.3 Upstream Fish Passage Standards

Diadromous fish present in the Project tailwater include American eel (*Anguilla rostrate*), as well as blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*) (hereafter collectively referred to as river herring). Historically, Atlantic salmon (*Salmo salar*) migrated up the Salmon Falls River, giving the river its name. By 1750 prior to the dam's construction, these runs were sufficiently disrupted by dams, overfishing, and sawdust pollution that the salmon no longer returned to the Salmon Falls River for spawning (Noon, 2002).⁹ American shad (*Alosa sapidissima*) are present downstream of the South Berwick Project; however, no shad have been recorded using the upstream fishway at the South Berwick Project, which was installed in 2011, and no entity has reported observing shad in the Salmon Falls River between the South Berwick Project dam and the Rollinsford Project dam. Approximately 24,571 and 16,418 river herring passed upstream using the fish passage facilities at the South Berwick Project in 2018 and 2019, respectively.

3.3.1 Upstream Fish Passage Standards-Impoundment ZOE

Criterion	Standard	Instructions
С	1	Not Applicable / De Minimis Effect:
		• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no facility barrier to further upstream movement.
		• Document available fish distribution data and the lack of migratory fish species in the vicinity.
		• If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

The Impoundment ZOE (Zone 1) is using standard 1 to justify meeting the upstream fish passage standard since once the fish pass upstream of the dam into the impoundment, they are not restricted in any way. There is no barrier to restrict further upstream movement.

3.3.2 Upstream Fish Passage Standards-Bypass Reach and Downstream ZOE

Criterion	Standard	Instructions
С	2	Agency Recommendation:
		• 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).
		• 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.
		• Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.
		• Provide evidence that required passage facilities are being operated and maintained as mandated (e.g., meets seasonal operational requirements, coordination with agencies, effectiveness relative to performance targets).

⁹ Noon, J. (2002). New Hampshire's Native Fish. Wildlife Journal. July/August 2002. <u>http://www.wildlife.state.nh.us/pubs/documents/samples/nh-native-fish.pdf</u>.

The Bypass Reach and Downstream ZOE (Zones 2 and 3) are using standard 2 to justify meeting the upstream fish passage standard.

- The DOI issued its Modified Prescription¹⁰ for Fishways (the Prescription) pursuant to Section 18 of the Federal Power Act on January 31, 2022. Regarding upstream anadromous fish passage, the Prescription requires the following measures be implemented during the term of the new license.
 - Construct, operate, and maintain upstream fish passage facilities that pass anadromous fish species in a safe, timely and effective manner. Based on the best scientific information available at this time, one of the following types of fishway could satisfy the standard of safe, timely, and effective: (a) two technical fishways (one fishway at the dam and one fishway through the lower section of the bypass reach); or (b) one technical fishway at the dam and one nature-like fishway (NLF) through the lower section of the bypass reach. The NLF should modify the existing chute in the bypass reach to provide a suitable zone of passage for adult alosines over the emergent bedrock adjacent to the powerhouse.
 - The above fishways will be operational by March 15 of the fourth passage season after license issuance, unless interim trap and transport fish passage (described below) is implemented instead.
- Per a settlement agreement with the DOI, the Licensee agreed to request from FERC approval to construct facilities necessary to support a trap and truck operation from the South Berwick Project. The facility would be designed to have the capacity to accommodate the anticipated alosine population for the Rollinsford impoundment, move fish within 24 hours of reaching the facilities to the extent practicable, and pass fish volitionally into the South Berwick Project impoundment when trapping operations for the trap and transport program are not in progress. If implemented the trap and truck program would begin in the third year after the new license is issued at the Project. The trap and truck program contemplates stocking alosines into the Rollinsford Project, the Lower Great Falls Project (FERC Project No. 4451), and Somersworth Project (FERC Project No. 3820) impoundments that will increase the abundance and sustainability of migratory fish species in the river system by providing increased access to spawning and rearing habitat.
- For upstream American eel passage, the Prescription requires the following measures be implemented during the term of the new license.
 - Construct, operate, and maintain upstream fish passage facilities that provide safe, timely, and effective upstream passage for American eels.
 - To determine proper siting of the permanent upstream eelway(s), conduct an American eel ramp siting study in the 4th year after the issuance of the new license.
 - Based on the results of the siting study construct permanent eel ladder(s) to be operational no later than May 1 within 5 years of the effective date of the new license or the second passage season after the completing the siting survey, whichever is later.
- The Prescription also requires development of a Fishway Effectiveness Monitoring Plan (FEMP) in consultation with and approved by the USFWS. The FEMP will contain plans for ensuring the effectiveness of the upstream anadromous and eel passage measures required by the Prescription. Effectiveness testing measures will commence the first migratory season after the upstream fishway(s) is operational and continue for a minimum of two (2) fish passage seasons.

¹⁰ FERC Accession Number 20220131-5437: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220131-5437.

- Finally, the Prescription requires development of a Fishway Operation and Maintenance Plan (FOMP) within 1 year of license issuance to cover operations and maintenance of the upstream fish passage facilities at the Project.
- There are currently no passage performance standards required at the Project.

3.4 Downstream Fish Passage and Protection Standards

In addition to the diadromous species described in <u>Section 3.3</u>, the Salmon Falls River, in the vicinity of the Project, is known to support a variety of resident fish species, including macrohabitat generalists such as yellow perch, largemouth bass, bluegill, golden shiner, brown bullhead, and redfin pickerel; and fluvial-dependent fish such as white sucker and fallfish (<u>Table 3.4.1-1</u>). Several non-native species are present at the Project, including black crappie, bluegill, and several species of bass that were introduced to the Salmon Falls River via stocking.

American eel, American shad and river herring are present downstream of the Project but currently do not have access to the Salmon Falls River upstream of the Project. Under the recently issued FERC license, upstream passage will be provided at the Project, as prescribed by the DOI and discussed above. Therefore, downstream fish passage facilities are necessary to provide safe downstream passage for migratory fish as they emigrate through the Project on their way back out to sea.

Criterion	Standard	Instructions
D	2	Agency Recommendation:
		 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). Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.
		 Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. Provide evidence that required passage facilities are being operated and maintained as mandated (e.g., meets seasonal operational requirements, coordination with agencies, effectiveness relative to performance targets).

3.4.1 Downstream Fish Passage Standards-Impoundment and Bypass Reach ZOE

- The DOI issued its Modified Prescription¹¹ for Fishways (the Prescription) pursuant to Section 18 of the Federal Power Act on January 31, 2022. Regarding downstream anadromous fish passage, the Prescription requires the following measures be implemented during the term of the new license.
 - Within 3 years of license issuance, construct, operate, and maintain a downstream passage and protection system that provides safe, timely, and effective downstream passage for both spent adult and juvenile anadromous fish.
 - Develop a plan to provide permanent downstream alosine passage and protection, including the design of permanent downstream passage facilities, developed in consultation with, and approved by, the USFWS.
- For downstream American eel passage, the Prescription requires the following measures be implemented during the term of the new license.

¹¹ FERC Accession Number 20220131-5437: <u>https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220131-5437</u>.

- Develop a plan to provide permanent downstream eel passage and protection including the design of permanent eel passage facilities and/or operational measures, to be developed in consultation with, and approved by the USFWS.
- Within 3 years of license issuance, construct, operate, and maintain a downstream eel passage and protection system that provides safe, timely, and effective downstream passage for American eels.
- Upon license issuance, implement, as an interim measure, targeted nighttime turbine shutdowns to protect emigrating eels. Turbine shutdowns will occur from dusk to dawn for three consecutive nights following rain accumulations of 0.50 inch or more over a 24-hour period. Turbine shutdowns will occur during the duration of the downstream eel passage season (August 15-November 15).
- Article 404 requires the Licensee to file within one year of license issuance, for Commission approval, a downstream fish passage plan that provides for the installation of downstream fish passage facilities at the Project for downstream migrating anadromous fish species and American eels. The downstream fish passage facilities must consist of: (1) a full-depth diversionary guidance boom placed upstream of the headgates; (2) a 3-foot-wide surface weir at the dam that has a hydraulic capacity of 35 cfs and provides a water depth of 2 feet; and (3) a 4-foot-deep plunge pool located downstream of the dam. The downstream fish passage facilities must be operational by June 1 of the third year after license issuance (2025).
- The Prescription also requires development of a FEMP in consultation with and approved by the USFWS. The FEMP will contain plans for ensuring (1) the effectiveness of the downstream anadromous and downstream eel passage measures required by the Prescription; and (2) that the minimum bypass flow of 35 cfs provides safe, timely, and effective downstream passage to emigrating diadromous species (i.e., does not strand fish). Effectiveness testing measures will commence the first migratory season after the downstream fishway(s) is operational and continue for a minimum of two (2) fish passage seasons.
- Finally, the Prescription requires development of a FOMP within 1 year of license issuance to cover operations and maintenance of the downstream fish passage facilities at the Project.
- There are currently no passage performance standards required at the Project.

3.4.2 Downstream Fish Passage Standards-Downstream ZOE

Criterion	Standard	Instructions
D	1	Not Applicable / De Minimis Effect:
		• Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective and timely downstream migration.
		• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles.
		• Document available fish distribution data and the lack of fish species requiring passage in the vicinity.
		• If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation
	1	with the facility is not of was not the cause of the extirpation.

• The Downstream ZOE (Zone 2) is using standard 1 to justify meeting the downstream fish passage standard since once the fish pass downstream of the dam into the tailwater, they are not restricted in any way. There is no barrier to restrict further downstream movement.

Common Name	Scientific Name
Alewife	Alosa pseudoharengus
American eel	Anguilla rostrata
American shad	Alosa sapidissima
Black crappie	Pomoxis nigromaculatus
Blueback herring	Alosa aestivalis
Bluegill	Lepomis macrochirus
Bridle shiner	Notropis bifrenatus
Brook trout	Salvelinus fontinalis
Brown bullhead	Ameiurus nebulosus
Brown trout	Salmo trutta
Common shiner	Luxilus cornutus
Eastern silvery minnow	Hybognathus regius
Fallfish	Semotilus corporalis
Golden shiner	Notemigonus crysoleucas
Largemouth bass	Micropterus salmoides
Longnose dace	Rhinichthys cataractae
Rainbow trout	Oncorhynchus mykiss
Rainbow smelt	Osmerus mordax
Redfin pickerel	Esox americanus americanus
Sea lamprey	Petromyzon marinus
Smallmouth bass	Micropterus dolomieu
White perch	Morone Americana
White sucker	Catostomus commersoni
Yellow perch	Percaflavescens

 TABLE 3.4.1-1: FISH SPECIES FOUND AT THE ROLLINSFORD PROJECT

3.5 Shoreline and Watershed Protection Standards

3.5.1 Shoreline and Watershed Protection Standards-Impoundment, Bypass Reach, and Downstream ZOE

Criterion	Standard	Instructions
E	1	Not Applicable / De Minimis Effect:
		• 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).
		• Document that there have been no Shoreline Management Plans or similar
		protection requirements for the facility.

The Impoundment (Zone 1), Bypass Reach (Zone 2) and Downstream (Zone 3) ZOE are using standard 1 to justify meeting the shoreline and watershed protection standard.

- There are approximately 4.0 acres of land and 84 acres of water contained with the FERC Project boundary.
- Land use adjacent to and within the Project boundary is primarily developed, forested, or farmland. Upstream of the dam, land in New Hampshire is forested, some of which abuts conserved forest on the Scoutland property. The Scoutland property is owned by the Town of Rollinsford and encompasses some 87.8 acres which provide watershed protection, wildlife habitat, and recreational opportunities. In Maine upstream of the dam, the banks are vegetated but give way to farmland, both cultivated crops and pasture lands.
- Existing land use and aesthetic resources at the Project consist of undeveloped forested riverbanks and scattered development along the river corridor. This Project has existed in its present form since 1923 and is an accepted part of the natural landscape. Figure 3.5.1-1 shows land use designations in the Project vicinity.
- The Lands within the Project boundary are limited to those required for Project operations. The Project's run-of- river operation and stable pond elevations provide protection for the Project's shoreline areas.
- The Licensee does not have a shoreline management plan or policy with regards to permitting the development of piers, boat docks, or other shoreline facilities at the Project. In addition, the Licensee does not maintain a buffer zone around the Project impoundment. None of these provisions were prescribed within the recent Project relicensing process.



3.6 Threatened and Endangered Species Standards

Criterion	Standard	Instructions
F	3	Recovery Planning and Action:
		• If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents.
		• Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the facility area.

3.6.1 Threatened and Endangered Species Standards-Impoundment, Bypass Reach, and Downstream ZOE

The Impoundment (Zone 1), Bypass Reach (Zone 2) and Downstream (Zone 3) ZOE are using standard 3 to justify meeting the threatened and endangered species standard.

- The Northern Long-eared bat (NLEB) was listed as a federally threatened species under the Endangered Species Act (ESA) on May 4, 2015 and was recently proposed to be reclassified as endangered on March 23, 2022.¹² The NLEB is also a state-listed endangered species in New Hampshire and Maine. In January 2016, the USFWS finalized the 4(d) rule for this species, which focuses on preventing effects on bats in hibernacula associated with the spread of white-nose syndrome and effects of tree removal on roosting bats or maternity colonies. As part of the 4(d) rule, USFWS proposes that take incidental to certain activities would not be prohibited, if the following criteria are met: (1) occurs more than 0.25 mile from a known, occupied hibernacula; (2) avoids cutting or destroying known, occupied maternity roost trees during the pup season (June 1 July 31); and (3) avoids cutting or destroying any tree within a 150-foot radius of a known, occupied maternity tree during the pup season.
- The Project is located within the white-nose syndrome buffer zone for this species. Although there is no documentation of NLEB at the Project, and no known NLEB hibernacula sites occur within 0.25 mile of the Project, upland and wetland forest in the Project vicinity may provide suitable habitat for NLEB summer roosting and foraging activities. No critical habitat has been designated for this species.
- Existing vegetation management activities at the Project include mowing, which occurs approximately every week, in grassed areas adjacent to the powerhouse, along the above ground portion of the penstock, and adjacent to the intake headworks during the months of May through September. Vegetation on the Project dam embankments, as well as around the dam abutments and intake headworks structure are treated with herbicide (KleenUp®) once per year, during the spring or early summer. These areas are further maintained during the growing season (May through September) with a string trimmer and handheld cutters once a month.
- Article 405 of the FERC license restricts the removal of trees with diameters that are equal to or greater than 3 inches at breast height from April 1 through October 1, to reduce the likelihood of disturbing NLEB and their newly born pups during the broader, active season of NLEB at the Project. Article 405 is based on the January 2016 USFWS 4(d) rule for this species.

¹² Federal Register. <u>https://www.federalregister.gov/documents/2022/03/23/2022-06168/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-northern-long-eared-bat</u>. Date accessed: 9/16/2022.

- NHFGD identified two state-listed endangered species that could occur in the Project area: Blanding's turtle (*Emydoidea blandingii*) and New England cottontail (*Sylvilagus transitionalis*). In their 2021 Draft Environmental Assessment¹³, FERC determined that the Project does not appear to be adversely affecting these species or their habitats as currently licensed, and no activities that would be expected to adversely affect these species have been proposed.
 - Blanding's turtle, a semi-aquatic species, uses large intact landscapes to seasonally move between wetlands, vernal pools, and sandy open areas. FERC in the 2021 Draft Environmental Assessment for the Project determined that scrub-shrub habitat along the Salmon Falls River provides suitable habitat for Blanding's turtle. However, in the Project vicinity, habitat is largely fragmented due to the more urban setting of the Project and is likely a limiting factor for this species. FERC indicated that there is no indication that any specific measures to protect this species are necessary at this time. Also, project operation and maintenance activities (i.e., vegetation management) are consistent with the applicable measures contained in the New Hampshire Wildlife Action Plan¹⁴ to benefit the species and its habitat.
 - New England cottontail is a species of cottontail rabbit whose preferred habitat includes young forest and shrubland. At the Project, a forested/shrub area along the impoundment could provide suitable habitat for New England cottontail. Current project operation and maintenance activities are consistent with the applicable measures contained in the Best Management Practices for New England Cottontail¹⁵. FERC indicated that there is no indication that any specific measures to protect this species are necessary at this time.

¹³ FERC Accession Number 20210823-3025:

https://elibrary.ferc.gov/eLibrary/filelist?accession number=20210823-3025.

- ¹⁴ <u>https://www.wildlife.state.nh.us/wildlife/profiles/wap/reptile-blandingsturtle.pdf</u>.
 ¹⁵ <u>https://newenglandcottontail.org/sites/default/files/attachments/NEC_BMP-FINAL_LOW%20RES-071917.pdf</u>.

3.7 Cultural and Historic Resources Standards

3.7.1 Cultural and Historic Resources Standards: Impoundment, Bypass Reach, and Downstream ZOE

Criterion	Standard	Instructions
G	2	Approved Plan:
		• Provide documentation of all approved state, federal, and recognized tribal
		plans for the protection, enhancement, and mitigation of impacts to cultural
		and historic resources affected by the facility.
		• Document that the facility is in compliance with all such plans.
The Impour	dmont (Zon	e 1) Bynass Reach (Zone 2) and Downstream (Zone 3) ZOE are using standard 2

The Impoundment (Zone 1), Bypass Reach (Zone 2) and Downstream (Zone 3) ZOE are using standard 2 to justify meeting the cultural and historic resources standard.

- The Project is partially located within the Salmon Falls Mill Historic District (District), which was listed on the National Register in 1980. The District is located on the New Hampshire side of the riverbank and includes four textile mill buildings and their contributing structures, including the Project powerhouse, dam, and intake headwork structure. The District buildings were constructed between 1840 and 1860, and are made from red brick, a typical example of a small northern New England textile manufacturing community. Presently, the four textile mill buildings are occupied by a guild of artists, and also used for office and commercial spaces.
- The Boston and Maine Railroad Bridge and the Rollinsford Dam are contributing resources to the character of the District. The Boston and Maine Railroad Bridge that spans the Salmon Falls River just downstream of the Project dam, was constructed in 1888, as a lattice-deck, truss bridge with a cut-stone masonry sub-structure. The Project dam was constructed between 1909 and 1910, replacing the original 1843 wooden dam.
- A Phase I archaeological survey within the Maine portion of the Project boundary was conducted in 2018. The purpose of the survey was to identify known pre- and post-contact archaeological resources, and to identify additional areas within the Maine portion of the Project boundary that were potentially sensitive for pre- and post- contact archaeological resources. The Phase I survey investigated one previously recorded archaeologically sensitive area and six additional archaeologically sensitive areas. However, the surveys concluded that no pre- or post-contact archaeological sites are present within the Maine portions of the Project boundary. No archaeological surveys were conducted within the New Hampshire portion of the Project boundary
- Article 406 of the FERC license and the terms of a Programmatic Agreement with the New Hampshire and Maine SHPOs requires the Licensee to develop and implement an HPMP to ensure that measures are in place to protect Project historic properties from adverse effects related to the operation and maintenance of Project facilities and potential adverse effects related to installation of eel and fish passage structures. An HPMP also ensures that any previously undiscovered archaeological resources are not adversely affected by the Project during the term of the FERC license. As part of the Programmatic Agreement, the Licensee must file, for Commission approval, a HPMP within one year of issuance. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the Licensee must obtain approval from the Commission and the New Hampshire and Maine State Historic Preservation Officers, before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the Project's areas of potential effects.

3.8 Recreational Resources Standards

3.8.1 Recreational Resources Standards: Impoundment, Bypass Reach, and Downstream ZOE

• The Licensee does not have records of a previous FERC Environmental and Recreation Inspection being completed at the Project.

Criterion	Standard	Instructions
Н	1	Not Applicable / De Minimis Effect:
		• Document that the facility does not occupy lands or waters in the designated ZoE to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.

3.8.2 Recreation Amenities Associated with the Project

The Impoundment (Zone 1), Bypass Reach (Zone 2) and Downstream (Zone 3) ZOE are using standard 1 to justify meeting the recreational resources standard.

- Since the Project has a relatively small footprint, there are no licensed Project recreation facilities. However, the Town of Rollinsford owns, operates, and maintains several recreation facilities partially within and/or adjacent to the Project boundary (Figure 3.8-1). Due to the existing access provided by these facilities, FERC and the resource agencies did not recommend substantive additional measures to enhance recreational use and access at the Project during the recent FERC relicensing process.
 - Bicentennial Park: Located just upstream of the Project dam along the New Hampshire side of the Project impoundment providing a gazebo, benches, parking for a few vehicles, and a gravel and concrete boat ramp that provides access to the impoundment (Figures 3.8-2 and 3.8-3).
 - An informal trail located on the Maine side of the bypass reach that provides access within the Project boundary. The trail is unmarked, primitive, and not maintained (Figure 3.8-4).
 - South Berwick Impoundment boat launch: Located on the New Hampshire side of the Salmon Falls River approximately half a mile downstream of the Project dam. This facility provides a gazebo, parking for approximately 15 vehicles, and a concrete boat ramp that provides access to the Project waters below the dam. The boat launch is adjacent to Gold Star Park, which has a baseball diamond and provides informal shoreline access to the Salmon Falls River downstream of the project (Figure 3.8-5).
 - Scoutland: Located on the New Hampshire side of the Project impoundment approximately 0.75-mile upstream of the Project dam. The 88-acre property is open to the public for low-impact recreational use, including several miles of walking and hiking trails. The 1.6-mile Scoutland Trail is a multi-use trail that parallels the Project impoundment and connects to Bicentennial Park. There are no restrictions to public access at the site; however, the access road to the property is gated to prevent unauthorized travel by large vehicles. There is no formal access to the impoundment from Scoutland.
- In addition to the recreation sites owned and operated by the Town of Rollinsford, additional recreation facilities adjacent to the Project include:
 - Malley Farm: Owned, operated, and maintained by the City of Somersworth, New Hampshire and located approximately 1.25 miles upstream of the Project dam. This 179-acre park contains the Somersworth community gardens and primitive walking trails along the Salmon Falls River. The trails connect to the Scoutland Trail described above. The Park also has two baseball diamonds and a large parking area.

- The Mills at Salmon Falls: The privately-owned mill complex located immediately downstream of the Project powerhouse provides informal, unrestricted access via its parking lot to the Salmon Falls River shoreline downstream of the Project powerhouse (Figure 3.8-6).
- Condition 6a of the MDEP WQC requires that the Licensee consult with MDIFW within 6 months of license issuance regarding opportunities for improvements to access streamside angling opportunities, including additional signs and foot trails to the tailrace and bypass reach.



FIGURE 3.8-2: BICENTENNIAL PARK



FIGURE 3.8-3: BICENTENNIAL PARK BOAT RAMP



FIGURE 3.8-4: INFORMAL TRAIL TO THE BYPASS REACH ON THE MAINE SIDE



FIGURE 3.8-5: SOUTH BERWICK IMPOUNDMENT BOAT LAUNCH



FIGURE 3.8-6: VIEW OF PROJECT TAILWATER FROM THE MILLS AT SALMON FALLS

4 CONTACT FORMS

4.1 Applicant-Related Contacts

Facility Owner:	
Name and Title	Dan Cullity Town Clerk
Company	Town of Rollinsford, NH
Phone	603-742-2510
Email Address	clerk@rollinsford.nh.us
Mailing Address	667 Main Street, PO Box 309, Rollinsford, NH 03869
Facility Operator	(if different from Owner):
Name and Title	John Greenan, Engineer
Company	Green Mountain Power
Phone	802-770-2195
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	1252 Post Road, Rutland, VT 05701
Consulting Firm	Agent for LIHI Program (if different from above):
Name and Title	Kirk Smith, Director of Licensing
Company	Gomez and Sullivan Engineers, DPC
Phone	603.340.7667
Email Address	ksmith@gomezandsullivan.com
Mailing Address	41 Liberty Hill Road - Building 1, P.O. Box 2179, Henniker, NH 03242
Compliance Cont	act (responsible for LIHI Program requirements):
Name and Title	John Greenan, Engineer
Company	Green Mountain Power
Phone	802-770-2195
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	1252 Post Road, Rutland, VT 05701
Party responsible	e for accounts payable:
Name and Title	John Greenan, Engineer
Company	Green Mountain Power
Phone	802-770-2195
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	1252 Post Road, Rutland, VT 05701

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	United States Fish and Wildlife Service	⊠ Flows
		Water Quality
		🛛 Fish/Wildlife
		⊠ Watershed
		☑ T&E Species
		Cultural/Historic
		□ Recreation
Name and Title	Kenneth Hogan North Atlantic-Appalachian F	Region Hydropower Program
	Coordinator	
Phone	603-227-6426	
Email address	kenneth_hogan@fws.gov	
Mailing Address	70 Commercial Street, Suite 300, Concord, New	v Hampshire 03301

4.2	Current Relevant State ,	Federal, and Trib	oal Resource Agency	Contacts (excluding FI	ERC).

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	National Marine Fisheries Services	⊠ Flows
		Water Quality
		🛛 Fish/Wildlife
		Watershed
		T&E Species
		Cultural/Historic
		□ Recreation
Name and Title	Christopher Boelke, Chief, New England Bra	nch, Habitat and Ecosystem
	Services Division	
Phone	978-281-9131	
Email address	christopher.boelke@noaa.gov	
Mailing Address	55 Great Republic Drive, Gloucester, MA 01930)

	Area of Responsibility (check applicable boxes)	
Agency Name	New Hampshire Department	of 🛛 Flows
	Environmental Services	🛛 Water Quality
		□ Fish/Wildlife
		⊠ Watershed
		□ T&E Species
		Cultural/Historic
		□ Recreation
Name and Title	James Tilley, Water Quality Certification Sup	pervisor
Phone	603-271-0699	
Email address	james.w.tilley@des.nh.gov	
Mailing Address	29 Hazen Drive, P.O. Box 95, Concord, NH 0	3302-0095

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	New Hampshire Fish and Game Department	⊠ Flows
		🛛 Water Quality
		🛛 Fish/Wildlife
		Watershed
		⊠ T&E Species
		Cultural/Historic
		⊠ Recreation
Name and Title	Mike Dionne, Environmental Review Coordinat	or
Phone	603-271-1136	
Email address	Michael.Dionne@wildlife.nh.gov	
Mailing Address	11 Hazen Drive, Concord, NH 03301	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	New Hampshire Department of Historical	
	Resources	Water Quality
		□ Fish/Wildlife
		□ Watershed
		□ T&E Species
		⊠ Cultural/Historic
		□ Recreation
Name and Title	Benjamin Wilson, Director and State Historic Pr	eservation Officer
Phone	603-271-3483	
Email address	benjamin.wilson@dncr.nh.gov	
Mailing Address	19 Pillsbury Street- 2nd Floor, Concord, NH 033	01-3570

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Department of Environmental	⊠ Flows
	Protection	🛛 Water Quality
		🛛 Fish/Wildlife
		Watershed
		T&E Species
		Cultural/Historic
		⊠ Recreation
Name and Title	Kyle Olcott, Hydropower Coordinator, Bureau	of Land Resources
Phone	207-641-9012	
Email address	Kyle.Olcott@maine.gov	
Mailing Address	17 State House Station, 28 Tyson Drive, Augu	sta, ME 04333-0017

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Department of Inland Fisheries and	⊠ Flows
	Wildlife	🛛 Water Quality
		⊠ Fish/Wildlife
		□ Watershed
		☑ T&E Species
		Cultural/Historic
		⊠ Recreation
Name and Title	John Perry, Environmental Review Coordinato	Dr
Phone	207-287-5254	
Email address	John.Perry@maine.gov	
Mailing Address	284 State Street, 41 SHS, Augusta, Maine 043	33-0041

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Department of Marine Resources	
		Water Quality
		🛛 Fish/Wildlife
		□ Watershed
		T&E Species
		Cultural/Historic
		□ Recreation
Name and Title	Gail Wippelhauser, Ph. D, Marine Resources Scientist	
Phone	207-624-6349	
Email address	gail.wippelhauser@maine.gov	
Mailing Address	21 State House Station, Augusta, ME 04333-0021	

	Agency Contact	Area of Responsibility (check applicable boxes)
Agency Name	Maine Historic Preservation Commission	Flows
		Water Quality
		Fish/Wildlife
		Watershed
		T&E Species
		🛛 Cultural/Historic
		□ Recreation
Name and Title	Mr. Kirk Mohney, Director and State Historic	Preservation Officer
Phone	207-287-3811	
Email address	kirk.mohney@maine.gov	
Mailing Address	55 Capitol Street, 65 State House Station, Augusta, ME 04333-0065	

5 ATTESTATION AND WAIVER FORM

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

ATTESTATION

As an Authorized Representative of <u>Green Mountain Power</u>, 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:	ame: John Greenan			
Title:	Engineer			
Author	ized Signature:	John C.	yilally signed by John C. Greenan c.m.John C. Greenan, o, Green Monatain Power, all John generan gaing genemountai the 2022 09.19 16:21:56 - 0:000'	
Date:	September 20,	2022.		

APPENDIX A: PROJECT FACILITY PHOTOGRAPHS

FIGURE A-1: PROJECT DAM



FIGURE A-2: PROJECT IMPOUNDMENT



FIGURE A-3: INTAKE HEADWORKS GATES





FIGURE A-4: PENSTOCK INTAKE AND TRASHRACKS



FIGURE A-5: INTAKE HEADWORKS SKIMMER WASTE GATE

FIGURE A-6: PROJECT PENSTOCK



FIGURE A-7: PROJECT FOREBAY





FIGURE A-8: PROJECT POWERHOUSE AND FOREBAY

FIGURE A-9: PROJECT SUBSTATION



FIGURE A-10: PROJECT TAILRACE

