

**Brookfield**

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May 2, 2022

**VIA E-FILING**

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

**Subject: Rumford Falls Hydroelectric Project (FERC No. 2333-091)  
Draft License Application**

Dear Secretary Bose:

Rumford Falls Hydro LLC (RFH), a subsidiary of Brookfield Renewable, herein files with the Federal Energy Regulatory Commission (FERC or Commission) the Draft License Application (DLA) for the Rumford Falls Hydroelectric Project (Project) (FERC No. 2333) pursuant to 18 Code of Federal Regulations (CFR) §5.16(c). The Project, which consists of two discrete developments – the Upper Station Development and the Lower Station Development, is located on the Androscoggin River in the Town of Rumford, Oxford County, Maine. The Project's existing FERC license expires on September 30, 2024, and RFH is pursuing a new license for the Project through the Commission's Integrated Licensing Process (ILP).

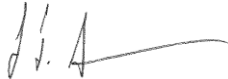
RFH is currently in the second study season consistent with the ILP schedule and is in the process of completing studies that will inform the environmental analysis and development of potential license articles. Therefore, certain information within the DLA is still under development and will be included in the Final License Application (FLA) on or before September 30, 2022. Additionally, the Exhibit F and Exhibit G drawings, as well as the single-line diagram will be provided in the FLA. Given the ongoing study activities, and consistent with the Commission's ILP schedule, two of the studies (i.e., Angler Creel Survey and Recreation Study) will not be completed until after the required FLA filing date. Therefore, the study reports for these two studies and the potential resulting modifications to the FLA will be filed with the Commission as a supplemental to the FLA.

Consistent with 18 CFR §5.16(e), participants and Commission staff may file comments on the DLA on or before August 1, 2022.

Concurrent with this filing, RFH is distributing an electronic copy of this letter to those on the enclosed distribution list. All interested parties may obtain a copy of the DLA electronically through FERC's eLibrary system at <https://elibrary.ferc.gov/idmws/search/fercgensearch.asp> under docket number P-2333.

If there are any questions or comments regarding the DLA, please contact me by phone (207) 755-5613 or at [luke.anderson@brookfieldrenewable.com](mailto:luke.anderson@brookfieldrenewable.com).

Sincerely,



Luke Anderson  
Manger, Licensing  
Brookfield Renewable

cc: Distribution List  
Enclosures (1)

**Rumford Falls Hydroelectric Project, FERC No. 2333**  
**Draft License Application**  
**Distribution List**

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Draft License Application  
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Draft License Application  
Distribution List

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Rumford Falls Hydroelectric Project, FERC No. 2333  
Draft License Application  
Distribution List

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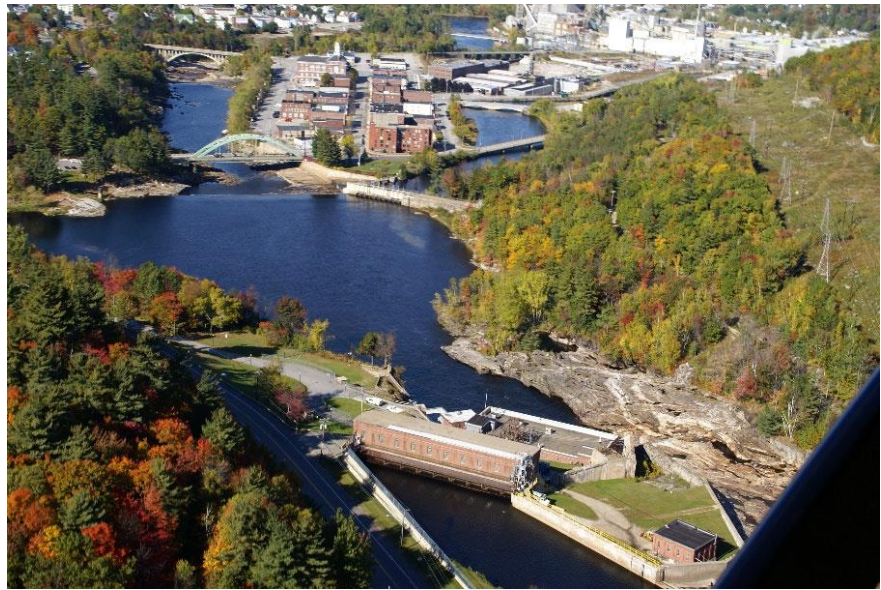
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**RUMFORD FALLS HYDROELECTRIC PROJECT  
(FERC NO. 2333)**

**DRAFT LICENSE APPLICATION**



**RUMFORD FALLS HYDRO LLC  
Rumford, Maine**

**May 2022**

**RUMFORD FALLS HYDROELECTRIC PROJECT  
(FERC NO. 2333)**

**DRAFT LICENSE APPLICATION**

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**INITIAL STATEMENT**

**EXHIBIT A – PROJECT DESCRIPTION**

**EXHIBIT B – PROJECT OPERATION AND RESOURCE UTILIZATION**

**EXHIBIT C – CONSTRUCTION HISTORY**

**EXHIBIT D – STATEMENT OF COSTS AND FINANCING**

**EXHIBIT E – ENVIRONMENTAL REPORT**

**EXHIBIT F – GENERAL DESIGN DRAWINGS**

**EXHIBIT G – PROJECT MAPS**

**EXHIBIT H – DESCRIPTION OF PROJECT MANAGEMENT AND NEED FOR  
PROJECT POWER**

# **INITIAL STATEMENT**

# Initial Statement

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

Rumford Falls Hydro LLC

Rumford Falls Hydroelectric Project  
(FERC No. 2333)

**APPLICATION FOR A NEW LICENSE  
FOR A MAJOR PROJECT - EXISTING DAM**

- (1) Rumford Falls Hydro LLC (RFH or Licensee), a subsidiary of Brookfield Renewable (Brookfield), applies to the Federal Energy Regulatory Commission (FERC or Commission) for a new license for the Rumford Falls Hydroelectric Project (FERC No. 2333), as described in the attached exhibits.
  
- (2) The location of the Project is:  
State or territory: Maine  
County: Oxford  
Township or nearby town: Rumford Falls, Mexico  
Stream or other body of water: Androscoggin River
  
- (3) The exact name and business address of applicant is:  
Rumford Falls Hydro LLC  
P.O. Box 280  
Rumford, Maine 04276

The exact name and business address of each person authorized to act as agent for the applicant in this application are:

Luke Anderson  
Manager, Licensing  
Brookfield Renewable  
150 Main Street  
Lewiston, Maine 04240  
(207) 755-5613  
luke.anderson@brookfieldrenewable.com

- (4) The applicant is a domestic corporation and is not claiming preference under section 7(a) of the Federal Power Act.
- (5) (i) The statutory or regulatory requirements of Maine that affect the Project as proposed, 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 and transmitting power and in any other business necessary to accomplish the purpose of the license under the Federal Power Act are:
- (a) Water Quality Certification (WQC) from the State of Maine pursuant to Section 401(a)(1) of Public Law 92-500 as amended by Public Law 95-217 (Clean Water Act of 1977), 33 U.S.C. Section 1341.
  - (b) Maine Waterway Development and Conservation Act, 38 M.R.S.A. §§630 *et seq.*
  - (c) Mill and Dam Act, M.R.S.A. Title 38, §651 *et seq.*
- (ii) The steps the applicant has taken or plans to take to comply with each of the laws cited above are:
- (a) The applicant will apply to the Maine Department of Environmental Protection for a WQC no later than 60 days after FERC issues the notice of acceptance and ready for environmental analysis.
  - (b) The Maine Waterway Development and Conservation Act (MWDCA), enacted in 1983, regulates certain construction or reconstruction of hydropower projects which change water levels or flows above or below a dam. The applicant is not proposing as part of the relicensing any construction or changes in water levels that would require approval under the MWDCA.
  - (c) The Mill Act, essentially enacted in 1821, allows riparian owners to maintain dams and raise water. The statute does not require any permits and has been interpreted by the Maine Supreme Judicial Court to apply to hydroelectric generating plants. See *Veazie v. Dwinel*, 50 Me. 479 (1862). Maine case law has also held that owners of the riverbed have the right to the natural flow of a stream



as it passes through their land, *Wilson & Son v. Harrisburg*, 107 Me. 207 (1910). The Licensee either owns or has easement or flowage rights to all Project lands and waters.

- (6) RFH is the owner of all existing facilities and the Project does not occupy any lands of the United States.

## **Additional Information Provided Pursuant to 18 CFR §5.17(e)**

### **PURPA Benefits**

RFH reserves its rights to seek benefits under section 210 of the Public Utility Regulatory Policies Act (PURPA) of 1978 in association with the relicensing of the Project.

**Additional Information Provided Pursuant to 18 CFR §5.18(a)**

- (1) *Identify every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project:*

RFH, a subsidiary of Brookfield Renewable, possesses and will maintain all proprietary rights necessary to operate and maintain the Project.

- (2) *Identify (providing names and mailing addresses):*

- (i) *Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located;*

Oxford County  
County Administrator  
26 Western Avenue  
South Paris, ME 04281

There are no federal lands or facilities associated with the Project.

- (ii) *Every city, town, or similar local political subdivision:*

- (A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located*

Town of Rumford  
145 Congress Street  
Rumford, ME 04276

There are no federal lands or facilities associated with the Project.

- (B) *That has a population of 5,000 or more people and is located within 15 miles of the project dam*

Town of Rumford  
145 Congress Street  
Rumford, ME 04276

*(iii) Every irrigation district, drainage district, or similar special purpose political subdivision:*

*(A) In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

There are no irrigation districts, drainage districts, or similar special purpose political subdivisions associated with the Project.

*(B) That owns, operates, maintains, or uses any project facilities that would be used by the project:*

There are no irrigation districts, drainage districts, or similar special purpose political subdivisions that own, operate, maintain, or use any project facilities.

*(iv) Every other political subdivision in the general area of the project that there is reason to believe would likely be interested in, or affected by, the application:*

There are no other political districts or subdivisions that are likely to be interested in, or affected by, the application.

*(v) All Indian tribes that may be affected by the project:*

There are no tribal lands within the Project Boundary or immediate Project vicinity.

The following Tribes have been included on the distribution lists for the Project:

Aroostook Band of Micmacs  
7 Northern Road  
Presque Isle, ME 04769

Passamaquoddy Tribe  
Indian Township  
PO Box 301  
Princeton, ME 04668

Houlton Band of Maliseet Indians  
88 Bell Road  
Littleton, ME 04730

Passamaquoddy Native American Nation  
Pleasant Point Reservation  
Tribal Building Office  
Route No. 190  
Perry, ME 04667

Penobscot Nation  
12 Wabanaki Way  
Indian Island, ME 04468

- (3) Given that this is an application for a new license under Section 15 of the Federal Power Act, RFH is not required to provide notice by certified mail of the application to landowners or entities identified in Section 2 of this Initial Statement, or any other Federal, state, municipal or other local government agencies that would likely be interested in or affected by such application.
- (4) As a major project – existing dam, the following Exhibits are attached to and made a part of this application:

- Exhibit A: Project Description
- Exhibit B: Project Operation and Resource Utilization
- Exhibit C: Construction History
- Exhibit D: Statement of Costs and Financing
- Exhibit E: Environmental Report
- Exhibit F: General Design Drawings
- Exhibit G: Project Maps
- Exhibit H: Description of Project Management and Need for Project Power

# Verification Statement

## To be included in the Final License Application

This application is executed in the

STATE OF:

COUNTY OF:

By:

The undersigned being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed this application this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

---

Subscribed and sworn to before me, a Notary Public of the State of Maine, this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

---

Notary Public

**EXHIBIT A**  
**PROJECT DESCRIPTION**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT A – PROJECT DESCRIPTION**

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# **Exhibit A**

## **Project Description**

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Rumford Falls Hydro LLC (RFH or Licensee), a subsidiary of Brookfield Renewable (Brookfield), is the Licensee of the 44.5 megawatt (MW) Rumford Falls Hydroelectric Project (FERC No. 2333) (Project), a multi-development hydroelectric facility located on the Androscoggin River in Rumford, Maine.

Pursuant to the requirements of 18 Code of Federal Regulations (CFR) 4.51(b), the following is a description of the Project. There are two dams associated with this Project; hence each dam and its associated facilities are described as discrete developments. The facilities and structures of the Project will be depicted in the Project drawings and single-line diagram, which will be filed as Critical Energy Infrastructure Information (CEII) under 18 CFR §388.113 in the Final License Application.

### **1.0 Project Structures**

Project works consist of two discrete hydropower developments, the Upper Station Development and the Lower Station Development. The total nameplate capacity of the Project is 44.5 MW and the Project's maximum hydraulic capacity is 4,550 cubic feet per second (cfs) for the Upper Station Development and 3,100 cfs for the Lower Station Development.

#### **1.1 Upper Station Development**

The Upper Station Development's principal features consist of a dam, a forebay, a gatehouse, four short penstocks, a powerhouse, an impoundment, two overhead transmission lines, and appurtenant facilities. The development has a total installed nameplate capacity of 29.3 MW, and a maximum hydraulic capacity of 4,550 cfs.

The dam is a concrete gravity structure which utilizes 30-inch, pin-type, break-away flashboards and a 271-foot-long Obermeyer spillway system. The crest of the concrete dam is at elevation 598.74 feet U.S. Geological Survey Datum (USGS), with the flashboards in place and the Obermeyer inflated (the normal operating mode); spillage occurs when the water surface elevation exceeds 601.24 feet USGS. The length of the ogee-type spillway is 464 feet. The concrete dam is approximately 37 feet from its bedrock foundation and is approximately 42 feet wide at its base.



The rounded crest of the spillway is 10 feet wide. The downstream face of the dam slopes downward before reaching a lip at elevation 569.74 feet USGS and then slopes sharply downward to the base of the dam.

The dam forms one side of the forebay of the Upper Station; the other side of the forebay consists of a concrete wall along the shoreline. The gatehouse to the Upper Station contains power-operated headgate hoists and gates, two for each of the four active penstocks. Screening of flow through the Upper Station is provided by bar racks to keep out debris.

The four penstocks are of riveted-plate steel, three of which are 12 feet in diameter and one of 13 feet in diameter. Each penstock is approximately 110 feet in length, extending underground from the gatehouse to the powerhouse.

There is a masonry powerhouse integral with the dam, occupying two adjoining sections of the dam: (a) the Old Station, about 30 feet wide, by 110 feet long, by 92 feet high, equipped with one generating unit, and (b) the New Station, about 60 feet wide by 140 feet long by 76 feet high, equipped with three generating units.

The tailrace of the Upper Station is located in the natural river channel and is within the Middle Dam Impoundment. The normal tailwater elevation is 502.74 feet USGS. Besides the bedrock channel, there are no specific structures associated with the tailrace.

## **1.2 Lower Station Development**

The Lower Station Development's principal features consist of the Middle Dam, the Middle Canal headgate structure with a waste weir section, the Middle Canal, a gatehouse, two penstocks (each with a surge tank), a powerhouse, an impoundment, a short transmission line, and appurtenant facilities. The existing development has a total nameplate capacity of 15.2 MW and a total maximum hydraulic capacity of 3,100 cfs.

The Middle Dam is a rock-filled, wood-crib, gravity-type dam, capped and reinforced with concrete and topped with 16-inch-high, pin-type flashboards. The elevation of Middle Dam crest with flashboards is at the normal tailwater elevation of the Upper Station Development (502.74 feet USGS). The length of the dam spillway is 328.6 feet. The dam rises approximately 20 feet

above the river bottom and is approximately 105 feet in cross-sectional width at its base, including a gently sloping concrete apron on the downstream side that is approximately 38 feet wide. The cross-section of the dam is roughly triangular, with a concrete lip on the downstream face at elevation 490.74 feet USGS.

The Middle Canal headgate structure is adjacent to the Middle Dam and approximately 120 feet wide, and it contains a set of 10 headgates. The structure consists primarily of concrete masonry with steel/wooden gates. Within the Middle Canal and perpendicular to the Canal headgates is a waste weir, which allows floating debris to be diverted back to the natural river channel. There are normally twelve-inch-high flashboards on the crest of the waste weir, which brings the typical water surface elevation up to elevation 502.6 feet USGS. The spillway of the waste weir is approximately 120 feet long. The Middle Canal is approximately 2,400 feet long, with typical depths ranging from 8 to 11 feet. The width of the canal ranges from 75 to 175 feet with the upstream end of the canal being the widest.

The Lower Station gatehouse contains two (with provisions for a third) motorized gate hoists and headgates for Lower Station penstocks. Flow to the Lower Station is screened through bar racks. The canal level control transmitter to the Supervisory Control and Data Acquisition (SCADA) controls is located in the gatehouse. A selector switch is provided to allow for one of the units to supervise canal level control. Also located in the gatehouse are the trashracks and power-driven trash rake hoists. From the gatehouse, two 12-foot diameter, welded-plate, steel penstocks extend for approximately 815 feet to surge tanks and then an additional 77 feet downward to the powerhouse. The two steel surge tanks are 36 feet in diameter and 50.5 feet tall as measured from the surface of the ground. The masonry powerhouse is equipped with two generating units.

The tailrace of the Lower Station is located in the natural Androscoggin River channel. Flow through the two turbines returns to the river after crossing an approximately 25-foot-wide concrete tailrace apron. The normal tailwater elevation is 423.24 feet USGS. Besides the tailrace apron, there are no other specific structures associated with the tailrace.

## **2.0 Impoundment Specifications**

### **2.1 Upper Station Development**

The normal maximum surface area of the Upper Dam impoundment is 419 acres, with a corresponding normal maximum surface elevation of 601.24 feet USGS. The estimated gross storage capacity of the Upper Dam impoundment is 2,900 acre-feet (ac-ft) with flashboards installed and the Obermeyer inflated. Since the Upper Station is operated as a run-of-river facility, there is, in essence, no usable storage capacity associated with this impoundment.

### **2.2 Lower Station Development**

The normal maximum surface area of the Middle Dam impoundment is 21 acres, with a corresponding normal maximum surface elevation of 502.74 feet USGS. The estimated gross storage capacity of the Middle Dam impoundment is 141 ac-ft with flashboards. As with the Upper Station impoundment, there is no usable storage capacity associated with the Middle Dam impoundment, since the Lower Station is also operated as a run-of-the river facility.

## **3.0 Turbine and Generator Specifications**

### **3.1 Upper Station Development**

As mentioned previously, the powerhouse includes two sections, the Old Station and the New Station. The Old Station contains one horizontal generating unit with a capacity of 4.3 MW (Unit 4). The New Station contains three vertical generating units (Units 1, 2 and 3), two with a capacity of 8.1 MW each, and one with a capacity of 8.8 MW.

### **3.2 Lower Station Development**

The Lower Station powerhouse contains two identical vertical units, each with 7.6 MW capacity (Units 1 and 2).

## **4.0 Transmission Line and Equipment Specifications**

All primary transmission lines associated with the Project deliver electricity from both the Upper and Lower Stations to the RFH Generator Step-Up (GSU) substation. The voltage is stepped up from 11.5 kilovolt (kV) to 115 kV by passing through the 66 megavolt-amperes (MVA) GSU transformer. This transformer is tied to Central Maine Power's transmission point of interconnect.

#### **4.1 Upper Station Development**

Although a total of four 11.5 kV transmission lines extend from the Upper Station to the GSU substation, only two are energized at the present time (i.e., Lines 2 and 3). Line 2 extends approximately 4,500 feet, sharing steel towers with de-energized Line 1. Line 3 extends approximately 4,200 feet on single circuit steel towers. Line 4 is approximately 3,100 feet long and was owned and abandoned by Catalyst Paper.

#### **4.2 Lower Station Development**

Electricity from the Lower Station is submitted to the GSU substation by 11.5 kV Lines 5 A and B, which run 600 feet parallel on the same tower.

### **5.0 Specifications of Additional Mechanical, Electrical, and Transmission Equipment Appurtenant to the Project**

#### **5.1 Battery System**

Separate from this relicensing, RFH requested a non-capacity amendment for the Project's license on April 27, 2021, and supplemented on May 18, 2021, to construct and maintain a battery storage system at the Project. On June 3, 2021, FERC issued an order amending the license to include the battery storage system. RFH will install the battery storage system along the transmission line adjacent to the Project's substation in the summer/fall of 2022. The 8 MW battery storage system consists of 15 smaller battery enclosures with integrated heating/cooling and ventilation and have a rating of 372.7 kilowatt-hours each. The battery storage system also consists of DC-AC inverters, inverter step-up transformers, spill containment, and associated auxiliary equipment. Although this battery storage system will increase Project efficiency, it will not change the Project's authorized installed capacity nor its hydraulic capacity. All connection points to the Independent System Operator New England electrical grid will remain unchanged. Implementation of the battery storage system will not change Project operations and will not impact the generating or water control capabilities of the dam or powerhouse.

#### **5.2 Upper Station Development**

Additional appurtenant equipment includes switch boards, switchgear, transformers, turbine governors, and other auxiliary equipment required for control of the units. Metal clad station

switch gear includes 11.5 kV, 60 cycle, Westinghouse draw-out, air-vacuum, circuit breakers, with 1,200 A, 500,000 kilovolt ampere (kVA) interrupting capacity, and 4,160 volt, 60 cycle Allis Chalmers draw-out, air-magnetic, circuit breakers, type A.M.-150C, with 1,200 A, 150,000 kVA interrupting capacity. The control equipment consists of panels containing meters and relays, and a bench-board type control board for breaker, governor, and excitation control. This equipment is located in the control room above the generator floor. Also in this location is the SCADA Programmable Logic Controller (PLC) equipment for the Upper and Lower Stations. There is one 5,000 kVA, 60 cycle, 3-phase, 11,000 Delta, 4,160 volt, wye Allis Chalmers outdoor, oil-insulated transformer adjacent to the Upper Station, and one 11-kV/ 240-V, 225 MVA indoor station service transformer. A 130 kW, propane-fueled station service back-up generator is located near the intake gatehouse.

Auxiliary equipment associated with Units 1, 2 and 3 includes two L&S actuator turbine governors with a capacity of 50,000 foot-pounds (ft-lbs); automatic power factor controllers; automatic synchronizers; switchboard speed controllers; pressure gauges; and gate opening indicators. Voltage regulators for Units 1 and 2 are Siemens static exciters. Unit 3 has a Basler voltage regulator, and the exciter is direct-connected. The turbine governor for Unit 4 is a gate shaft positioner-type, with a capacity of 15,000 ft-lbs.

### **5.3 Lower Station Development**

Additional appurtenant equipment includes switchgear, turbine governors, and auxiliaries required for control of the units. Control is provided for local manual, local automatic, and supervisory control from the Brookfield's National System Control Center. The control switchboard is located on the generator floor and is a General Electric tunnel-type design. The main and neutral switchgear of the Westinghouse metal-clad design are located on the turbine floor. Switchgear consists of a neutral circuit breaker, surge protector equipment, and termination of the generator phase leads. The main generator breakers are located in an enclosed building just outside of the station. This building houses the Powercon switchgear for Units 1 & 2, station service, and the breaker for Line 5. An 11-kV/ 480-V, 225 kVA station service transformer is located near the Line 5 tower. A 60 kW, propane-fueled station service generator is located just outside the powerhouse.

Both units at the Lower Station have gate shaft operators with a capacity of 30,000 ft-lbs. Additional auxiliary equipment includes a permanent magnet generator drive, motor-driven oil pumping system, gate limit switches, automatic generator brake control, governor oil pressure failure switch, and PLC control for automatic start and synchronizing.

## **6.0 United States Lands within the Project Boundary**

No lands of the United States are located within the Project Boundary.

**EXHIBIT B**  
**PROJECT OPERATION AND RESOURCE UTILIZATION**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT B – PROJECT OPERATION AND RESOURCE UTILIZATION**

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**APPENDICES**

Appendix B.1 Monthly and Annual Flow Duration Curves, for the Period 2000-2021

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# Exhibit B

## Project Operation and Resource Utilization

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### 1.0 Project Operation

#### 1.1 Operating Mode

The Rumford Falls Hydroelectric Project (Project) is operated in a run-of-river mode consistent with the Project's existing Federal Energy Regulatory Commission (FERC or Commission)-issued license. Rumford Falls Hydro LLC (RFH or Licensee) maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation (601.24 feet U.S. Geological Survey Datum [USGS] at the Upper Dam impoundment and elevation 502.74 feet USGS at the Middle Dam impoundment) and acts to minimize the fluctuations of the reservoir surface elevation (i.e., maintain a discharge from the Project so that, at any point in time, flows immediately downstream from the Project tailraces approximate the sum of the inflows to the Project reservoirs).

Pursuant to Article 402 of the Project's existing license, RFH releases a minimum flow of 1 cubic foot per second (cfs) from the Upper Dam and 21 cfs from the Middle Dam into the bypass reaches. The minimum flow at the Upper Dam is provided via leakage from the flashboards. At the Middle Dam, the 21 cfs minimum flow is provided via a 12-inch-diameter and 18-inch-diameter pipe located near the center of the dam, which is combined with leakage from the flashboards and pressure release vertical drain holes.

At the Upper Dam, the Upper Station's headpond elevation is maintained through a combination of automated adjustments of the Project's Upper Station turbines as well as the Obermeyer spillway and flashboard system. Under normal river flows, the Upper Dam impoundment elevation is measured by an electronic differential pressure transmitter located in the forebay that monitors river height and inflow. The signals are transmitted simultaneously to the National System Control Center (NSCC) in Marlborough, Massachusetts<sup>1</sup>. The NSCC regulates the wicket gate opening to the operating unit(s) to control of the amount of water passing through the turbines and maintain the Upper Dam impoundment elevation no more than the maximum pond level of 601.24 feet USGS, just below the crest of the flashboards.

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<sup>1</sup> The NSCC is in the process of moving to Queensbury, NY, which is expected to be completed in 2022.

The Obermeyer spillway system at the Upper Dam can be operated remotely or locally and is set to automatically deflate as a safety precaution if the Upper Dam impoundment elevation reaches two feet or more above the top of the gate or in the event of a station trip.

Turbines in the Lower Station have the same capabilities, and along with the Lower Station's canal headgates and flashboards at the Middle Dam, maintain the impoundment elevations in the Middle Dam impoundment. Four of the ten headgates are operated remotely and can be operated locally as well; the remaining gates are operated locally. There is a canal level control transmitter in the gatehouse and a selector switch which allows for one of the units to supervise canal level control.

The Upper and Lower Stations are monitored and controlled remotely via the Supervisory Control and Data Acquisition (SCADA) system 24 hours per day, seven days a week. In addition, three local technicians provide operation and maintenance support.

## **1.2 Future Operations**

The Licensee is not proposing any changes to the operation of the Project for the term of the new license. Separate from this relicensing, RFH requested a non-capacity amendment for the Project's license on April 27, 2021, and supplemented on May 18, 2021, to construct and maintain a battery storage system at the Project. On June 3, 2021, FERC issued a non-capacity order amendment to the license to include the battery storage system. RFH plans to install the battery storage system along the transmission line adjacent to the Project's substation in the summer/fall of 2022. Although this battery storage system will increase Project efficiency, it will not change the Project's authorized installed capacity nor its hydraulic capacity. All connection points to the Independent System Operator (ISO) New England electrical grid will remain unchanged. Implementation of the battery storage system will not change Project operations and will not impact the generating or water control capabilities of the dam or powerhouse.

## **1.3 Annual Plant Factor**

The annual plant factor as well as monthly and average annual energy production for the Project will be provided in the FLA.

## **1.4 Project Operation during Adverse, Mean, and High Flow**

### **1.4.1 River Basin Operations**

Flows on the Androscoggin River are regulated by upstream non-project and non-RFH storage reservoirs established by the 1909 Androscoggin River Company Headwater Benefits Agreement (HBA), which was updated in 1983 (Androscoggin Reservoir Company [ARCO] HBA, 1909 / 1983). The storage reservoirs are operated as seasonal storage reservoirs and have a combined capacity of approximately 644,000 acre-feet.

Additionally, there are 18 FERC-licensed hydroelectric projects on the mainstem of the Androscoggin River. The Shelburne Hydroelectric Project (FERC No. 2300) is the first project upstream from the Project, and the Riley-Jay-Livermore Hydroelectric Project (FERC No. 2375) is the first dam downstream of the Project on the Androscoggin River. The operations for these projects have been established through each project's existing FERC licenses.

Consistent with Article 401 of the Project's existing FERC license, the Project is operated in a run-of-river mode for the protection of water quality and aquatic resources. The Licensee maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation and acts to minimize the fluctuations of the reservoir surface elevation (i.e., maintain a discharge from the Project so that, at any point in time, flows immediately downstream from the Project tailraces approximate the sum of the inflows to the Project reservoirs). Run-of-river operations may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between RFH and the U.S. Fish and Wildlife Service (USFWS), Maine Department of Environmental Protection (MDEP), and Maine Department of Inland Fisheries and Wildlife (MDIFW).

Pursuant to Article 402 of the Rumford Falls Project's existing license, RFH releases a minimum flow of 1 cfs from the Upper Dam and 21 cfs from the Middle Dam for the protection of aquatic resources and water quality in the two bypass reaches of the Androscoggin River. This flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between the Licensee and the USFWS, MDEP, and MDIFW.

#### 1.4.2 Operation During High Water and Flood Conditions

High flows in the Androscoggin River Basin occur annually during the spring and fall runoff periods. The magnitude of spring flows may vary considerably depending on the water content of the melting snow cover, the occurrence of coincidental heavy spring rainfall, and warm temperatures. Ice jams, another phenomenon often associated with the spring runoff period, can cause uncontrolled increases in river stages.

During or in anticipation of extreme highwater conditions, RFH notifies the Maine Emergency Management Agency (MEMA) of flood conditions and control measures. MEMA has developed a volunteer monitoring network for flood stage observation and is responsible for public notification and warning. RFH also notifies an emergency contact list for the Project.

During high flow conditions, flows in excess of the hydraulic capacity of the generating units at the Upper (i.e., 4,550 cfs) and Lower (i.e., 3,100 cfs) Stations pass over the spillways into each Station's bypass reach. At the Upper Station, the Development's Obermeyer spillway system is lowered to support passing the higher flows and to manage impoundment water levels. In addition, the Obermeyer spillway system is set to automatically deflate as a safety precaution if the Upper Dam impoundment elevation reaches two feet or more above the top of the gate. At the Lower Station Development, the headgates at the Middle Dam Canal are closed to manage the canal elevation, which directs additional flow over the Station's spillway.

Under higher flow conditions, the wooden flashboards at the Upper and Middle Dams are designed to fail, which supports the passage of additional flows and the lowering of impoundment levels, eventually to the dam crest elevation once flows subside. If the flashboards at the developments are damaged during high flow events, they are replaced as soon as conditions safely allow.

#### 1.4.3 Operation During Low Water and Adverse Conditions

During low flow conditions, RFH operates the Project to maintain the impoundments' levels and to provide the required downstream minimum flows in accordance with Article 401 of the Project's existing FERC license. The minimum flow at the Upper Dam is provided via leakage from the dam and flashboards. At the Middle Dam, minimum flow is provided via a 12-inch-diameter and

18-inch-diameter pipe located near the center of the dam, which is combined with leakage from the flashboards and pressure release vertical drain holes.

#### 1.4.4 Project Operation During Maintenance Activities

During both scheduled and unscheduled maintenance and unit shutdown events, the Licensee continues to pass inflow downstream through operation of the remaining unit(s) or over the Stations' spillways, as necessary. Order of operation or shutdown of units is based on flow conditions and the specific event taking place.

#### **Turbines**

Turbine-generator unit shutdowns may occur at the Project, as needed, to perform repairs or for unanticipated maintenance activities. During both scheduled and unscheduled maintenance and unit shutdown events, RFH continues to pass inflow downstream through operation of the remaining units or through spill by deflating the Obermeyer, as necessary.

In addition to planned unit maintenance activities, there are times when an operator has to clear accumulated debris (e.g., leaves, trees, branches) from the Stations' intakes. This requires backing off the turbines to flush the debris away from the intake. During these maintenance activities, RFH continues to pass inflow over the spillway, as necessary.

#### **Impoundment Drawdowns**

Drawdown of the impoundment is required from time to time to maintain flashboards, perform major maintenance on Project structures, or to accommodate requests or orders from federal or state agencies regarding dam/public safety or similar activities.

If planned maintenance activities requires impoundment drawdowns below authorized levels or an interruption in run-of-river operations, RFH first consults with the applicable state and federal agencies.

## **2.0 Dependable Capacity, Average Annual Energy Production, and Supporting Data**

### **2.1 Project Hydrology**

Monthly and annual flow duration curves, for the period 2000-2021 are provided in Appendix B.1. Flows were calculated from *USGS Gage No. 01054500 Androscoggin River at Rumford, Maine*, which is located approximately 550 feet downstream from the Lower Station Development's powerhouse and are representative of both the Upper and Lower Station Developments. River flow statistics for the same period are provided in Section 5.5 of Exhibit E – Environmental Report.

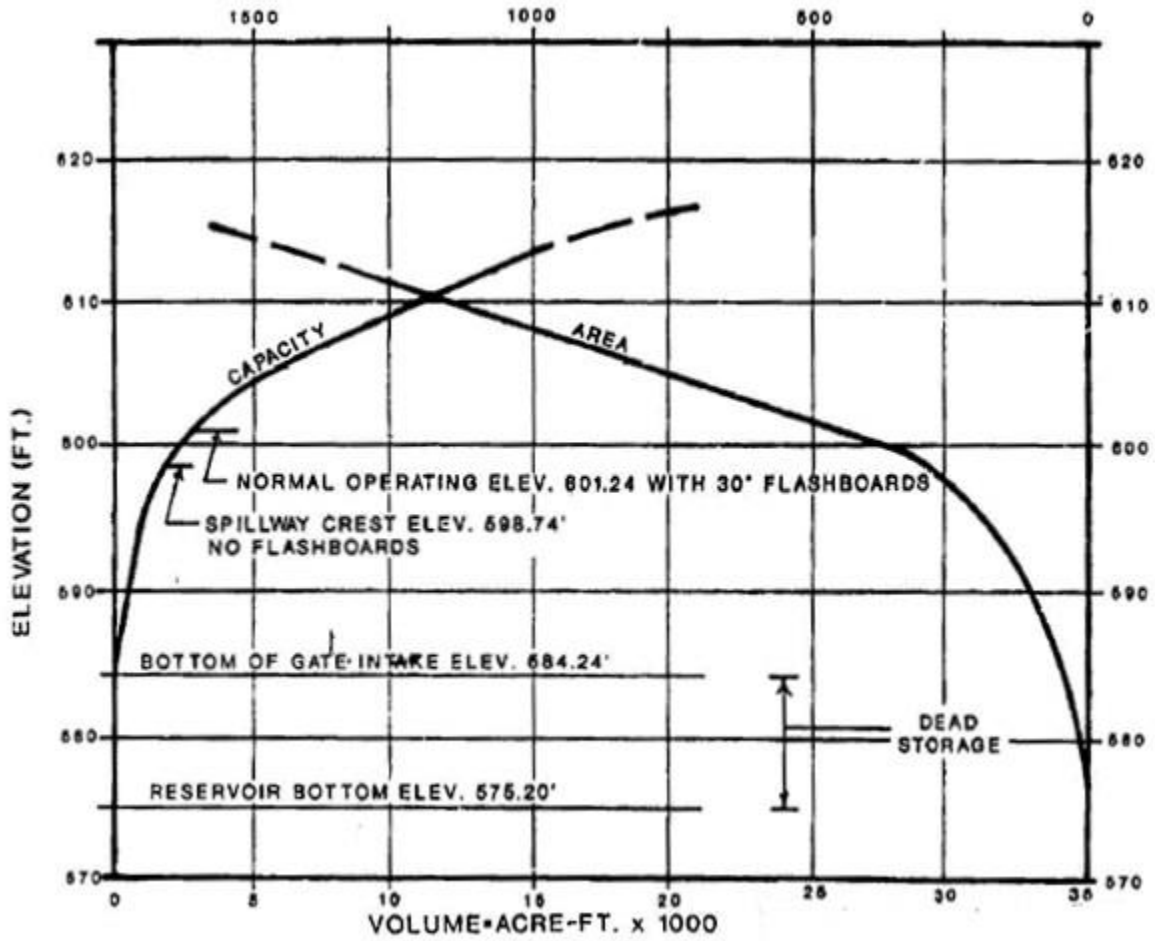
### **2.2 Dependable Capacity**

The estimated dependable capacity for the Project is 14.4 MW in the summer and 30.41 MW in the winter.

### **2.3 Area-Capacity Curve**

The area-capacity curve for the Upper Dam impoundment is provided in Figure 2.3-1. There is no area-capacity curve for the Lower Dam impoundment; however, the Project has limitations on pond level fluctuations and requirements for minimum flows and does not have the capacity to store or manage flows on a long-term basis.

**FIGURE 2.3-1**  
**AREA-CAPACITY CURVE FOR THE UPPER STATION DEVELOPMENT**



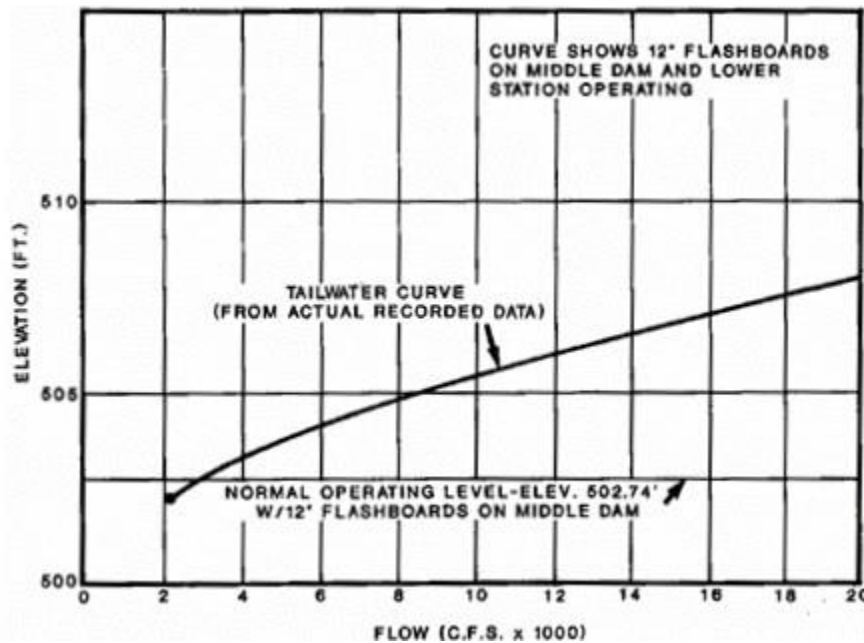
**2.4 Estimated Hydraulic Capacity**

The maximum hydraulic capacity is 4,550 cfs at the Upper Station Development and is 3,100 cfs at the Lower Station Development.

**2.5 Tailwater Rating Curve**

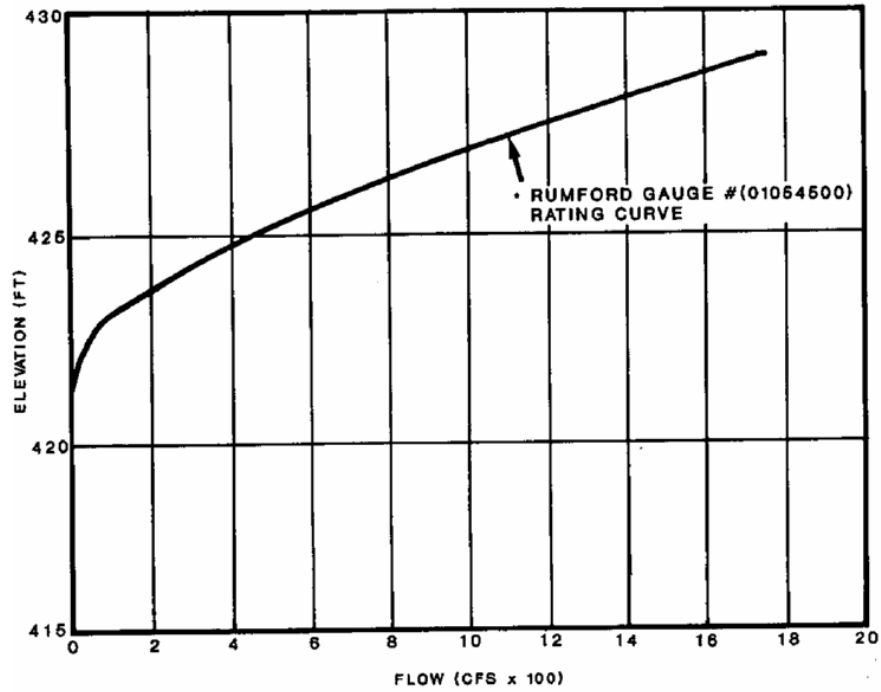
The tailwater rating curves for Upper and Lower Station Developments are shown on Figures 2.5-1 and 2.5-2, respectively.

**FIGURE 2.5-1  
TAILWATER RATING CURVE FOR THE UPPER STATION DEVELOPMENT**





**FIGURE 2.5-2  
TAILWATER RATING CURVE FOR THE LOWER STATION DEVELOPMENT**

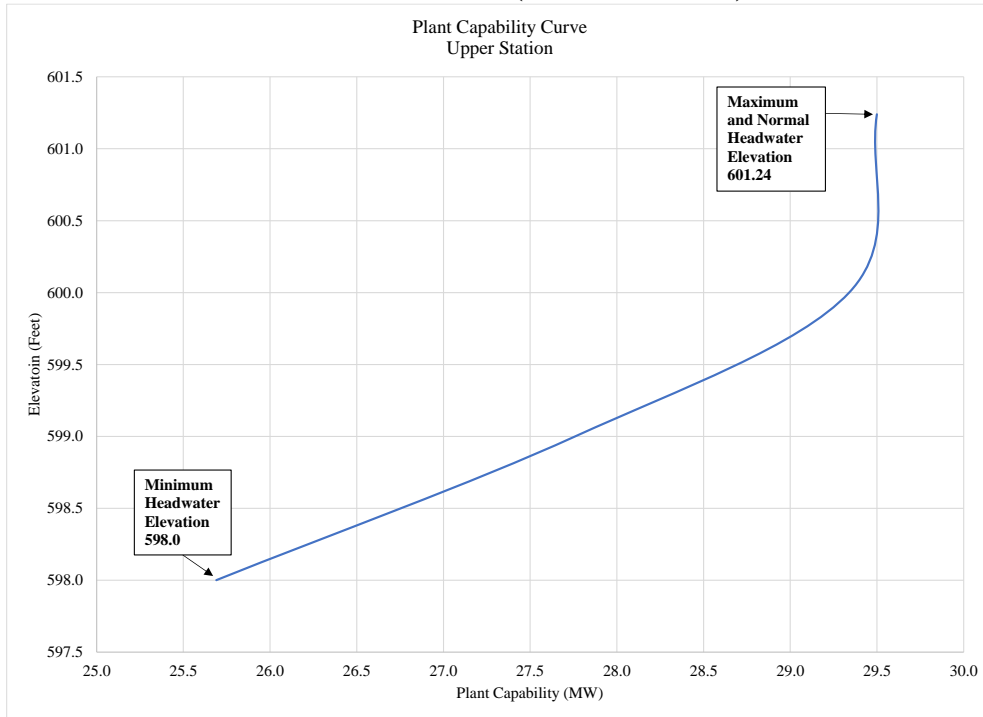


**NOTE:**  
 LOCATION OF GAUGE 1000 FT UPSTREAM OF CONFLUENCE WITH SWIFT RIVER ON LOWER STATION OUTLET BANK.  
 PREVIOUS TO 11/79 GAUGES LOCATED IN POND ABOVE DAM AND IN TAILRACE OF UPPER PLANT.

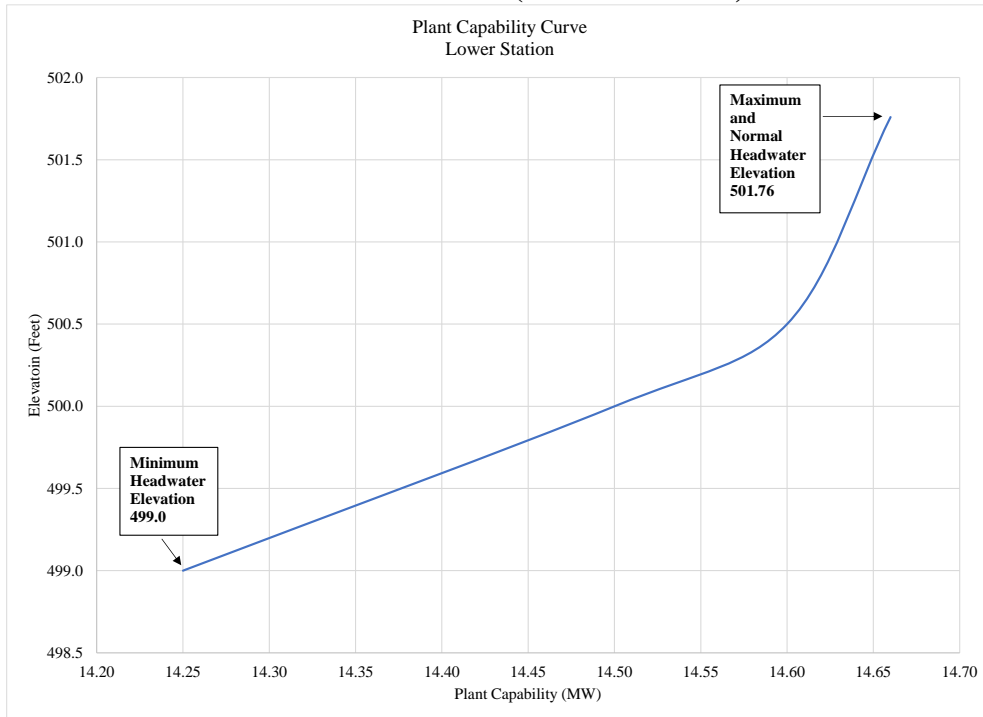
## 2.6 Powerplant Capability Versus Head

A curve showing powerplant capability versus head and specifying maximum, normal, and minimum heads is provided for the Upper and Lower Station Developments in Figures 2.6-1 and 2.6-2, respectively.

**FIGURE 2.6-1  
POWERPLANT CAPABILITY VERSUS HEAD FOR THE UPPER STATION  
DEVELOPMENT (USGS DATUM)**



**FIGURE 2.6-2  
POWERPLANT CAPABILITY VERSUS HEAD FOR THE LOWER STATION  
DEVELOPMENT (USGS DATUM)**



### **3.0 Use of Project Power**

RFH is an independent power producer and, as such, does not provide electric service to any particular group or class of customers, or prepare and submit load and capability forecasts or resource plans to any regulatory body.

The Project is a certified Low Impact Hydropower Institute (LIHI) facility<sup>2</sup> and generates renewable power for Maine and the regional power pool administered by the ISO New England. Currently, generation from the Project is sold on the open market through bidding into the New England Power Pool (NEPOOL) market administered by ISO New England, the non-profit independent system operator for New England. ISO New England administers all significant aspects of the NEPOOL power market.

### **4.0 Plans for Future Development**

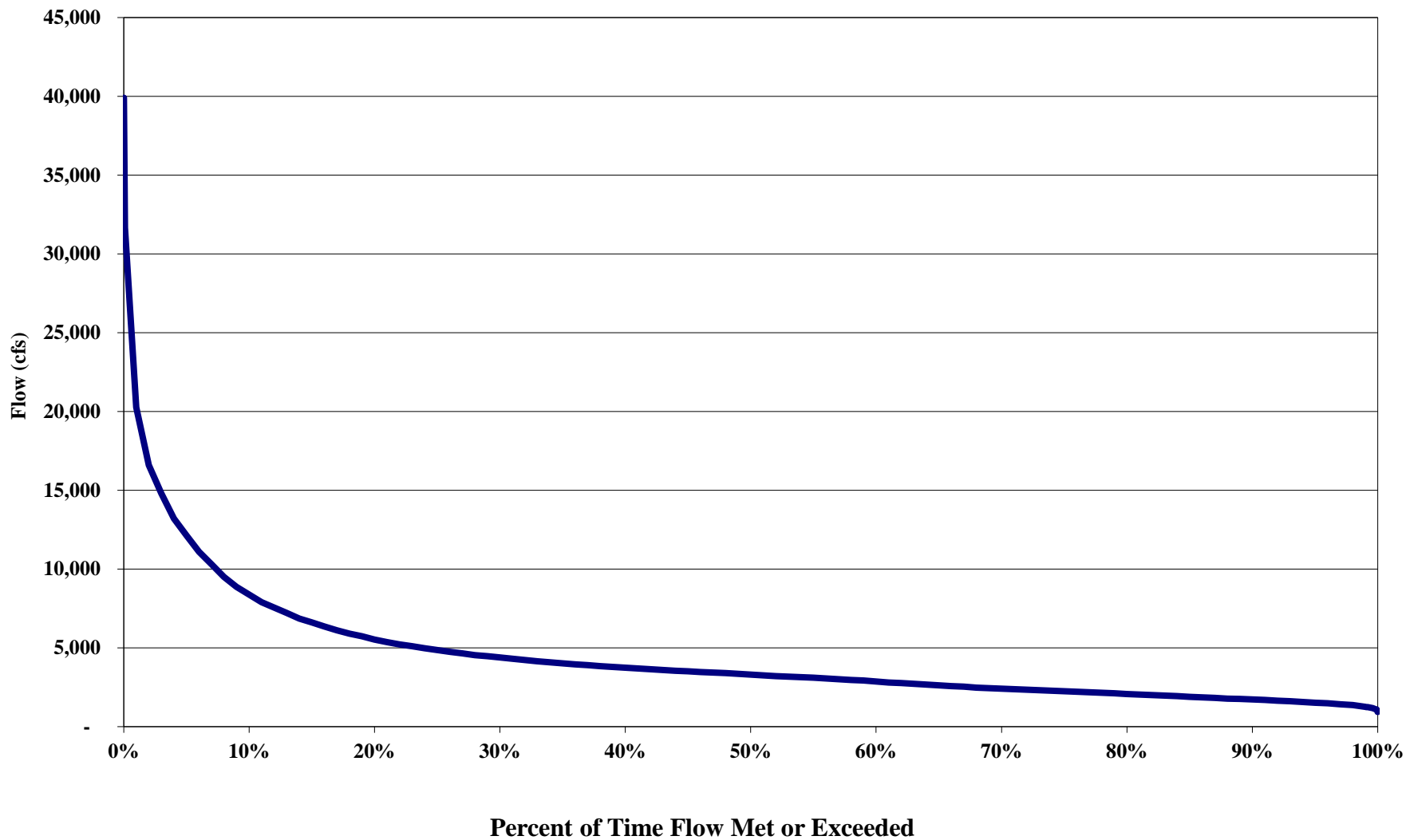
RFH has no plans to alter Project operations at this time nor has any other future development plans at the Project for this relicensing. As discussed in Section 1.2 above, RFH plans to install a battery storage system along the transmission line adjacent to the Project's substation in the summer/fall of 2022 pursuant to the June 3, 2021 FERC-issued order amending the license. However, this is separate from this relicensing and will not change Project operations.

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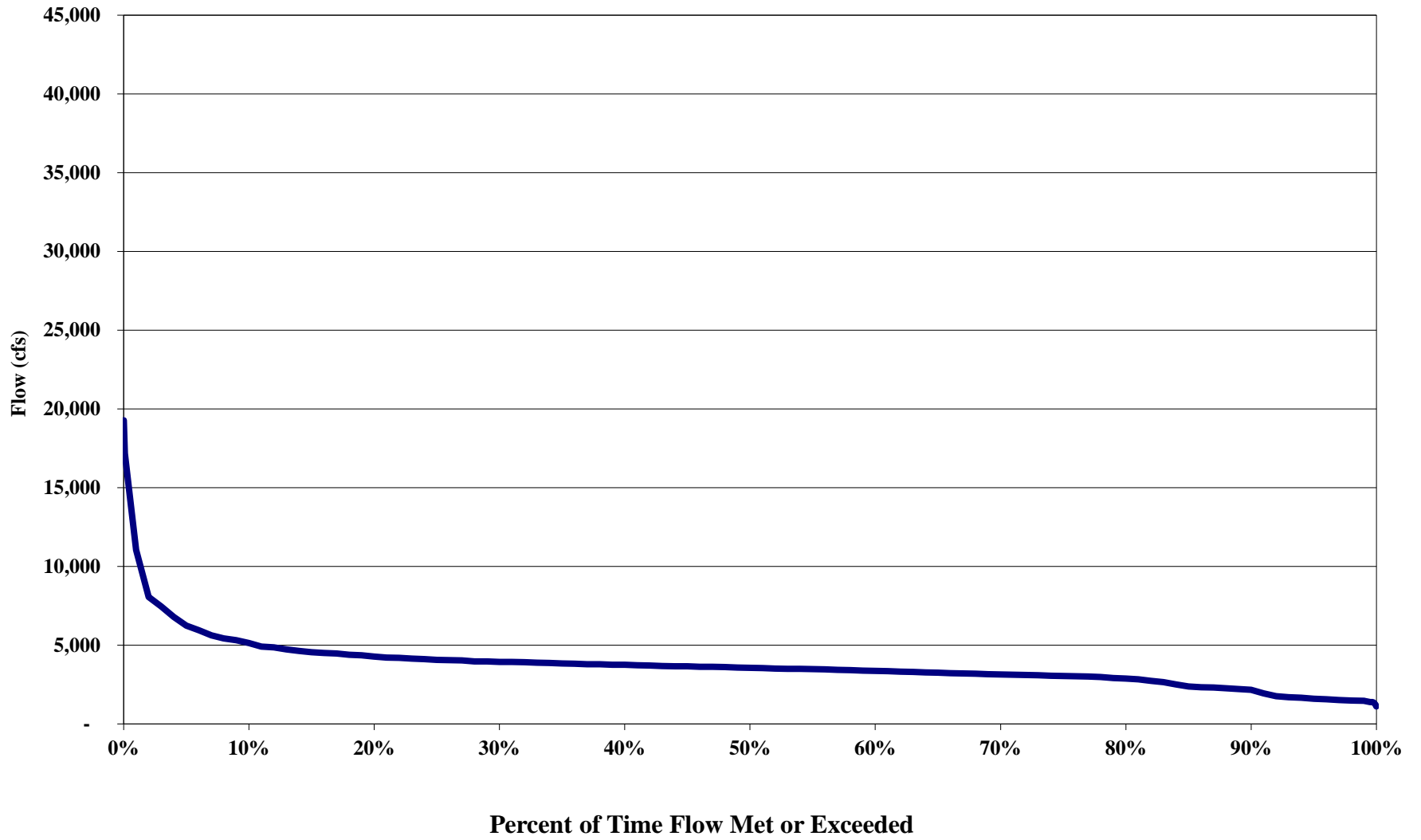
<sup>2</sup> LIHI certified through December 9, 2028.

**APPENDIX B.1**  
**MONTHLY AND ANNUAL FLOW DURATION CURVES,**  
**FOR THE PERIOD 2000-2021**

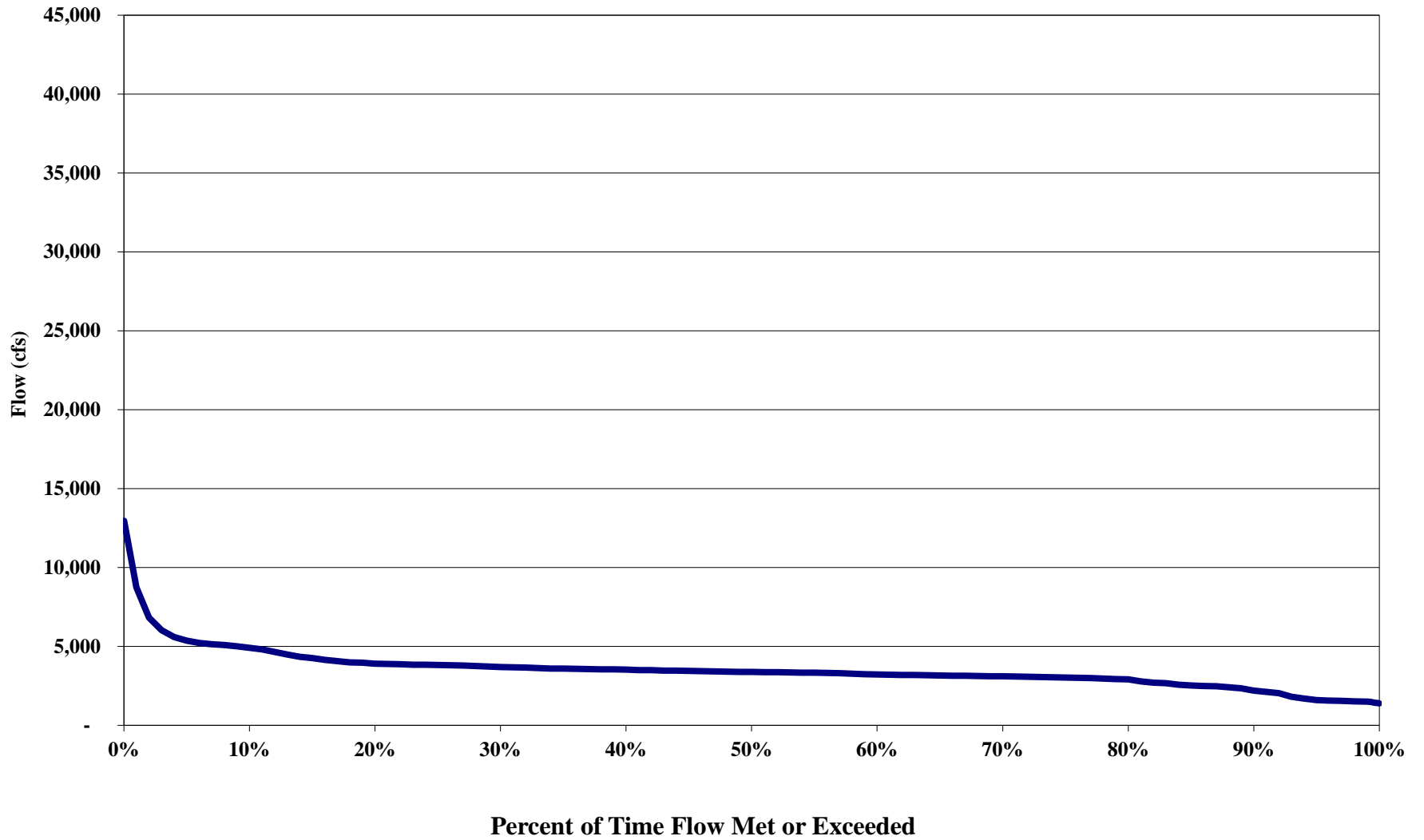
**Flow Exceedance  
Rumford Falls Project  
Annual 2000 -- 2021**



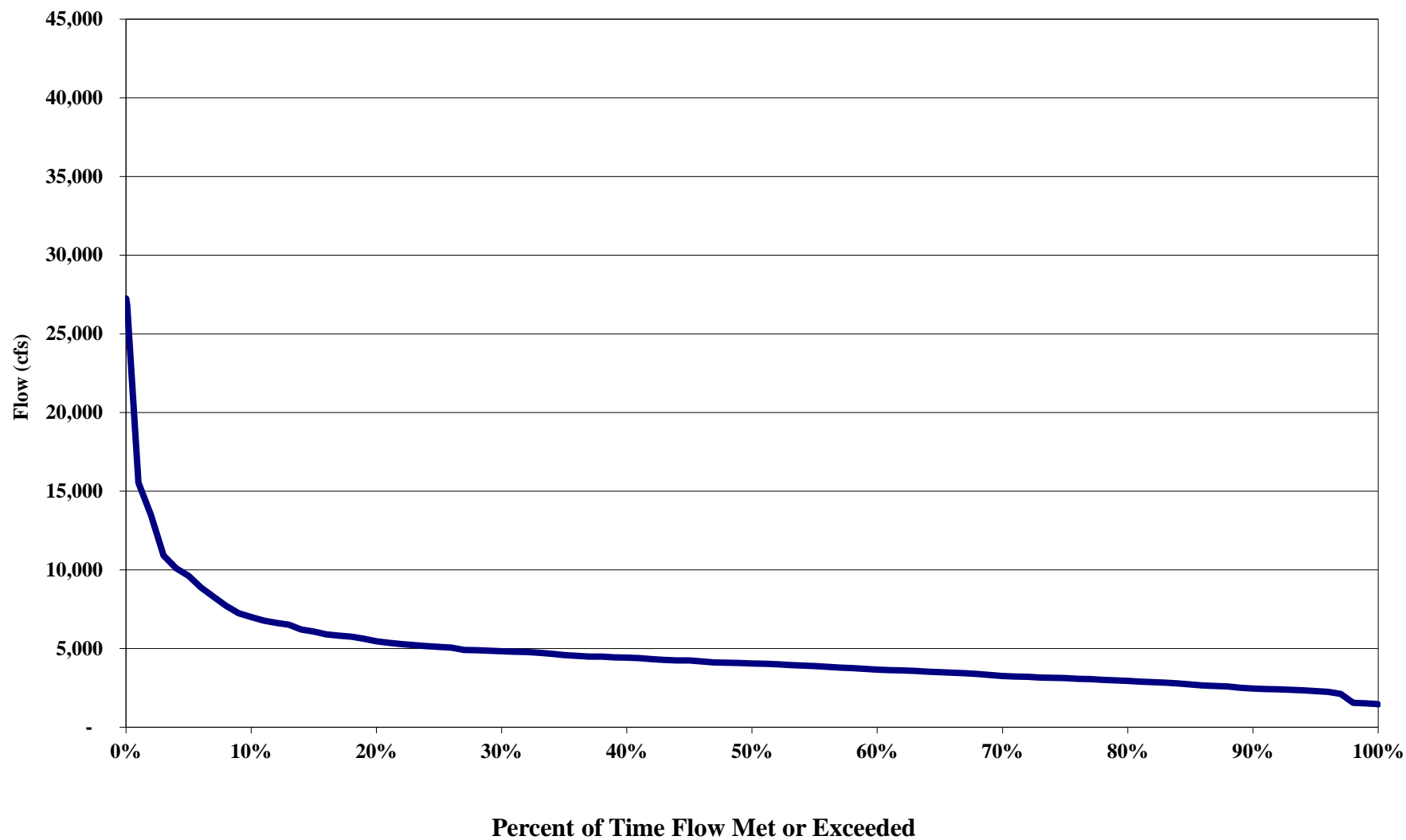
**Rumford Falls Project  
January Flow Exceedance  
(2000 - 2021)**



**Rumford Falls Project  
February Flow Exceedance  
(2000 - 2021)**

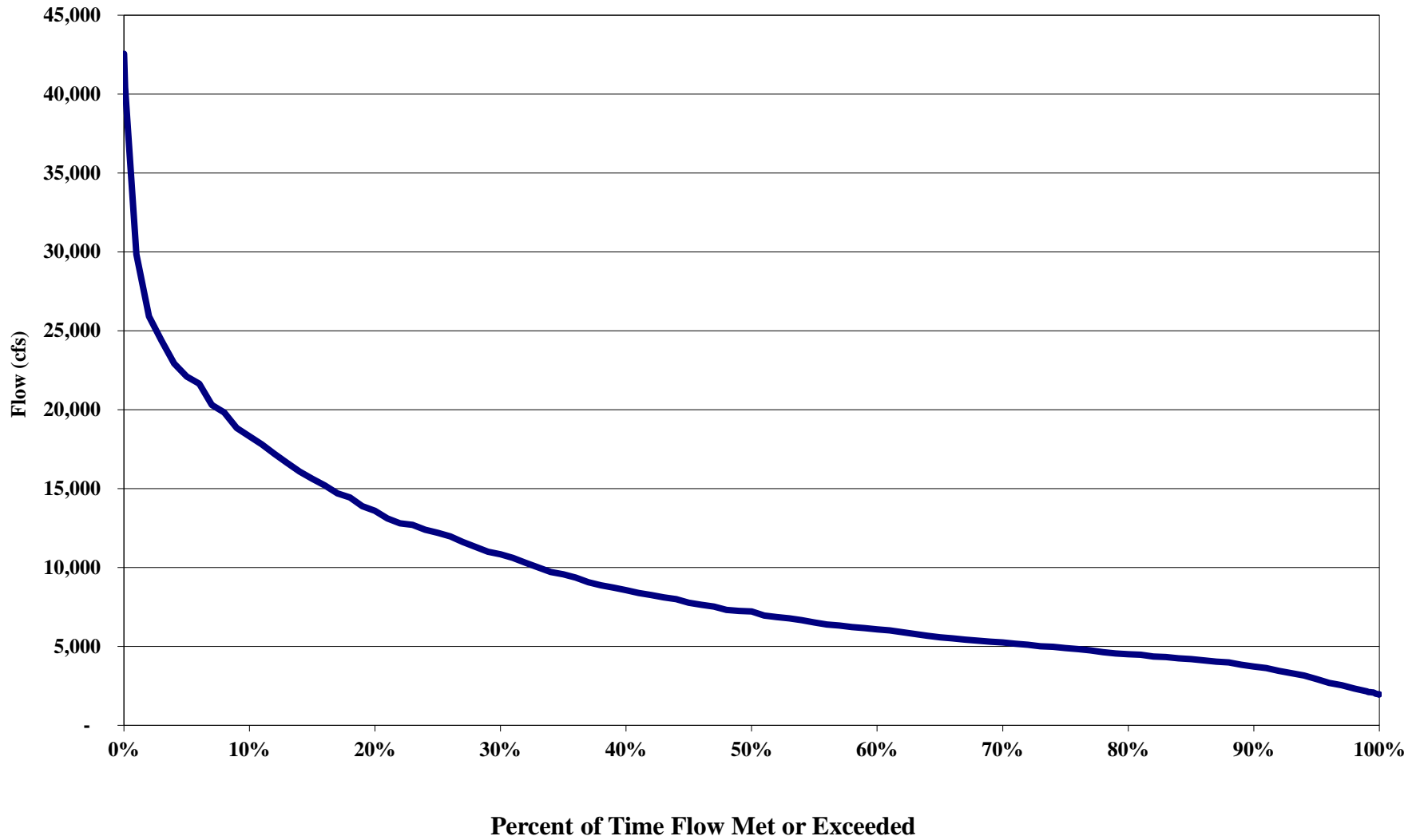


**Rumford Falls Project  
March Flow Exceedance  
(2000 - 2021)**

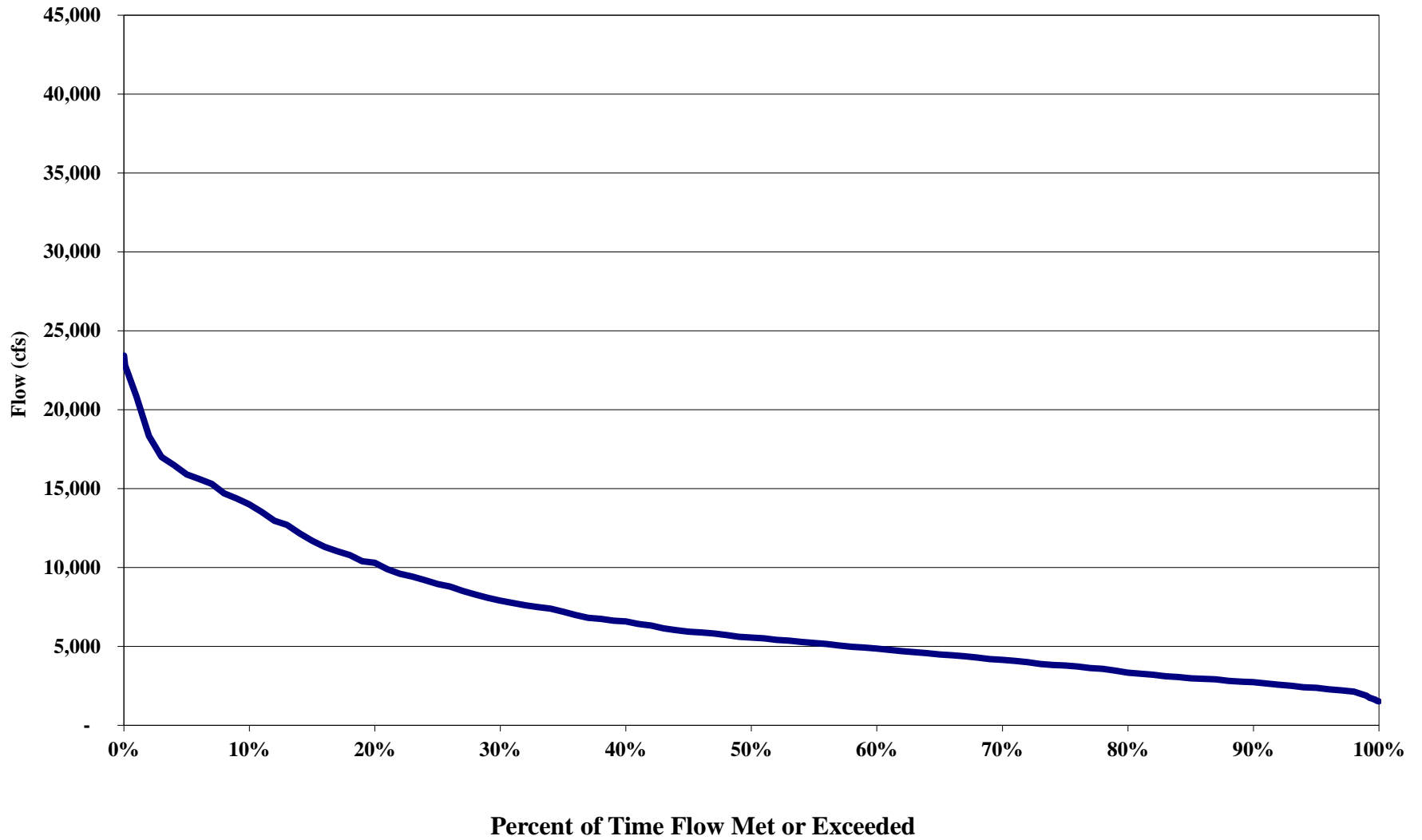




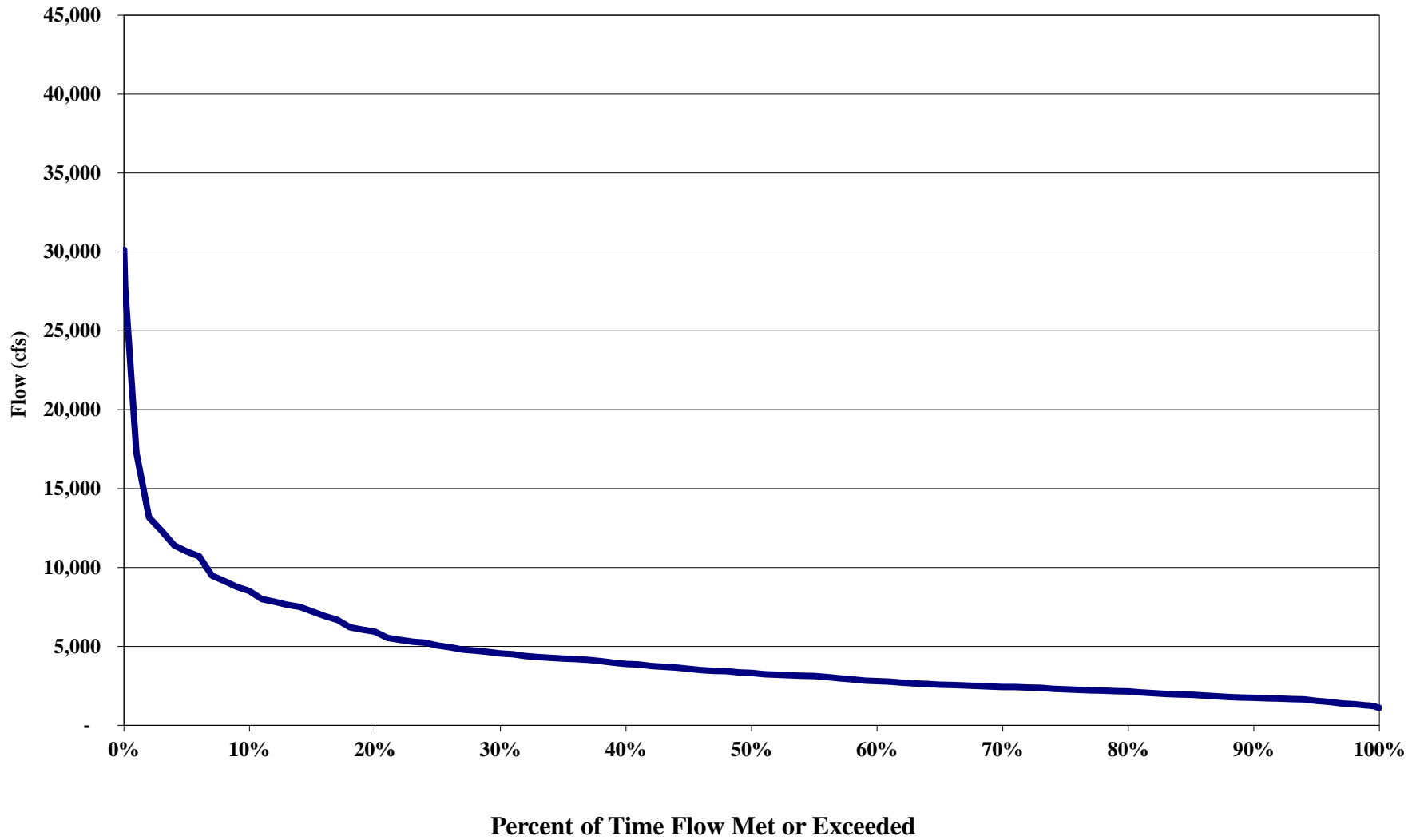
**Rumford Falls Project  
April Flow Exceedance  
(2000 - 2021)**



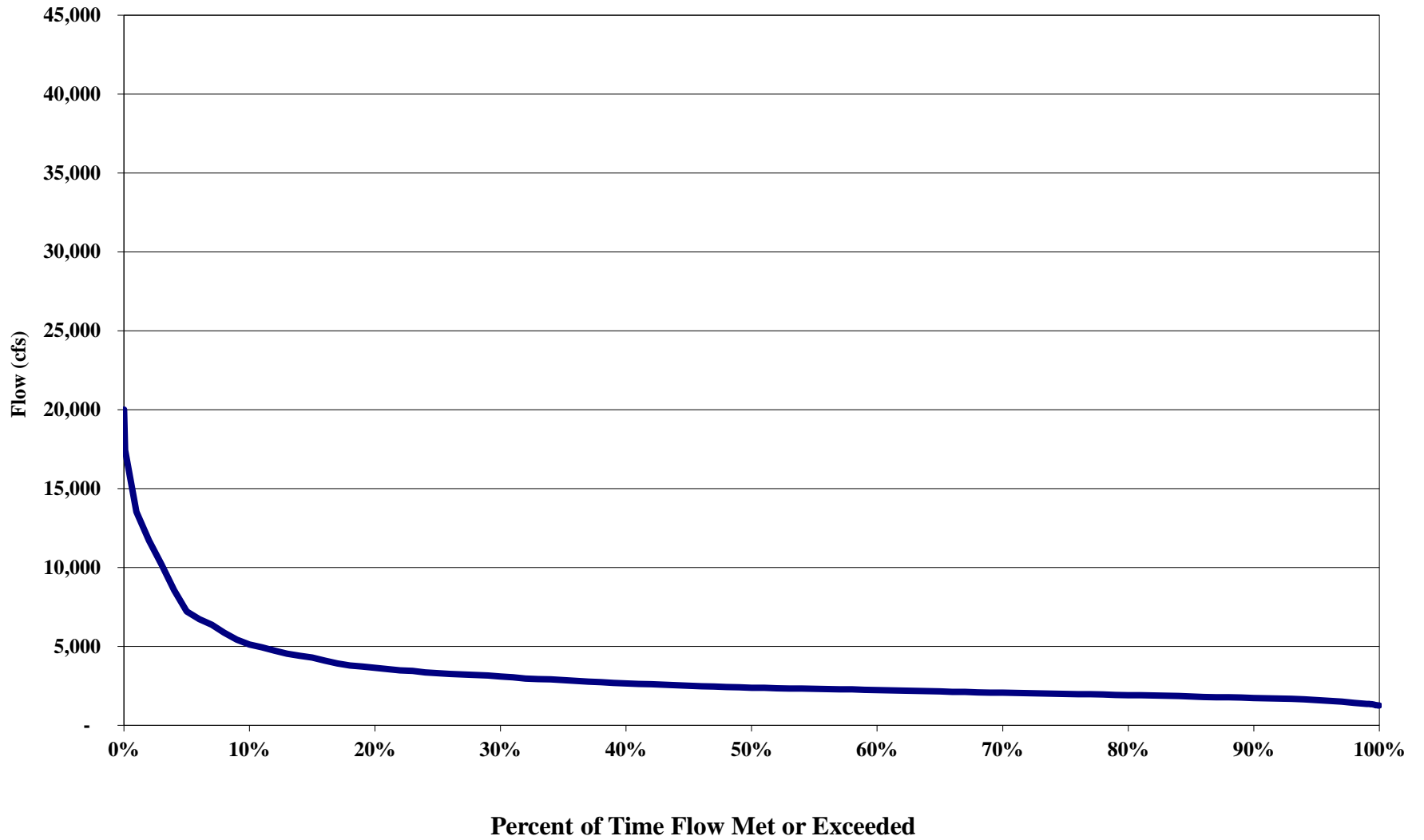
**Rumford Falls Project  
May Flow Exceedance  
(2000 - 2021)**



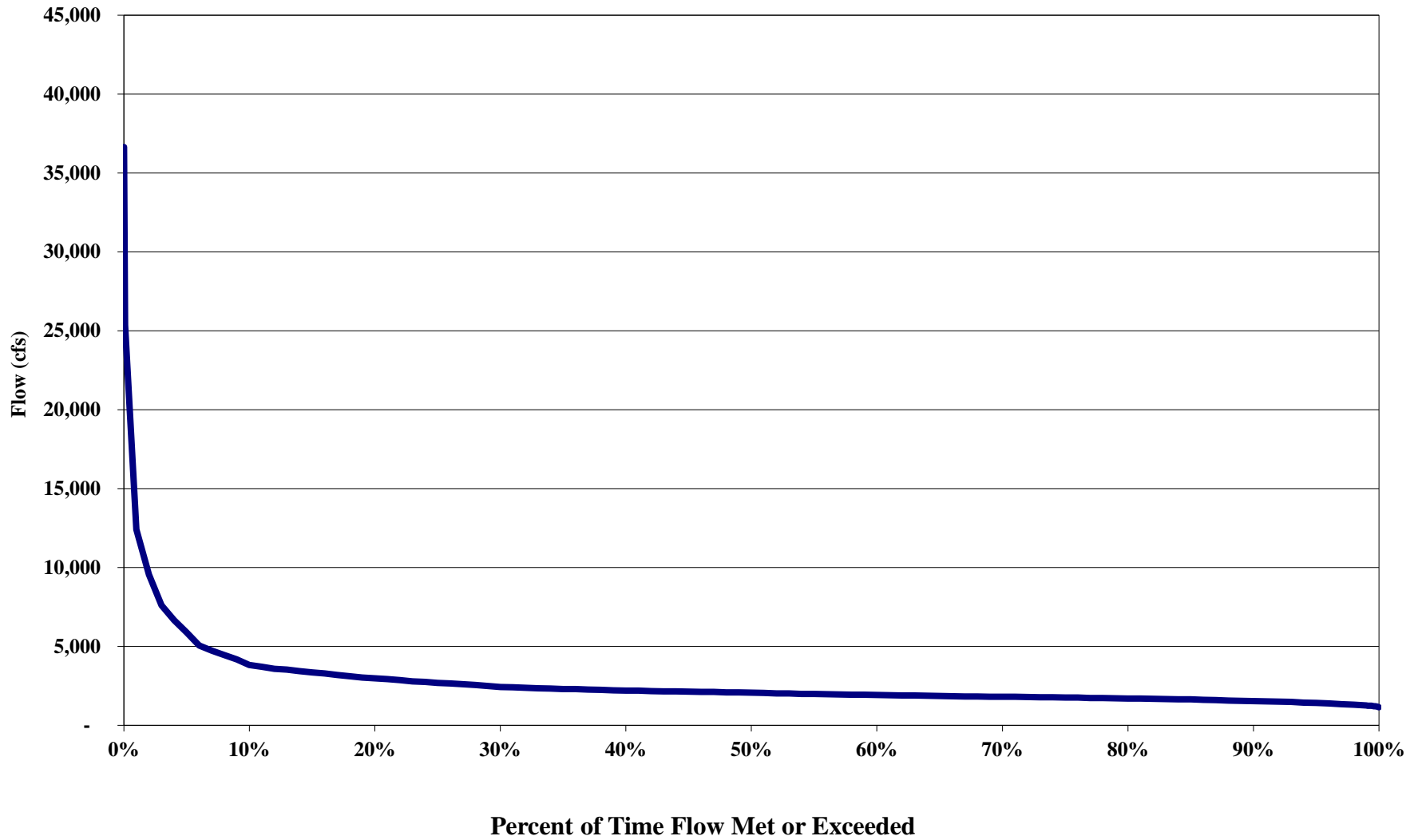
**Rumford Falls Project  
June Flow Exceedance  
(2000 - 2021)**



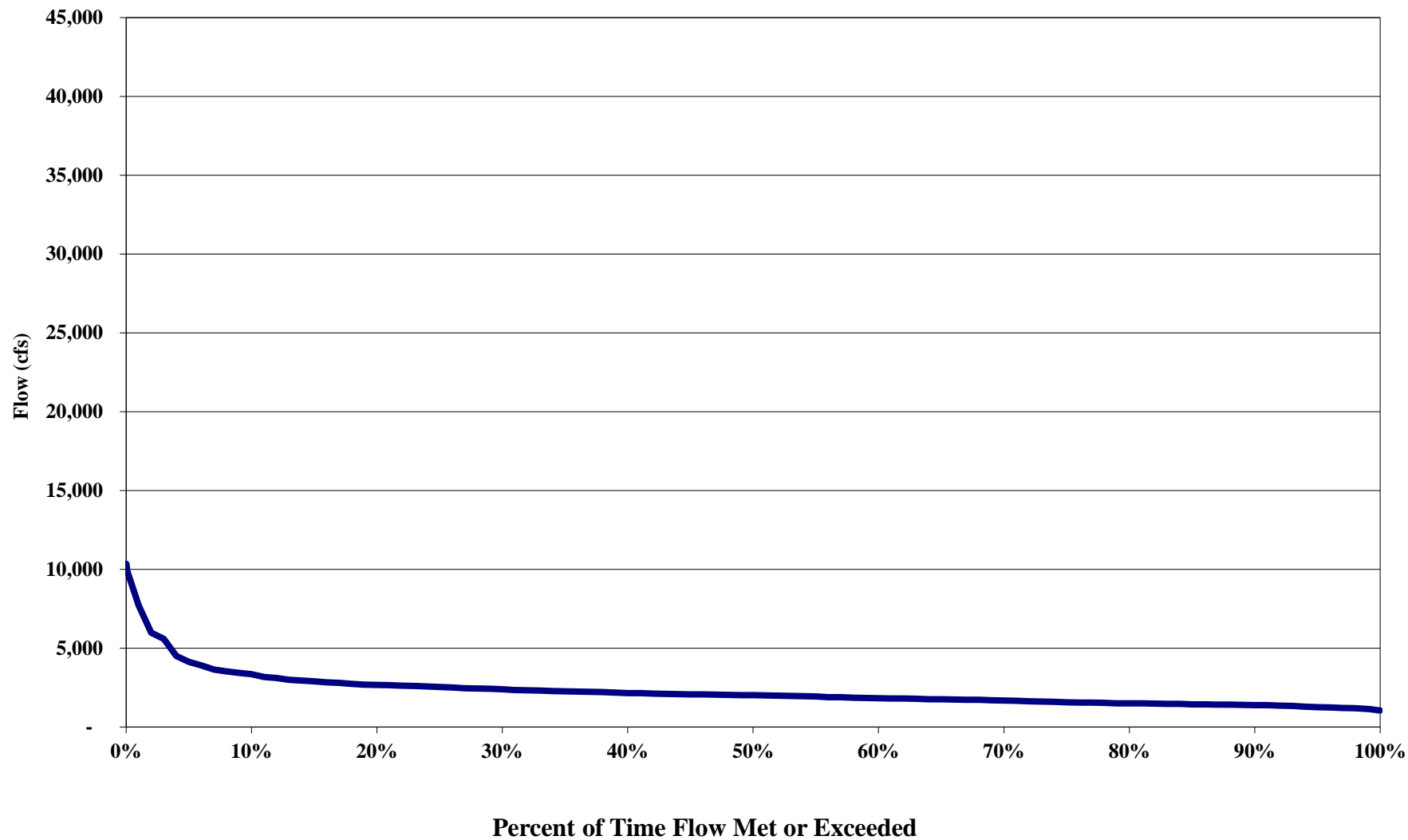
**Rumford Falls Project  
July Flow Exceedance  
(2000 - 2021)**



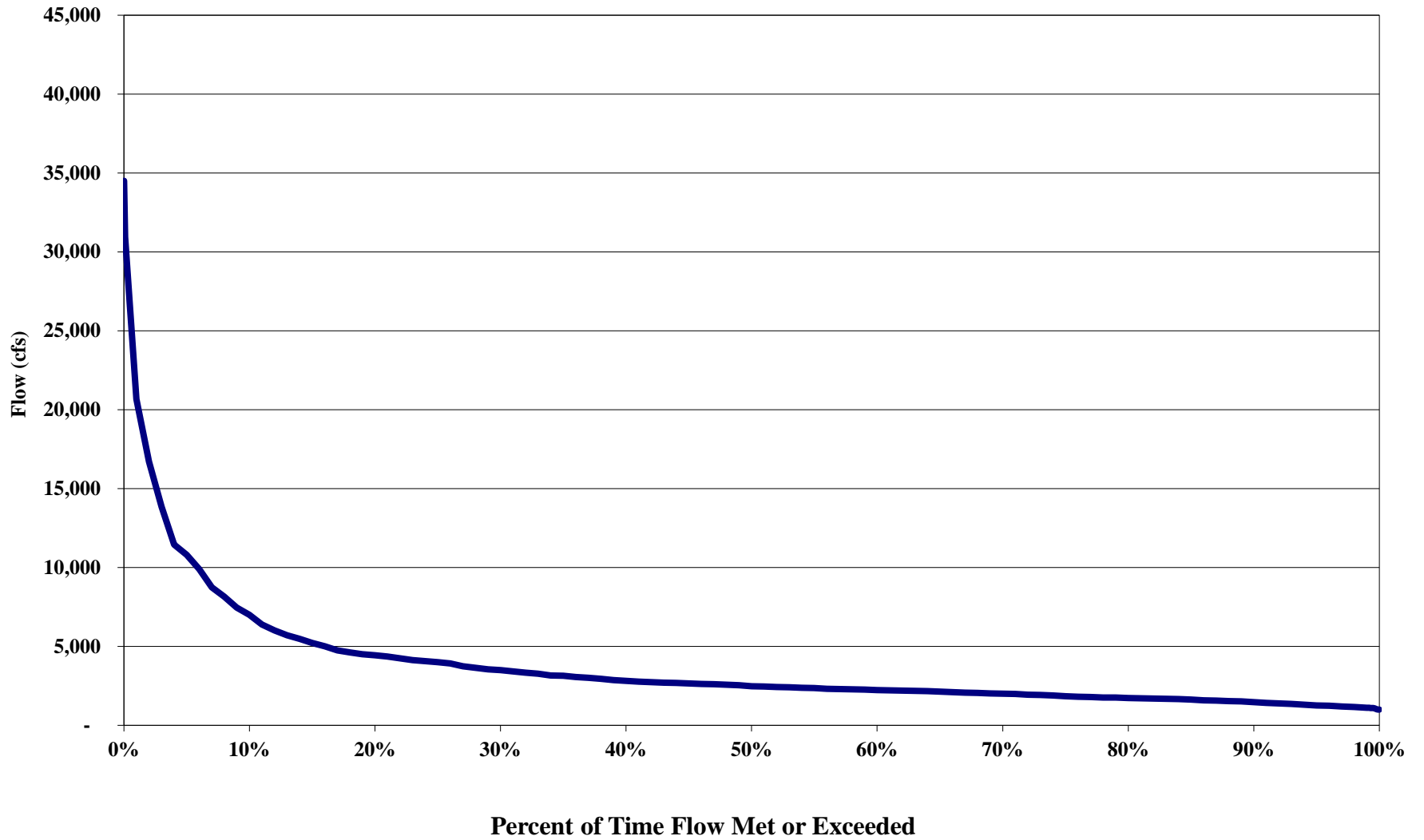
**Rumford Falls Project  
August Flow Exceedance  
(2000 - 2021)**



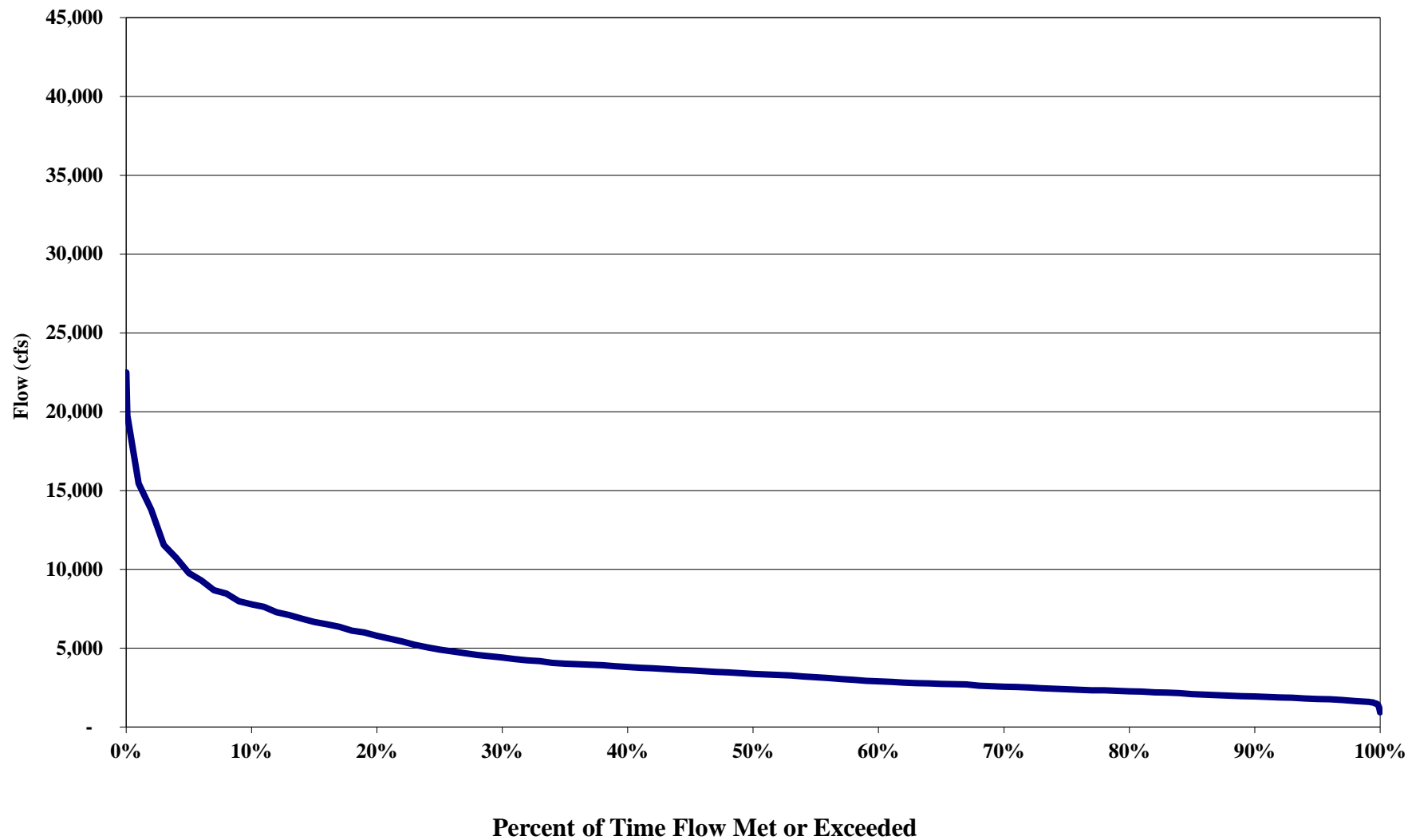
### Rumford Falls Project September Flow Exceedance (2000 - 2021)



**Rumford Falls Project  
October Flow Exceedance  
(2000 - 2021)**

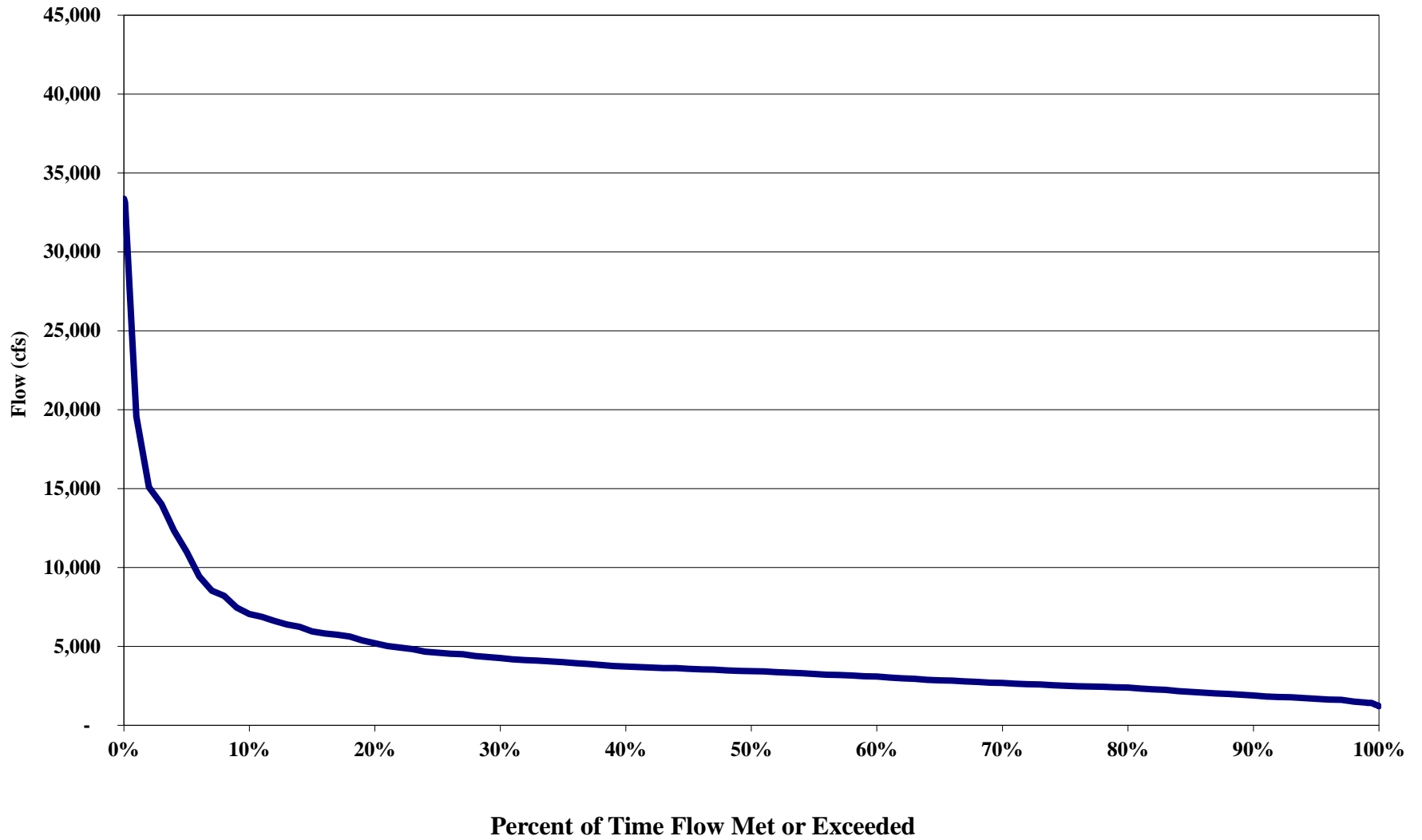


### Rumford Falls Project November Flow Exceedance (2000 - 2021)





**Rumford Falls Project  
December Flow Exceedance  
(2000 - 2021)**



**EXHIBIT C**  
**CONSTRUCTION HISTORY**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT C – CONSTRUCTION HISTORY**

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# **Exhibit C**

## **Construction History**

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Code of Federal Regulations (CFR) §4.51(d)(1) only requires a construction history for applications for an initial license, a construction history is not required for this relicensing application for the Rumford Falls Hydroelectric Project (Project). However, to provide general background information, a summary of the major aspects of the construction history of the Project is provided below.

### **1.0 General Construction History**

Construction of the Project began in 1890. The Middle Dam as well as the Middle Dam Canal and associated headgate structure for the Lower Station were built in 1890 to 1892. The Lower Station was completed in 1954. Construction of the current concrete gravity dam at the Upper Dam Development was completed in 1916. The “new portion” of Upper Station was completed in 1918, with the old portion left from the 1910 development.

#### **1.1 Modification or Additions to the Existing Project**

In 2006, after the Project was purchased by Rumford Falls Hydro LLC (RFH or Licensee), the station was automated for remote operation from Millinocket, Maine. Between 2007 and 2010, Units 1 and 2 in the Lower Station and Unit 3 in the Upper Station were upgraded, the Obermeyer spillway system was installed on the Upper Dam, and the remote supervisory control moved to Marlborough, Massachusetts. Currently, the national control center is being moved to Queensbury, New York, which is expected to be completed in 2022.

### **2.0 Project Schedule of New Development**

There are no new structures being proposed in this application. Separate from this relicensing, RFH plans to install a battery storage system along the transmission line adjacent to the Project’s substation in the summer/fall of 2022 pursuant to the June 3, 2021 FERC-issued order amending the license. Although this battery storage system will increase Project efficiency, it will not change the Project’s authorized installed capacity nor its hydraulic capacity. All connection points to the Independent System Operator New England electrical grid will remain unchanged.

Implementation of the battery storage system will not change Project operations and will not impact the generating or water control capabilities of the dam or powerhouse.

The Licensee is proposing to update the Project Boundary to completely include the transmission lines pursuant to the Commission's June 3, 2021 order. This revision will be incorporated into Exhibit G in the Final License Application<sup>1</sup>.

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<sup>1</sup> The Licensee will revise the Exhibit G drawings to include the entire battery storage system within the Project Boundary within 90 days of completing construction of the battery system.

**EXHIBIT D**  
**STATEMENT OF COSTS AND FINANCING**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT D – STATEMENT OF COSTS AND FINANCING**

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## **Exhibit D**

# **Statement of Costs and Financing**

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### **1.0 Original Cost of Existing Unlicensed Facilities**

This section is not applicable to the Rumford Falls Hydroelectric Project (Project) because Rumford Falls Hydro LLC (RFH or Licensee) is not applying for an initial (i.e., original) license.

### **2.0 Estimated Amount Payable Upon Takeover Pursuant to Section 14 of the FPA**

Under Section 14(a) of the Federal Power Act (FPA), the Federal government may take over a project licensed by the Federal Energy Regulatory Commission (FERC or Commission) upon the expiration of the current license. If such a takeover were to occur upon expiration of the current license, the Licensee would have to be reimbursed for the net investment, not to exceed fair value, of the property taken, plus severance damages. To date, no agency or interested party has recommended a federal takeover of the Project pursuant to Section 14 of the FPA.

#### **2.1 Fair Value**

The fair value of the Project is dependent on prevailing power values and license conditions, both of which are currently subject to change. The best approximation of fair value would likely be the cost to construct and operate a comparable power generating facility. Because of the high capital costs involved with constructing new facilities and the increase in fuel costs associated with operation of such new facilities (assuming a fossil-fueled replacement), the fair value would be considerably higher than the net investment amount. If a takeover of the Project were to be proposed, the Licensee would calculate fair value based on conditions current at that time.

#### **2.2 Net Investment**

The net investment for the Project will be provided in the Final License Application (FLA).

#### **2.3 Severance Damages**

Severance damages are determined either by the cost of replacing (retiring) equipment that is “dependent for its usefulness upon the continuance of the License” (Section 14, FPA), or the cost of obtaining an amount of power equivalent to that generated by the Project from the least



expensive alternative source, plus the capital cost of constructing any facilities that would be needed to transmit the power to the grid, minus the cost savings that would be realized by not operating the Project. These values would be calculated based on power values and license conditions at the time of Project takeover.

### **3.0 Estimated Costs of New Development**

This application does not include proposals for any new development at the Project. Separate from this relicensing, RFH requested a non-capacity amendment for the Project’s license on April 27, 2021, and supplemented on May 18, 2021, to construct and maintain a battery storage system at the Project. On June 3, 2021, FERC issued an order amending the license to include the battery storage system. RFH plans to install the battery storage system along the transmission line adjacent to the Project’s substation in the summer/fall of 2022. Although this battery storage system will increase Project efficiency, it will not change the Project’s authorized installed capacity nor its hydraulic capacity. All connection points to the Independent System Operator (ISO) New England electrical grid will remain unchanged. Implementation of the battery storage system will not change Project operations and will not impact the generating or water control capabilities of the dam or powerhouse.

#### **3.1 Land and Water Rights**

The Licensee is not proposing to expand land or water rights as a consequence of this license application. The Licensee is proposing to update the Project Boundary to completely include the transmission lines pursuant the Commission’s June 3, 2021 order. This revision will be incorporated into Exhibit G in the FLA<sup>1</sup>.

#### **3.2 Cost of New Development**

This application does not include proposals for any new development at the Project.

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<sup>1</sup> The Licensee will revise the Exhibit G drawings to include the entire battery storage system within the Project Boundary within 90 days of completing construction of the battery system.

#### **4.0 Estimated Average Annual Cost of Project**

The estimated average annual operation and maintenance cost of the Project will be provided in the FLA.

#### **4.1 Capital Costs**

The capital costs of the Project will be provided in the FLA.

#### **4.2 Taxes**

Local, state, and federal taxes for the Project will be provided in the FLA.

#### **4.3 Depreciation and Amortization**

The annualized composite rate of depreciation for the Project will be provided in the FLA.

#### **4.4 Operation and Maintenance Expenses**

The estimated annual operation and maintenance expenses for the Project will be provided in the FLA.

#### **4.5 Cost to Develop the License Application**

The approximate cost to prepare the license application for the Project will be included in the FLA.

#### **4.6 Costs of Proposed Environmental Measures**

The Licensee is in the second study season consistent with the Commission-issued Process Plan and Schedule for the Project. Therefore, RFH is still in the process of conducting studies to inform the process of developing proposed environmental measures. RFH will provide the proposed environmental measures along with the associated costs in the FLA.

#### **5.0 Estimated Annual Value of Project Power**

Power generated by the Project is sold through ISO New England at prevailing market rates. The Licensee will provide the estimated gross annual energy production of the Project in the FLA. The average market clearing price for energy can be estimated based on the ISO New England website.

## **6.0 Sources and Extent of Financing and Annual Revenues**

The Licensee’s current financing needs are generated from internal funds. If determined to be needed, the Licensee is likely to finance major enhancements through earnings retention, equity contributions, and/or loans made by the corporate parent or some combination of those mechanisms.

## **7.0 Estimated Average Annual Decrease in Generation**

Upon development of the FLA, and based on further consultation with the agencies and stakeholders, RFH will develop and provide an estimate of any changes to generation as a result of the issuance of the new license.

**EXHIBIT E**  
**ENVIRONMENTAL REPORT**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT E – ENVIRONMENTAL REPORT**

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# List of Acronyms

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°C	degrees Celsius
°F	Fahrenheit
μS/cm	microsiemens per centimeter
ac-ft	acre feet
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
ARCO	Androscoggin River Company
ARWC	Androscoggin River Watershed Council
ASMFC	Atlantic States Marine Fisheries Commission
Brookfield	Brookfield Renewable
CFR	Code of Federal Regulations
cfs	cubic feet per second
CZMA	Coastal Zone Management Act
DLA	Draft License Application
DO	dissolved oxygen
DPS	distinct population segment
DWA	Deer Wintering Area
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FERC or Commission	Federal Energy Regulatory Commission
FLA	Final License Application
FMP	Fishery Management Plan
GOM DPS	Gulf of Maine Distinct Population Segment
GSU	Generator Step-Up
HBA	Headwater Benefits Agreement
HPMP	Historic Properties Management Plan
ILP	Integrated Licensing Process
IPaC	Information for Planning and Consultation
ISR	Initial Study Report

kV	kilovolts
kW	kilowatts
LIHI	Low Impact Hydropower Institute
M.R.S.	Maine Revised Statute
MDACF	Maine Department of Agriculture, Conservation, and Forestry
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries and Wildlife
mg/L	milligrams per liter
MHPC	Maine Historic Preservation Commission
MNAP	Maine Natural Areas Program
msl	mean sea level
MW	megawatt
ND Paper	Nine Dragons Paper
NEPA	National Environmental Policy Act
NGOs	non-governmental organizations
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPS	National Park Service
NRI	Nationwide Rivers Inventory
NWI	National Wetland Inventory
OMP	Operations Monitoring Plan
PAD	Pre-Application Document
PM&E	protection, mitigation, and enhancement
ppm	parts per million
Project	Rumford Falls Hydroelectric Project
PSP	Proposed Study Plan
REA	Ready for Environmental Analysis
RFH	Rumford Falls Hydro LLC
RFPC	Rumford Falls Power Company

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RM	river mile
ROW	right of way
RSP	Revised Study Plan
RTE	rare, threatened, and endangered
SCORP	State Comprehensive Outdoor Recreation Plan
SD1	Scoping Document 1
SHPO	State Historic Preservation Officer
SPD	Study Plan Determination
SPU	standard platinum-cobalt units
SU	standard units
TP	total phosphorus
TSI	Trophic State Indices
TU	Trout Unlimited
U.S.C.	United States Code
µg/L	micrograms per liter
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USR	Updated Study Report

# Exhibit E

## Environmental Report

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### 1.0 Introduction

Rumford Falls Hydro LLC (RFH or Licensee), a subsidiary of Brookfield Renewable (Brookfield), is the Licensee of the 44.5 megawatt (MW) Rumford Falls Hydroelectric Project (FERC No. 2333) (Project), a multi-development hydroelectric facility located on the Androscoggin River in Rumford, Maine. The Project is operated in a run-of-river mode, generates renewable energy, and was recently recertified as a Low Impact Hydropower Institute (LIHI) facility<sup>1</sup> (LIHI 2022).

The Federal Energy Regulatory Commission (FERC or Commission) issued the Project's current license on October 18, 1994, which expires on September 30, 2024. RFH is using FERC's Integrated Licensing Process (ILP) as defined by 18 Code of Federal Regulations (CFR) Part 5 of the Commission's regulations in support of obtaining a new Project license. Pursuant to the process and schedule requirements of the ILP, RFH is filing this Draft License Application (DLA) with the Commission. This DLA is being provided to stakeholders, including participating federal and state agencies, tribes, non-governmental organizations (NGOs), local governments, and the public for comment. Comments on the DLA are due within 90 days of the filing of this DLA document on August 1, 2022.

### 1.1 Project Overview

The Project is located at river mile (RM) 80 on the Androscoggin River in Oxford County in the Town of Rumford, Maine. A Project location map is provided in Figure 1.1-1. The Project consists of two discrete developments – the Upper Station Development and the Lower Station Development. The total nameplate capacity of the Project is 44.5 MW. The Upper Station Development's total installed nameplate capacity is 29.3 MW, with a maximum hydraulic capacity of 4,550 cubic feet per second (cfs). The Lower Station Development's total nameplate capacity is 15.2 MW with a maximum hydraulic capacity of 3,100 cfs.

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<sup>1</sup> LIHI certified through December 9, 2028.

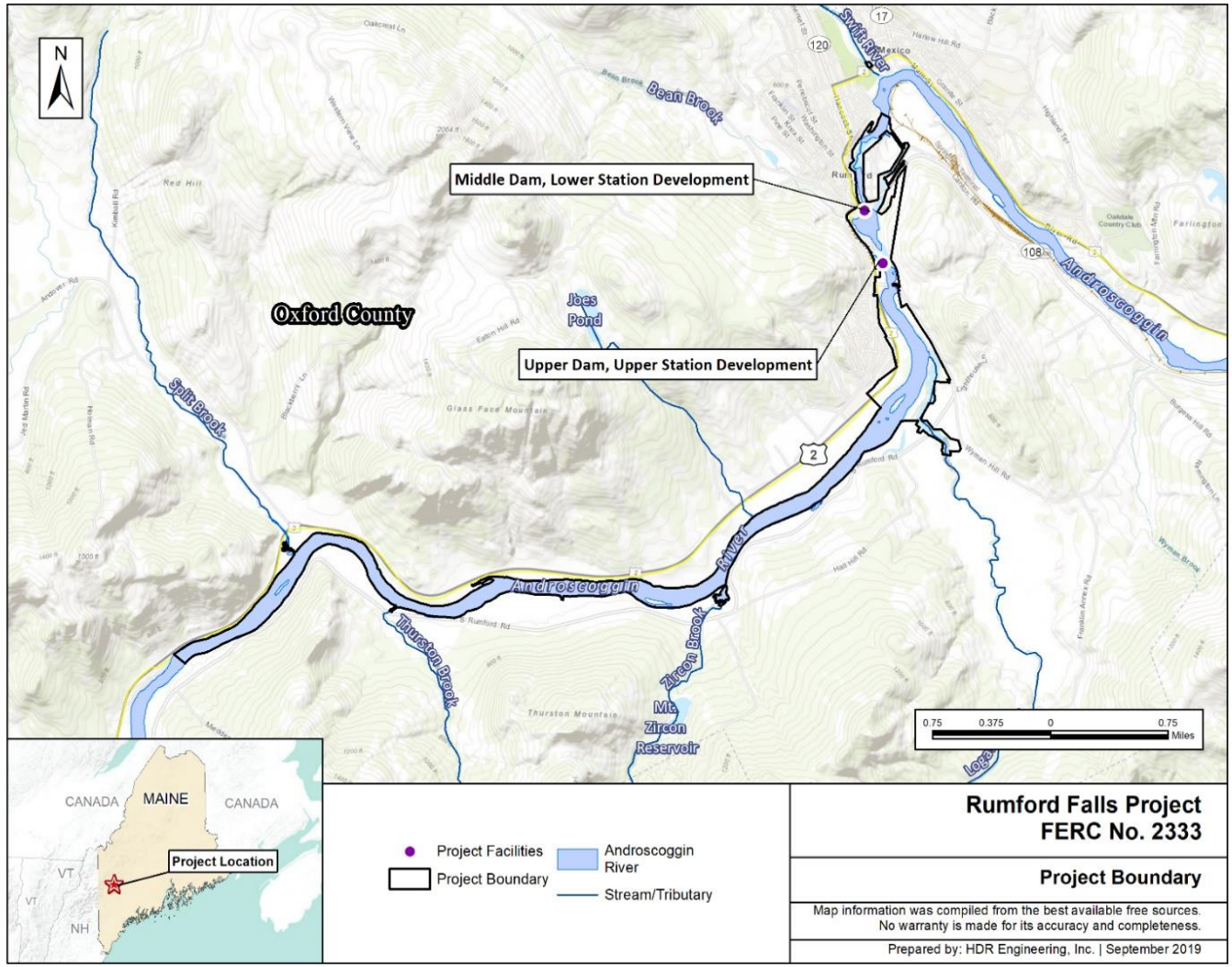
Consistent with Article 401 of the Project’s existing FERC license, the Project is operated in a run-of-river mode for the protection of water quality and aquatic resources. The Licensee maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation (elevation 601.24 feet U.S. Geological Survey Datum [USGS] at the Upper Dam impoundment and elevation 502.74 feet USGS at the Middle Dam impoundment) and acts to minimize the fluctuations of the reservoir surface elevation (i.e., maintain a discharge from the Project so that, at any point in time, flows immediately downstream from the Project tailraces approximate the sum of the inflows to the Project reservoirs).

Run-of-river operations may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between RFH and the U.S. Fish and Wildlife Service (USFWS), Maine Department of Environmental Protection (MDEP), and Maine Department of Inland Fisheries and Wildlife (MDIFW) pursuant to Article 401.

Pursuant to Article 402 of the Project’s existing license, RHF releases a minimum flow of 1 cfs from the Upper Dam and 21 cfs from the Middle Dam for the protection of aquatic resources and water quality in the two bypass reaches of the Androscoggin River. This flow may be temporarily modified, if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between the Licensee and the USFWS, MDEP, and MDIFW.

On April 27, 2021, and supplemented on May 18, 2021, RFH requested Commission authorization to construct and maintain a battery storage system at the Project. The battery system will not change Project operations or impact the water control or generating aspects of the Project. On June 3, 2021, FERC issued a non-capacity order amendment to the license to include the battery system. Construction of the battery storage system is planned for the summer/fall of 2022.

**FIGURE 1.1-1  
PROJECT LOCATION**



### **1.1.1 Upper Station Development**

The Upper Station Development's principal features consist of the Upper Dam, a forebay, a gatehouse, four short penstocks, a powerhouse, an impoundment, two overhead transmission lines, and appurtenant facilities. The Upper Station Development has a total installed nameplate capacity of 29.3 MW and a maximum hydraulic capacity of 4,550 cfs.

The Upper Station Development consists of: (1) a concrete gravity dam, having a 464-foot-long by 37-foot-high ogee type spillway section with a crest elevation of 598.74 feet USGS, topped with approximately 2.5-foot-high, pin-supported, wooden flashboards; 271 feet of this consists of an Obermeyer spillway system; (2) a gatehouse with eight headgates (two headgates for each of the four penstocks), trashracks, and other appurtenant equipment; (3) four underground steel-plate penstocks, each approximately 110 feet long, three of which are 12 feet in diameter, and one 13 feet in diameter; (4) a masonry powerhouse integral with the dam, occupying two adjoining sections of the dam: (a) the Old Station, approximately 30 feet wide by 110 feet long by 92 feet high, equipped with one horizontal generating unit with a capacity of 4,300 kilowatts (kW), and (b) the New Station, approximately 60 feet wide by 140 feet long by 76 feet high, equipped with three vertical generating units, two with a capacity of 8,100 kW each, and one with a capacity of 8,800 kW; (5) an impoundment, with a gross storage capacity of 2,900 acre-feet (ac-ft), surface area of approximately 419 acres, normal maximum headwater elevation of 601.24 feet USGS, and tailwater elevation of 502.74 feet USGS; (6) four overhead 11.5-kilovolt (kV) transmission lines extending from the Upper Station to the Generator Step-Up (GSU) substation, varying in length from 4,200 feet long to 4,500 feet long; and (7) appurtenant facilities.

### **1.1.2 Lower Station Development**

The principal features of the Lower Station Development consist of the Middle Dam, the Middle Canal headgate structure with a waste weir section, the Middle Canal, a gatehouse, two penstocks (each with a surge tank), a powerhouse, an impoundment, a short transmission line, and appurtenant facilities. The existing development has a total nameplate capacity of 15.2 MW and a total maximum hydraulic capacity of 3,100 cfs.



The Lower Station Development consists of: (1) a rock-filled, wooden-cribbed, and concrete-capped Middle Dam, having a 328.6-foot-long by 20-foot-high gravity spillway section, with a crest elevation at 501.24 feet USGS, topped with 16-inch-high pin-supported wooden flashboards; (2) a Middle Canal concrete headgate structure, located adjacent to the dam, approximately 120 feet long, with 10 steel headgates, and a waste weir section perpendicular to the headgate structure, approximately 120 feet long, with a crest elevation of 502.6 feet USGS, topped with 1.0-foot-high flashboards; (3) a Middle Canal, approximately 2,400 feet long, with width ranging from 75 to 175 feet and depth from 8 to 11 feet; (4) a gatehouse containing two headgates, trashracks, and other appurtenant equipment; (5) two 12-foot-diameter, steel-plate penstocks, each extending approximately 815 feet to two cylindrical surge tanks, each approximately 36 feet in diameter by 50.5 feet high, and the penstocks continuing 77 feet to the powerhouse; (6) a masonry powerhouse, equipped with two identical vertical units, each with 7,600 kW capacity; (7) an impoundment, with a gross storage capacity of 141 ac-ft, surface area of approximately 21 acres, normal maximum headwater elevation of 502.74 feet USGS, and tailwater elevation of 423.24 feet USGS; (8) two 11.5-kV generator leads, extending from the Lower Station to the GSU substation; and (9) appurtenant facilities.

## **1.2 Purpose of Exhibit E**

The purpose of the Exhibit E, as defined in 18 CFR §5.18, is to describe: (1) the existing and proposed Project facilities, including Project lands and waters; (2) the existing and proposed Project operation and maintenance, to include measures for protection, mitigation, and enhancement (PM&E) measures with respect to each resource affected by the Project proposal; and (3) the continuing impacts of existing Project operations and maintenance on resources.

The environmental analysis in this Exhibit E presents the assessment of effects associated with existing and proposed Project operations and facilities. This analysis is based on existing information and the results of studies conducted by RFH under the FERC-approved Study Plan, developed in consultation with the agencies and stakeholders. RFH completed the Water Quality Study, Impoundment Bass Spawning Survey, and Historical Architectural Survey prior to or during the first study season within the ILP schedule. The results of the Water Quality Study and Impoundment Bass Spawning Survey were filed with FERC on August 6, 2021, in the Initial Study Report (ISR) and have been incorporated into the analysis sections of the appropriate resource area

in this Exhibit E. The Historic Architectural Survey Report was reviewed by the Maine Historic Preservation Commission (MHPC) and will be filed with the Commission as privileged in May 2022.

RFH is in the second study season within the ILP schedule and will be completing the Angler Creel Survey<sup>2</sup>, Recreation Study, Aesthetic Flow Study, Flow Study for Aquatic Habitat Evaluation, and Whitewater Boating Study during 2022. The study reports for the Aesthetic Flow Study, Flow Study for Aquatic Habitat Evaluation, and Whitewater Boating Study will be filed with FERC on or before August 7, 2022, in the Updated Study Report (USR) and will be incorporated into the Final License Application (FLA), which will be filed with FERC on September 30, 2022. Given the ongoing study activities, and consistent with the Commission’s ILP schedule, the Angler Creel Survey and Recreation Study will not be completed until after the required FLA filing date. Therefore, the study reports for these two studies and the potential resulting modifications to the FLA will be filed with the Commission as a supplemental to the FLA.

### **1.3 Document Organization**

The organization of this Exhibit E is based on FERC's Scoping Document 1 (SD1), issued November 19, 2019; FERC's requirements for Exhibit E of the License Application (18 CFR §5.18[b]); and FERC's guidance document, “Preparing Environmental Documents: Guideline for Applicants, Contractors, and Staff” (FERC 2008).

This Exhibit E is divided into six sections:

- 1) Introduction;
- 2) Consultation (a summary of consultation is provided in Appendix E.1) (18 CFR §5.18(b)(5));
- 3) Statutory and Regulatory Requirements (18 CFR §5.18(b)(3));

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<sup>2</sup> RFH is completing the first year of the Angler Creel Survey in 2022 and will consult with the MDIFW to determine if a second year is required.

- 4) Proposed Action and Alternatives, including a description of the existing Project facilities and operations (18 CFR §5.18(b)(4)) and any modifications and proposed PM&E measures as proposed by the Licensee or others (18 CFR §5.18(b)(5));
- 5) Environmental Analysis (18 CFR §5.18(b)(5)), discussed in greater detail below; and
- 6) Economic Analysis (18 CFR §5.18(b)(5)).

The Environmental Analysis comprises the bulk of Exhibit E. Following a general description of the river basin (18 CFR §5.18(b)(1)), Section 5.0 of this Exhibit E describes each of the following for each resource area:

- Affected Environment – a description of the existing baseline environmental conditions for the respective resource based on information from the Pre-Application Document (PAD) and study reports included in the ISR;
- Environmental Analysis – a description of the effects, if any, of the Proposed Action including proposed Project operations and proposed Project structures, a description of PM&E measures, and a discussion of how the effects of project structures and operations are addressed by the proposed PM&E measures; and
- Unavoidable Adverse Impacts – a description of any adverse impacts that will occur despite the implementation of proposed PM&E measures.

A discussion of no action and alternatives to the Proposed Action is also provided in Section 4.0 of this Exhibit E.

## **2.0 Consultation**

### **2.1 Initial Consultation**

Consultation with federal and state agencies, tribes, NGOs, and other interested parties was initiated on September 27, 2019, with the issuance of the Notice of Intent (NOI) and PAD. The PAD provided a comprehensive description of the Project and summarized the existing, relevant, and reasonably available information to assist the Commission, resource agencies, Indian tribes, NGOs, and other interested parties (collectively, “stakeholders”) in identifying resource interests, determining information needs, preparing study requests, and analyzing the license application.

On November 19, 2019, the Commission issued SD1 and solicited comments on the PAD and SD1, as well as study requests, by January 25, 2020. SD1 was intended to advise the stakeholders as to the proposed scope of the Environmental Assessment (EA) and to seek additional information pertinent to the Commission’s analysis of the license application. On December 17, 2019, the Commission held a daytime public scoping meeting and an evening public scoping meeting in Rumford, Maine, to solicit comments regarding the scope of issues and analysis for the EA. The Commission typically conducts a site visit in conjunction with the scoping meetings. However, due to potential issues with access to Project facilities during the winter season, the Commission conducted the site visit on October 24, 2019.

Comments and study requests were received through January 28, 2020. A total of five comment letters were received from the following stakeholders: FERC, MDEP, MDIFW, Trout Unlimited (TU), and the Town of Rumford. On February 27, the Commission issued a letter indicating that although several comments were received during scoping, that they did not affect the content of SD1. Therefore, the Commission indicated that a Scoping Document 2 was not warranted and SD1 would be used to prepare the EA. In SD1, the Commission did not identify any resources that may be cumulatively affected by the proposed operation and maintenance of the Project.

RFH filed the Proposed Study Plan (PSP) with the Commission on March 10, 2020, and a PSP Meeting was held on April 7, 2020, per 18 CFR §5.11(e) to provide stakeholders the opportunity to review, comment, and ask questions related to the PSP. Subsequent to the PSP Meeting, and pursuant to 18 CFR §5.12, stakeholder comments on the PSP were due by June 8, 2020. RFH received 60 comment letters (45 of the comment letters were provided via FERC’s eComment system), 43 of which were from members of the public. Comment letters were received up to June 12, 2020, and although comments were received after the regulatory deadline, all comments were considered during development of the Revised Study Plan (RSP).

RFH filed the RSP with the Commission on July 7, 2020. On August 6, 2020, the Commission issued a Study Plan Determination (SPD) for the Project approving and/or modifying the studies outlined in the RSP. The SPD included the following eight studies:

- 1) Water Quality Study
- 2) Angler Creel Survey

- 3) Recreation Study
- 4) Historic Architectural Survey
- 5) Aesthetic Flow Study
- 6) Impoundment Bass Spawning Survey
- 7) Flow Study for Aquatic Habitat Evaluation
- 8) Whitewater Boating Study

RFH filed the ISR on August 6, 2021, which described the Licensee's overall progress in implementing the study plan and associated schedule, the data collected, and any variances from the study plans and schedule identified in the July 7, 2020 RSP, as modified and/or approved in the Commission's August 6, 2020 SPD. Subsequent to filing the ISR, RFH held a virtual ISR meeting with Commission staff and other relicensing participants on August 19, 2021. RFH filed the ISR Meeting Summary with the Commission on September 3, 2021. RFH is in the second study season within the ILP schedule and will be filing a USR on August 7, 2022, and an FLA on September 30, 2022, with the Commission.

RFH filed quarterly progress reports with the Commission on October 30, 2020, January 29, 2021, and April 30, 2021, October 29, 2021, January 31, 2022, and April 29, 2022, which were distributed to stakeholders to provide routine updates on each of the studies.

Appendix E.1 provides the consultation correspondence that has occurred after the PAD was filed with the Commission.

## **2.2 Draft License Application**

Comments raised during the relicensing process have been taken into consideration in drafting this DLA. A summary of comments received regarding this DLA, and RFH's response to the comments, will be included in the FLA.

## **2.3 Post-Filing Consultation**

Once FERC has determined that RFH's FLA meets the applicable requirements, FERC will issue the notice of acceptance and Ready for Environmental Analysis (REA).

The acceptance/REA notice solicits comments, protests, and interventions along with recommendations, as well as preliminary terms and conditions. Comments, protests, and interventions must be filed within 60 days of the notice. RFH will then have 45 days to respond to submitted comments (105 days from the REA notice). When the application is accepted, FERC provides public notice in the Federal Register, local newspapers, and directly to resource agencies and Indian tribes. In its notice, FERC invites protests and interventions and requests the final fish and wildlife recommendations, prescriptions, mandatory conditions, and comments from the appropriate resource agencies and Indian tribes.

### **3.0 Statutory and Regulatory Requirements**

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

Pursuant to Section 401 of the 1972 Amendments to the Federal Water Pollution Control Act, Public Law 92-500, RFH is required to apply for a Section 401 Water Quality Certification from the MDEP. RFH has been consulting with the MDEP during the relicensing process and will file a 401 Water Quality Application with the MDEP within 60 days of issuance of the REA. A Water Quality Certification was last issued for the Project (to upgrade the turbine-generator capacity) by the MDEP on July 13, 2009.

#### **3.2 Endangered Species Act**

The Federal Endangered Species Act (ESA) (16 United States Code [U.S.C.] 1531-1544 – Public Law 93-205) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing the ESA are the USFWS and the National Marine Fisheries Service (NMFS). The USFWS maintains a nationwide list of endangered species. The NMFS has jurisdiction over Federally endangered and threatened marine species, whereas the USFWS generally manages terrestrial and freshwater endangered and threatened species. The Federal agencies also designate critical habitat (i.e., area[s] that contain[s] features essential for the conservation of a threatened or endangered species that may require special management and protection) for the species under their jurisdiction.

Section 7 of the ESA (16 U.S.C. §1536) requires Federal agencies to ensure that 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, in consultation with the

USFWS and NMFS. In this case, FERC is the Federal agency and issuance of a new license for the Project is the Federal action on which FERC must consult with the USFWS and NMFS.

Section 9 of the ESA prohibits taking endangered species of fish and wildlife. The regulations implementing ESA define “take” as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Incidental take authorization, either through an incidental take permit issued under Section 10 of the ESA or through an incidental take statement pursuant to intra-agency consultation and the issuance of a Biological Opinion with reasonable and prudent measures under Section 7 of the ESA is required when there is the potential for take of a listed species for activities that are otherwise lawful.

On November 19, 2019, FERC designated RFH as its non-Federal representative for informal ESA consultation for the relicensing of the Project. RFH consulted with the USFWS and the NMFS during the relicensing process to assess potential Project effects on Federally-listed threatened and endangered species. On February 8, 2022, the USFWS’s Information for Planning and Consultation (IPaC) system identified the Federally threatened northern long-eared bat (*Myotis septentrionalis*) and the Federally endangered Atlantic salmon (*Salmo salar*) as Federally-listed species potentially occurring within the Project Boundary (Appendix E.1). Rumford Falls is the natural barrier to Atlantic salmon on the Androscoggin River (Foster and Atkins 1868; as cited in MDMR et al. 2017). Per letter dated September 19, 2019, NMFS indicated that the Middle and Upper Dams of the Project are within the listed area of the Federally endangered distinct population segment (DPS) of Atlantic salmon but specified that the Project does not occupy any listed critical habitat. This consultation was included in Appendix A of the PAD that was filed with the Commission on September 27, 2019.

Rare, threatened, and endangered species (RTE) are discussed further in Section 5.9 of this Exhibit E.

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

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (Magnuson-Stevens Act) of 2006 is the primary law governing marine fisheries management in U.S. Federal waters and mandates that habitats essential to Federally managed commercial fish species be identified, and that measures be taken to conserve and enhance habitat. In 1996, the U.S. Congress

recognized the increasing pressure on marine resources in the country and addressed these issues in its reauthorization of the Magnuson Fishery Conservation and Management Act, now known as the Magnuson-Stevens Act (16 U.S.C. §1801 et seq.). This Act required Regional Fishery Management Councils, in collaboration with National Oceanic and Atmospheric Administration (NOAA), to give heightened consideration to Essential Fish Habitat (EFH) in resource management decisions. Congress defined EFH as, “those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.” The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities.

Before a Federal agency proceeds with an activity that may adversely affect a designated EFH (e.g., relicensing of a hydropower project), the agency must consult with NMFS and, if requested, the appropriate Council for the recommended measures to conserve EFH. Per letter dated September 19, 2019, NMFS indicated that there is designated EFH for Atlantic salmon downstream of the Project’s Upper Dam. The area upstream of the Project’s Upper Dam is considered outside of the DPS (NMFS 2019). This consultation was included in Appendix A of the PAD that was filed with the Commission on September 27, 2019.

### **3.4 Coastal Zone Management Act**

Under section 307 (c)(3)(A) of the Coastal Zone Management Act (CZMA) (16 U.S.C. §1456), FERC cannot issue a license for a project within or affecting a states’ coastal zone unless the state CZMA agency concurs with the license applicant’s certification of consistency with the state’s CZMA program, or unless the agency’s concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant’s certification.

The Maine Department of Agriculture, Conservation and Forestry’s (MDACF) Maine Coastal Program was contacted to confirm that the Project is not located in the State’s coastal zone as identified by the State’s coastal zone management plan. On August 16, 2019, the Maine Coastal Program confirmed that the Project was outside of Maine’s CZMA-designated coastal zone and a CZMA consistency review was not required. This consultation was included in Appendix A of the PAD that was filed with the Commission on September 27, 2019.



### **3.5 National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NHPA) requires FERC to take into account the effect of its undertakings on historic properties, which in this case, includes the issuance of a federal license for the continued operation of the Project. Section 106 of the NHPA is implemented through the Advisory Council on Historic Preservation (ACHP) Council regulations “Protection of Historic Properties” (36 CFR Part 800). The regulations implementing Section 106 (36 CFR Part 800) define the process for identifying historic properties, assessing effects, and seeking ways to resolve adverse effects on historic properties in consultation with the State Historic Preservation Officer (SHPO), federally recognized Indian tribes, the public, and other appropriate parties.

Specifically, FERC typically completes Section 106 by entering into a Programmatic Agreement or Memorandum of Agreement with the licensee, the ACHP, and the SHPO and tribes. FERC typically requires the licensee to develop and implement a Historic Properties Management Plan (HPMP) as a license condition. Through an approved HPMP, FERC can require consideration and management of effects on historic properties for the license term; thus, meeting the requirements of Section 106 for its undertakings.

RFH has consulted with the MHPC regarding the Project’s Area of Potential Effect (APE). In addition, RFH conducted a Historic Architectural Survey, in consultation with the MHPC, which is described in greater detail in Section 5.12 of this Exhibit E. RFH will develop an HPMP in consultation with MHPC, which will be filed with the Commission within 6 months of license issuance. The HPMP will contain specific steps to be taken by RFH to protect and preserve the historic properties identified at the Project over the term of the new license. With the implementation of an approved HPMP, the continued operation of the Project as proposed by RFH will have no adverse effects on cultural resources at the Project.

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

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. No areas within or in the vicinity of the Project Boundary have been designated for inclusion in the National Wild and Scenic Rivers System.

The Wilderness Act of 1964 [Public Law 88-577 (16 U.S.C. 1131-1136)] was enacted to establish a National Wilderness Preservation System for the permanent good of the whole people, and for other purposes. There are no nationally designated wilderness areas within the Project Boundary or in the vicinity of the Project.

#### **4.0 Proposed Action and Alternatives**

The current license for the Project was issued by the Commission in an order dated October 18, 1994, to the Rumford Falls Power Company (RFPC), and expires on September 30, 2024. The license was transferred from RFPC to RFH by Commission order dated May 24, 2006.

The Proposed Action consists of the issuance of a new FERC license to RFH for the continued operation and maintenance of the Project with appropriate PM&E measures. To that end, the Proposed Action is to continue to operate and maintain the Project and implement the environmental PM&E measures, which will be provided in the FLA. RFH is not proposing any new developments or changes in operation at this time.

#### **4.1 No-Action Alternative**

Under the no-action alternative, the Project would continue to operate as authorized by the current license. Existing facilities would remain in place, and no new PM&E measures would be implemented. If the Project were to operate as in the past, the Licensee would continue to produce energy in the present manner, and the environmental effects of its operation would remain unchanged. Any ongoing effects of the Project would continue. The no-action alternative represents the baseline Project energy production and environmental conditions for comparison with other alternatives.

##### **4.1.1 Existing Project Boundary**

The Licensee is not proposing to expand land or water rights as a consequence of this license application. The Licensee is proposing to update the Project Boundary to completely include the transmission lines pursuant the Commission’s June 3, 2021 Order Amending License to Include Battery System. This revision will be incorporated into Exhibit G – “Project Maps” in the FLA.

### 4.1.2 Existing Project Facilities

Detailed descriptions of Project facilities are included in Exhibit A – “Project Description” of this DLA. The estimated dependable capacity for the Project is in Exhibit B – “Project Operation and Resource Utilization”. The average annual generation for the Project will be provided in the FLA.

The Project consists of two discrete developments, the Upper Station Development and the Lower Station Development. The total nameplate capacity of the Project is 44.5 MW. The Upper Station Development’s total installed nameplate capacity is 29.3 MW and the Lower Station Development’s total nameplate capacity is 15.2 MW. The principal facilities of the Upper Station and Lower Station Developments as currently licensed are summarized below.

The Project’s FERC-approved public recreation facility is described in more detail in Section 5.10 of this Exhibit E.

#### 4.1.2.1 Upper Station Development

The Upper Station Development includes an impoundment, dam, a gatehouse, four short penstocks, a powerhouse, two overhead transmission lines, and appurtenant facilities.

The normal maximum surface area of the Upper Dam impoundment is 419 acres, with a corresponding normal maximum surface elevation of 601.24 feet USGS. At the normal maximum headwater elevation, the estimated gross storage capacity of the Upper Dam impoundment is 2,900 ac-ft. There is no usable storage capacity associated with this impoundment.

The Upper Dam consists of a concrete gravity structure with a 464-foot-long spillway with a crest elevation of 598.74 feet USGS. The spillway is topped with 2.5-foot-high, pin-supported, wooden flashboards and a 271-foot-long Obermeyer spillway system, which have a crest elevation of 601.24 feet USGS.

The gatehouse to the Upper Station contains two gates for each of the four active penstocks. Of the four penstocks, three are 12 feet in diameter and one is 13 feet in diameter. Each penstock is approximately 110 feet in length, extending underground from the gatehouse to the powerhouse. The masonry powerhouse is integral with the dam and includes four turbine and generator units. The Old Station contains one horizontal generating unit with a capacity of 4.3 MW (Unit 4). The

New Station contains three vertical generating units (Units 1, 2, and 3), two with a capacity of 8.1 MW each, and one with a capacity of 8.8 MW.

Four overhead 11.5-kilovolt (kV) transmission lines extend from the Upper Station to the GSU substation; however, only two are energized at the present time (Lines 2 and 3). Line 2 extends approximately 4,500 feet, sharing steel towers with de-energized Line 1. Line 3 extends approximately 4,200 feet on single circuit steel towers.

#### 4.1.2.2 Lower Station Development

The Lower Station Development includes an impoundment, a dam, a canal headgate structure with a waste weir, a canal, a gatehouse, two penstocks, a powerhouse, a short transmission line, and appurtenant facilities.

The normal maximum surface area of the Middle Dam impoundment is 21 acres, with a corresponding normal maximum surface elevation of 502.74 feet USGS. At the normal maximum surface elevation, the estimated gross storage capacity of the impoundment is 141 ac-ft. There is no usable storage capacity associated with this impoundment.

The Middle Dam consists of a 328.6-foot-long by 20-foot-high spillway with a crest elevation of 501.24 feet USGS topped with 16-inch-high, pin-supported, wooden flashboards.

The Middle Canal headgate structure is adjacent to the Middle Dam and is approximately 120 feet wide. The Middle Canal, which extends from the headgate structure to the intakes/penstocks, is approximately 2,400 feet long. From the gatehouse, two penstocks extend for approximately 815 feet to surge tanks and then an additional 77 feet downward to the powerhouse.

The Lower Station powerhouse contains two identical vertical units, each with 7.6 MW capacity (Units 1 and 2). Electricity from the Lower Station is submitted to the GSU substation by 11.5 kV Lines 5 A and B, which run 600 feet parallel on the same tower.

#### 4.1.3 Existing Project Operation

The Project is operated in a run-of-river mode pursuant to Article 401 of the Project's existing FERC-issued license and was recently recertified as a LIHI facility (LIHI 2020). A summary of

the operating characteristics of the existing Project is presented in Exhibit B – “Project Operation and Resource Utilization”. A summary of Project operation of the Upper Station and Lower Station Developments as currently licensed are summarized below.

RFH maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation (elevation 601.24 feet USGS at the Upper Dam impoundment and elevation 502.74 feet USGS at the Middle Dam impoundment) and acts to minimize the fluctuations of the reservoir surface elevation (i.e., maintain a discharge from the Project so that, at any point in time, flows immediately downstream from the Project tailraces approximate the sum of the inflows to the Project reservoirs).

Pursuant to Article 402 of the Project’s existing license, RFH releases a minimum flow of 1 cfs from the Upper Dam and 21 cfs from the Middle Dam into the bypass reaches. The minimum flow at the Upper Dam is provided via leakage from the flashboards. At the Middle Dam, the minimum flow is provided via a 12-inch-diameter and 18-inch-diameter pipe located near the center of the dam, which is combined with leakage from the flashboards and pressure release vertical drain holes.

During flows in excess of the hydraulic capacity of the generating units at the Upper (i.e., 4,550 cfs) and Lower (i.e., 3,100 cfs) Stations, flows pass over the spillways into each Station’s bypass reaches.

#### **4.1.4 Existing Environmental Measures**

RFH operates the Project with the following environmental PM&E measures:

- Operates the Project in a run-of-river mode where RFH:
  - Maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation (elevation 601.24 feet USGS at the Upper Dam impoundment and elevation 502.74 feet USGS at the Middle Dam impoundment); and
  - Acts to minimize the fluctuations of the reservoir surface elevation (i.e., maintain a discharge from the Project so that, at any point in time, flows immediately downstream from the Project tailraces approximate the sum of the inflows to the Project reservoirs).

- Releases a minimum flow of 1 cfs from the Upper Dam and 21 cfs from the Middle Dam into the bypass reaches for the protection of aquatic resources and water quality.
- Maintains the existing FERC-approved recreation facility at the Project (i.e., carry-in canoe facility at the Carlton Bridge).
- Provides for public uses and access to Project lands and waters.

These existing measures are discussed in further detail in the pertinent sections of this Exhibit E.

## **4.2 Applicant’s Proposal**

As studies are still being conducted, RFH is not proposing any new development or operational changes as part of the DLA. Therefore, RFH will continue to operate and maintain the Project and will propose certain environmental PM&E measures in the FLA.

### **4.2.1 Proposed Project Boundary**

RFH is proposing to update the Project Boundary to completely encompass the Project’s transmission lines pursuant to the Commission’s comments in the June 3, 2021 Order Amending License to Include Battery System<sup>3</sup>. This revision will be incorporated into Exhibit G – “Project Maps” in the FLA.

### **4.2.2 Proposed Project Facilities**

RFH is proposing no power-related modifications of the existing Project facilities. The existing dams, powerhouses, and appurtenant features are all well maintained and in good working order. No changes of these facilities that are outside normal maintenance practices or the Commission’s safety requirements are required or proposed.

### **4.2.3 Proposed Project Operation**

RFH is not proposing any changes to the operation of the Project for the term of the new license.

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<sup>3</sup> The Licensee will revise the Exhibit G drawings to include the entire battery storage system within the Project Boundary within 90 days of completing construction of the battery system.

#### **4.2.4 Proposed Environmental Measures**

As previously noted, the Licensee is in the second study season within the ILP schedule. Therefore, RFH is still in the process of conducting studies to inform the development of potential proposed environmental measures. RFH is proposing to develop and implement the following measures, in addition to those identified in Section 4.1.4 above, and will provide any additional proposed environmental measures in the FLA:

- Operations Monitoring Plan (OMP) to confirm the Project is operated in compliance with the new FERC license;
- Recreation Management Plan to provide for the management of recreational facilities throughout the term of the license; and
- Historic Properties Management Plan (HPMP) to provide for the management of historic properties throughout the term of the license.

#### **4.3 Alternatives Considered but Eliminated from Detailed Study**

The following alternatives were noted in SD1. However, consistent with SD1, given that: (1) no party has suggested that federal takeover would be appropriate; (2) no federal agency has expressed interest in operating the Project; (3) no party has sought a non-power license; (4) the Commission has no basis for concluding that the Project should no longer be used to produce power; and (5) there are no serious resource concerns that cannot be mitigated if the Project is relicensed, the following alternatives were considered but eliminated from detailed study.

##### **4.3.1 Federal Government Takeover of the Project**

FERC's statement from SD1 regarding a federal government takeover is as follows:

*In accordance with §16.14 of the Commission's regulations, a federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to sections 14 and 15 of the FPA. We do not consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval.*

*While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.*

#### **4.3.2 Issuance of Non-Power License**

FERC’s statement from SD1 regarding issuance of a non-power license is as follows:

*A non-power license is a temporary license the Commission would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no governmental agency has suggested a willingness or ability to take over the project. No party has sought a non-power license, and we have no basis for concluding that the Rumford Falls Project should no longer be used to produce power. Thus, we do not consider a non-power license a reasonable alternative to relicensing the project.*

#### **4.3.3 Decommissioning**

FERC’s statement from SD1 regarding decommissioning is as follows:

*As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing in most cases. Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs. 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. Rumford Falls Hydro 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; as such,*



*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.*

## **5.0 Environmental Analysis**

### **5.1 Cumulative Effects**

According to the Council on Environmental Quality's regulations for implementing NEPA (40 CFR §1508.7), an action may cause a cumulative effect if its effects overlap in space and/or time with effects of other past, present, and reasonably foreseeable future actions, regardless of what agency 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 land and water development activities.

#### **5.1.1 Resources that Could be Cumulatively Affected**

The scope of the environmental analysis defines the physical limits or boundaries of the Proposed Action's effects on resources. The scope of the effects analysis for the Project was defined in FERC's SD1, dated November 19, 2019. FERC did not identify any resources that may be cumulatively affected by the proposed operation and maintenance of the Project.

### **5.2 Resource Issues**

FERC identified a list of potential resource issues to be evaluated in the EA in their SD1 for the Project. The environmental effects of the Project on each resource is summarized below and discussed in detail within each resource area.

#### **Geologic and Soils Resources**

- Effects of Project operation on shoreline erosion at the Upper Dam impoundment.

#### **Aquatic Resources**

##### *Water Quantity and Quality*

- Effects of Project operation on water quality, especially dissolved oxygen concentration and temperature, in the Project area.

### *Fisheries*

- Effects of Project operation on aquatic habitat, including habitat distribution and suitability in the Project-affected areas.
- Effects of Project operation on EFH for Atlantic salmon.
- Effects of Project operation on fish impingement, entrainment, and survival in the Androscoggin River.

### **Terrestrial Resources**

- Effects of Project transmission line-related electrocution and collision hazards on birds.
- Effects of Project operation and maintenance on riparian, littoral, and forested/shrub wetland habitats and associated wildlife.
- Effects of Project operation and maintenance on nesting bald eagles and state-designated significant wildlife habitats including deer wintering areas and inland waterfowl and wading bird habitat.

### **Threatened and Endangered Species**

- Effects of Project operation and maintenance on the Federally threatened northern long-eared bat and the Federally endangered Atlantic salmon Gulf of Maine DSP.

### **Recreation and Land Use**

- Effects of Project operation on recreational use in the Project area, including the adequacy of existing recreational access and facilities in meeting recreation needs.
- The need to and feasibility of rehabilitating and reopening the viewing area of Rumford Falls at the Upper Development and the Rumford Falls Trail.

### **Cultural Resources**

- Effects of Project operation and maintenance activities on properties that are included in or eligible for inclusion in the National Register of Historic Places.

### **Aesthetic Resources**

- Effects of Project operation on aesthetic resources in the Project area.

## **Developmental Resources**

- Effects of proposed or recommended environmental measures on Project generation and economics.

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

#### **5.3.1 River System and Tributaries**

The Androscoggin River Basin occupies 3,500 square miles in western Maine and northeastern New Hampshire (State of Maine 2007). Approximately 80 percent of the drainage is in Maine and 20 percent is in New Hampshire (Maine Department of Marine Resources [MDMR] et al. 2017). The Androscoggin River is Maine’s third largest river and flows 177 miles from the headwaters in Umbagog Lake in Errol, New Hampshire (near Mount Washington), to its mouth at Merrymeeting Bay (MDEP 2016). The Androscoggin River Basin includes approximately 1,264 miles of rivers and streams (New Hampshire Department of Environmental Services 2008). The Project is located at RM 80 on the Androscoggin River in the Lower Androscoggin basin.

Major tributaries to the Androscoggin River include the Ellis, Swift, Webb, Nezinscot, and Little Androscoggin rivers. The Little Androscoggin River is the largest tributary, flowing from Bryant Pond through Oxford County including Norway and South Paris, finally joining the main river at Auburn (Maine an Encyclopedia 2016). The Ellis River converges with the Androscoggin River approximately 3.5 miles upstream of the Project Boundary and the Swift River joins the Androscoggin River approximately 0.2 miles downstream of the Project Boundary. Named tributaries to the Androscoggin River within the Project Boundary include Spilt Brook, Thurston Brook, Zircon Brook, Logan Brook, and Bean Brook (See Figure 1.1-1).

#### **5.3.2 Topography**

The Androscoggin River drops more than 1,500 vertical feet in altitude as it flows from the Rangeley Lakes region (located near the town of Rangeley, Maine) to Merrymeeting Bay. There are five major cascades in the drainage (Great Falls, Lewiston Falls, Rumford Falls, Snow Falls, and Biscoe Falls) (MDMR et al. 2017). From the Upper Dam and through the Middle Dam bypass reach, the river drops approximately 120 feet within one mile. Despite its steep gradient, the

Androscoggin River has a well-developed floodplain along most of its length in Maine that is used for agricultural purposes (Maine Rivers 2005).

### **5.3.3 Climate**

The Androscoggin River basin has four distinct seasons with relatively cool summers and severe winters. The average annual precipitation in the Androscoggin River Basin is approximately 40 inches, which is uniformly distributed throughout the year. Snowfall contributes the water equivalent of six to ten inches per year (MDACF 2007).

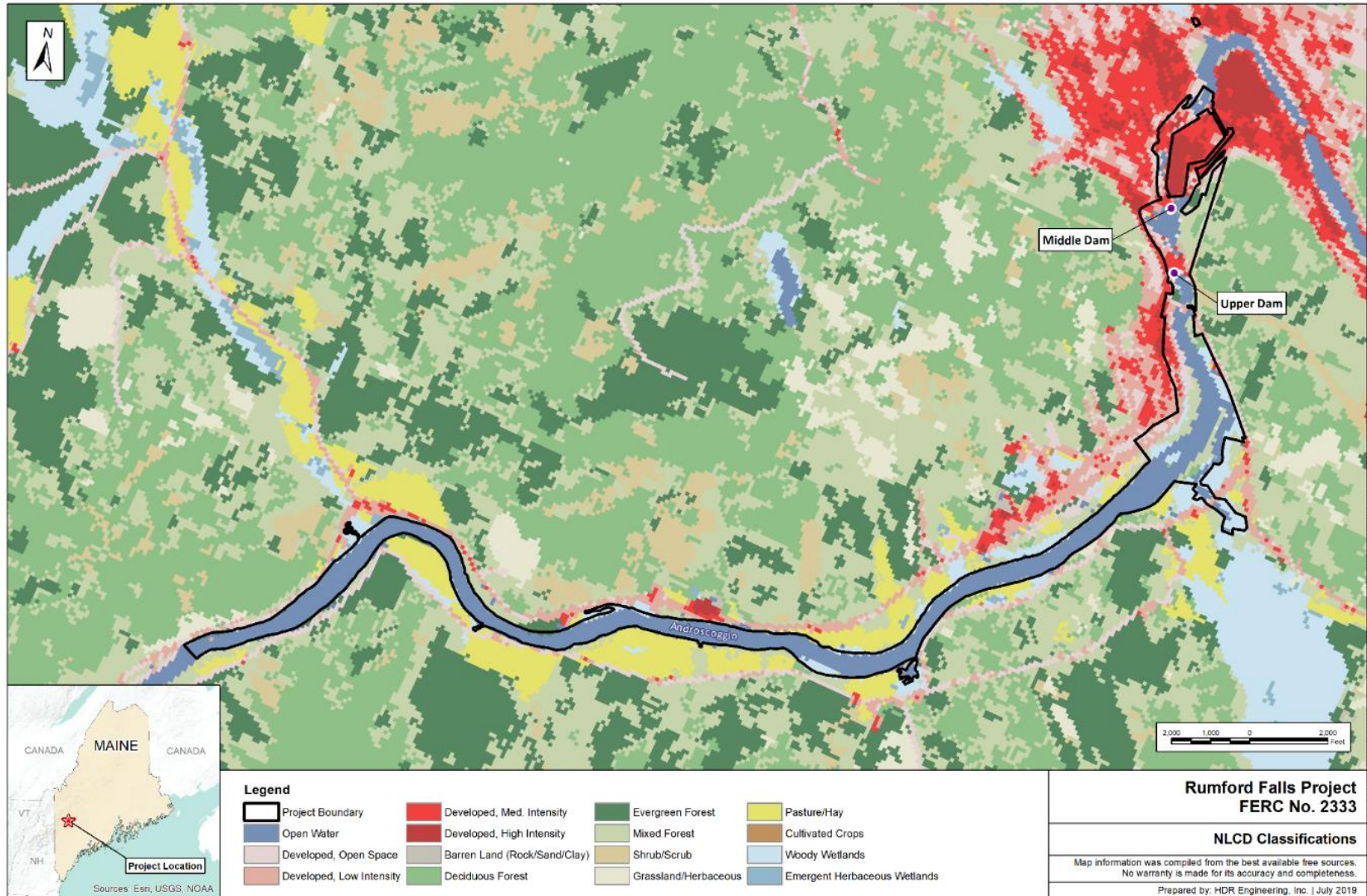
### **5.3.4 Major Land and Water Uses**

The Androscoggin River basin is relatively undeveloped. Seventy-five percent of the basin is comprised of deciduous, evergreen, or mixed forest. Agriculture is limited in the basin, comprising less than three percent of the total basin area. The northern reaches of the basin are heavily forested and gently transition towards development, cropping, and pasture cover as you move south along the river towards Brunswick (Carr et al. 2015).

Land use in the Project vicinity near the Upper Station and Lower Station Developments is a mixture of medium- and high-intensity development because of the Town of Rumford. The majority of the land adjacent to the Project Boundary upstream of the Upper Dam is pasture lands. The Project vicinity also contains a fair amount of forested areas. Land use within the Project vicinity is shown in Figure 5.3-1.

The Androscoggin River has a history of industrial and municipal use over the last 200 years (MDEP 2016). Historically, the primary use of the river was for log drives and sawmills. Textile and paper mills flourished along the river in the 19th and 20th centuries. Nine Dragons (ND) Paper, an operational pulp, packaging, and paper company, is located along the Androscoggin River next to the Project. The primary industrial use of the river today is for hydroelectric energy production (USGS 2019). The Androscoggin River is not used as a source of public drinking water.

**FIGURE 5.3-1  
LAND USE IN THE RUMFORD FALLS PROJECT VICINITY**



### 5.3.5 Dams and Diversions

Maine and New Hampshire’s databases list 203 dams in the Androscoggin River basin. According to these databases, 63 dams are listed as having recreation as their primary purpose, 25 are listed as hydroelectric power generation facilities, 11 are listed as flood control structures, and 22 are listed as water supply structures (Carr et al. 2015).

Flows on the Androscoggin River are regulated by upstream, non-project, and non-RFH storage reservoirs established by the 1909 Androscoggin River Company Headwater Benefits Agreement (HBA), which was updated in 1983 (Androscoggin Reservoir Company [ARCO] HBA, 1909 / 1983). The storage reservoirs are operated as seasonal storage reservoirs and have a combined capacity of approximately 644,000 ac-ft.

Additionally, there are 18 FERC-licensed hydroelectric projects on the Androscoggin River (Table 5.3-1). The Shelburne Hydroelectric Project (FERC No. 2300) is located approximately 35 RM upstream of the Rumford Falls Upper Dam. Approximately 21 RM downstream of the Rumford Falls Lower Dam is the Riley Dam of the Riley-Jay-Livermore Hydroelectric Project (FERC No. 2375).

**TABLE 5.3-1  
FERC-LICENSED PROJECTS ON THE ANDROSCOGGIN RIVER**

Project No.	Project Name	Authorized Capacity (kW)	Licensee	State
P-3133	Errol	2,031	Brookfield White Pine Hydro, LLC	ME
P-2861	Pontook	9,600	Pontook Operating Limited Partnership and NH Dept-Enir Serv-Wtr Res Div	NH
P-2422	Sawmill	3,174	Great Lakes Hydro America LLC	NH
P-2423	Riverside	7,900	Great Lakes Hydro America LLC	NH
P-2287	J. Brodie Smith	15,000	CRP NH Smith	NH
P-2326	Cross Power	3,220	Great Lakes Hydro America LLC	NH
P-2327	Cascade	7,920	Great Lakes Hydro America LLC	NH
P-2311	Gorham	4,800	Great Lakes Hydro America LLC	NH
P-2288	Gorham	2,150	CRP NH Gorham	NH

<b>Project No.</b>	<b>Project Name</b>	<b>Authorized Capacity (kW)</b>	<b>Licensee</b>	<b>State</b>
P-2300	Shelburne	3,720	Great Lakes Hydro America LLC	NH
P-2333	Rumford Falls	44,500	Rumford Falls Hydro LLC	ME
P-2375	Riley-Jay-Livermore	19,725	Andro Hydro, LLC	ME
P-8277	Otis	10,350	Andro Hydro, LLC	ME
P-2283	Gulf Island-Deer Rips	38,133	Brookfield White Pine Hydro, LLC	ME
P-2302	Lewiston Falls	28,440	Brookfield White Pine Hydro, LLC	ME
P-3428	Worumbo	19,100	Brown Bear II Hydro, LLC	ME
P-4784	Pejepscot	13,880	Topsham Hydro Partners Ltd Pt	ME
P-2284	Brunswick	19,000	Brookfield White Pine Hydro, LLC	ME

## **5.4 Geological and Soil Resources**

### **5.4.1 Affected Environment**

#### **5.4.1.1 Geology**

The Project is located within a major subdivision of the Appalachian Highlands Province designated as the New England Province. This province is further subdivided into the Seaboard Lowland Section and the New England Upland Section. On the Androscoggin River, Lewiston Falls (located between the cities of Auburn and Lewiston, Maine) is identified as the boundary between the two sections. The Project is located entirely within the New England Upland Section (RJ Associates 2014).

The New England Upland Section is composed of “dissected and glaciated peneplains on complex structural features; monadnocks” (Fenneman 1938; as cited in RJ Associates 2014). This area was reduced to a relatively flat terrain prior to the various glacial epochs. During glacial ice advance, the area was further eroded by ice action, leaving some hills of highly resistant rock (i.e., monadnocks), which dotted the postglacial landscape. All surficial features, with the exception of man-made structures and some minor stream deposition, were produced by glacial ice action and subsequent glacial melt water deposition. In general, the material deposited consists of tight glacial till in the valleys and glacial drift on the slopes. The till is extremely tight and is made up of cobbles

and boulders in a matrix of fine to medium sand with occasional beds of silt and clay. This material, in general, presents stable slopes and compact, competent foundation conditions (RJ Associates 2014).

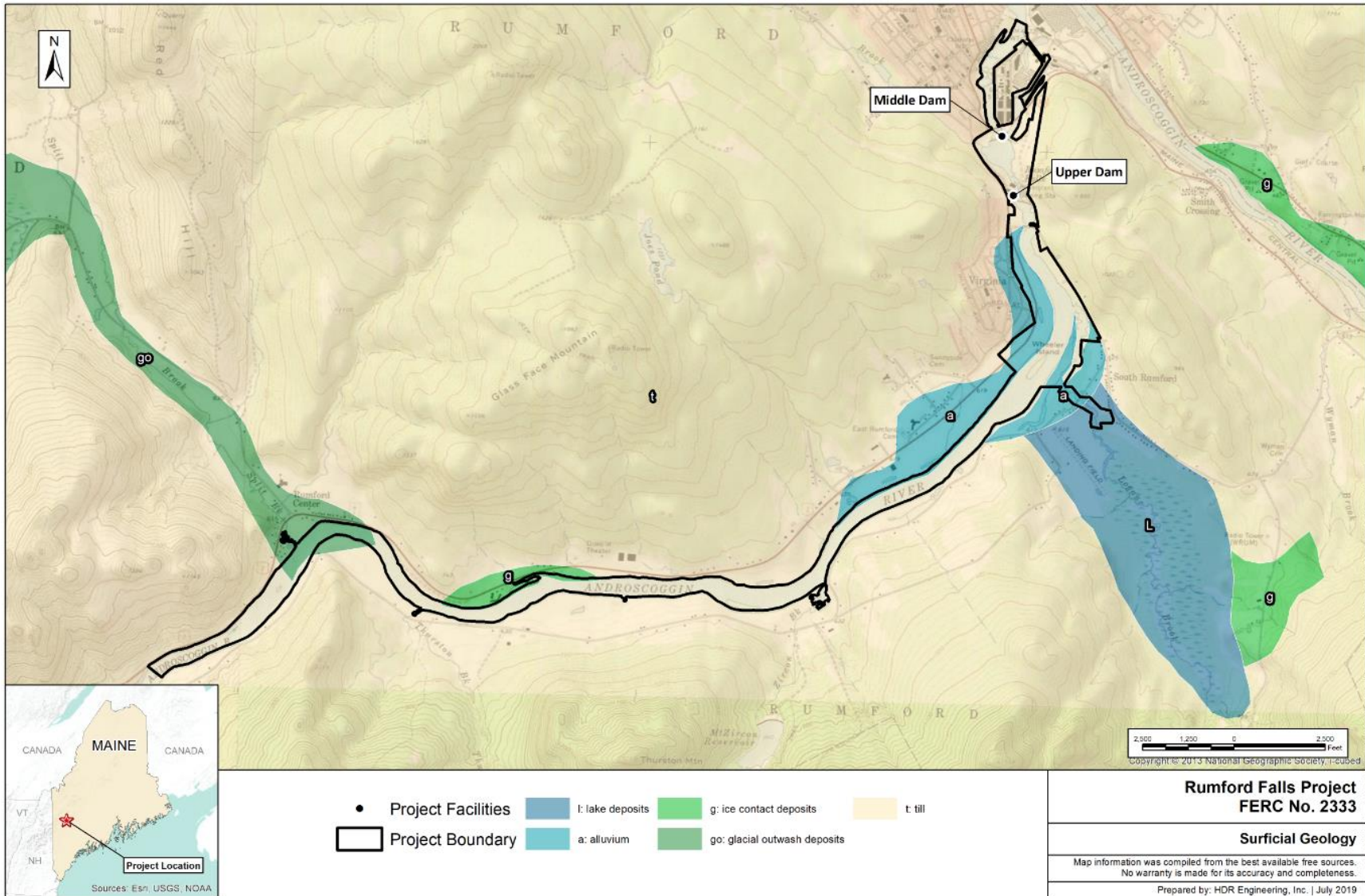
According to the Maine Geological Survey, Department of Conservation, “Bedrock Geologic Map of Maine,” 1985, the rocks in the region where the Project is located are dominated by material classified as Middle Devonian Ordovician to Lower Devonian metasedimentary rocks and Silurian to Devonian mafic to felsic volcanic rocks. The numerous alterations of the host sedimentary rocks by magmatic intrusions have resulted in the development of an extremely complex bedrock environment (Rumford Falls Power Company 1991, RJ Associates 2014).

The bedrock of the Project vicinity is comprised primarily of pelite, sandstone, biotite-muscovite, granite, tonalite, and limestone. The rocks as observed throughout the region are highly crystalline, with crystal sizes varying from very large in some quartzites to very small to fine in the schistose rocks. Numerous quartz seams and nodules are visible throughout the host rock. The structure of the bedrock is comparatively simple, with the strike conforming to the regional trend which is east-northeast. Some zones of brecciation and other indications of rock movement are visible; however, these zones are relatively rare and were re-cemented and sound. Any faulting which may have occurred in the past was of minor importance and consisted of movements and adjustments between beds, probably during the Appalachian Revolution which started approximately two hundred million years ago (RJ Associates 2014).

The surficial deposits of the Project vicinity are principally glacial till depositions composed of clay, silt, sand, and stone (Rumford Falls Power Company 1991). Figure 5.4-1 provides the surficial geology of the Project vicinity.



**FIGURE 5.4-1  
SURFICIAL GEOLOGY OF THE RUMFORD FALLS PROJECT**



#### 5.4.1.2 Soils

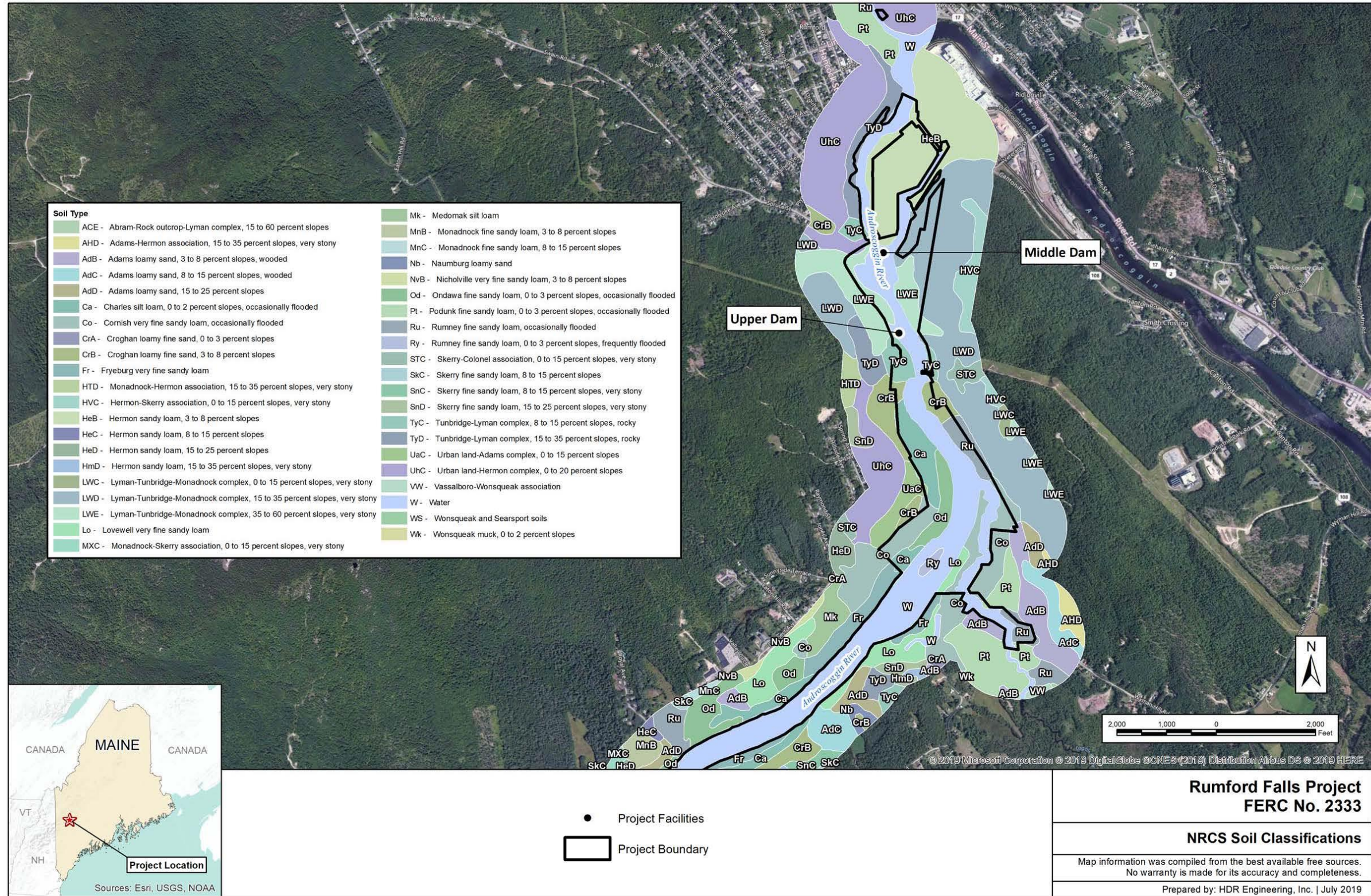
Soils within and adjacent to the Project vary greatly throughout the Project vicinity. Some of the soils located along the shoreline near the Upper Station and Lower Station Developments include the Lyman-Tunbridge-Monadnock (LWD and LWE), Tunbridge-Lyman (TyC), urban land-Hermon complex (UhC), and Hermon sandy loam (HeB) soil types. Figure 5.4-2 and Figure 5.4-3 display and describe the soil types within and adjacent to the Project Boundary.

The Lyman series consists of somewhat excessively drained soils that are shallow over bedrock. The Tunbridge series consists of well-drained soils that are moderately deep over bedrock. Both Lyman and Tunbridge soils are formed in glacial till derived from gneiss, granite, phyllite, and schist. The Monadnock series consists of very deep, well-drained soils. These soils are formed in loose glacial till derived mainly from gneiss and granite. The slopes of Lyman, Tunbridge, and Monadnock soils range from 3 to 60 percent (United States Department of Agriculture [USDA] undated).

The Hermon series consists of very deep, somewhat excessively drained soils. These soils formed in loose glacial till derived mainly from granite and gneiss. These are mainly found on the southeastern slopes of hills and mountains and slopes range from 0 to 50 percent (USDA undated).

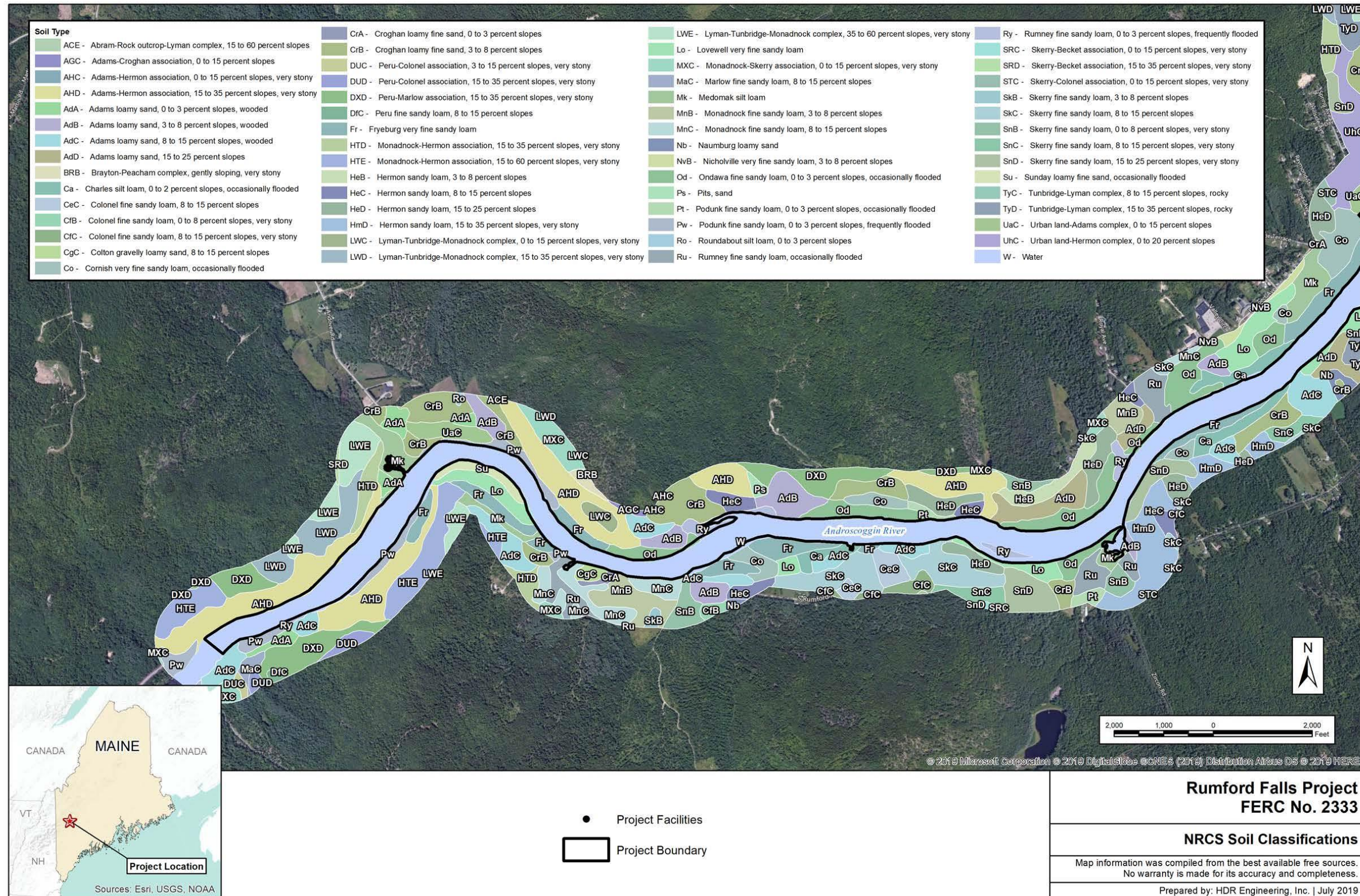


**FIGURE 5.4-2  
SOILS AT THE RUMFORD FALLS PROJECT**





**FIGURE 5.4-3  
SOILS AT THE RUMFORD FALLS PROJECT**





### 5.4.1.3 Impoundment Shorelines and Stream Banks

The Androscoggin River has a well-developed floodplain with the shoreline primarily consisting of forest and pastureland along the Upper Dam impoundment and a mixture of medium and high intensity development near the Upper Station and Lower Station Developments (See Figure 5.3-1). Some of the stream banks near the Upper Station and Lower Station Developments are armored. Because the vast majority of the immediate shoreline within the Project Boundary is forested or tree-lined, this canopy vegetation, as well as groundcover layers of vegetation (shrubs, small trees, perennials), helps to limit the degree of erosion.

The soils surrounding most of the Upper Dam impoundment are poorly drained to well drained and formed in alluvium (FERC 1993). The soils have a loamy surface layer underlain by sandy material and are subject to occasional flooding.

Annual monitoring has been conducted at the Project over the last decade (2010-2018) to determine whether erosion was affecting National Register-eligible archaeological sites on both sides of the Upper Dam impoundment. Photographic documentation demonstrated that no erosion was occurring at these sites. The archaeological sites are located in areas both buttressed by bedrock outcrops and underlain by friable alluvial deposits. The lack of documented erosion over the observation period permitted the MHPC to agree to a change in archaeological site monitoring from an annual to biennial cycle. FERC issued an Order Amending License Article 406 on March 26, 2019, as corrected in a notice issued on March 27, 2019, to allow for a biennial monitoring cycle. Recent monitoring also demonstrated that no erosion was occurring at these sites.

## 5.4.2 Environmental Analysis

FERC identified the following potential resource issue related to geological and soil resources in their SD1:

- Effects of Project operation on shoreline erosion at the Upper Dam impoundment.

The shoreline of the Upper Dam impoundment is well vegetated and, as stated above, over a decade of annual (now biennial) erosion monitoring at the Upper Dam impoundment has found no evidence of shoreline erosion.

RFH operates the Project pursuant to the existing FERC-issued license, which requires the Project to be operated in a run-of-river mode within 1 foot of full pond elevation and to minimize the fluctuations of the reservoir surface elevation at all times. Operating the Project in run-of-river mode minimizes potential effects to geology or shoreline erosion. RFH is not proposing any changes to Project operations; therefore, it does not anticipate that continued operation of the Project will affect geological and soil resources.

### **5.4.3 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to geological and soil resources at the Project. RFH will continue to conduct biennial monitoring for erosion of the National Register-eligible archaeological sites in the Upper Dam impoundment pursuant to Article 406 of the Project's existing license.

### **5.4.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of geological and soil resources.

## **5.5 Water Resources**

### **5.5.1 Affected Environment**

#### **5.5.1.1 Water Quantity and Use**

##### **Drainage Area**

The Androscoggin River Basin occupies 3,500 square miles in western Maine and northeastern New Hampshire (State of Maine 2007). The total drainage at the Project is 2,068 square miles. Flows on the Androscoggin River are regulated by upstream, non-project, and non-RFH storage reservoirs established by the 1909 ARCO HBA, which was updated in 1983 (ARCO HBA, 1909 / 1983). The storage reservoirs are operated as seasonal storage reservoirs and have a combined capacity of approximately 644,000 ac-ft.

### Androscoggin River Flows

Table 5.5-1 presents the monthly and annual minimum, average, and maximum flows as well as the flows that are exceeded 10 percent and 90 percent of the time at the Project from January 1, 2000, through December 31, 2021. These flows were calculated with data from the *USGS Gage No. 01054500 Androscoggin River at Rumford, Maine*, which has a drainage area of 2,068 square miles (USGS 2022). The gage is located approximately 550 feet downstream from the powerhouse at the Lower Station Development and is representative of flows through both the Upper and Lower Station Developments.

Annual and monthly flow duration curves for the Project can be found in Appendix B.1 in Exhibit B – “Project Operation and Resource Utilization” of this application.

**TABLE 5.5-1  
RUMFORD FALLS PROJECT - MONTHLY AND ANNUAL MINIMUM, AVERAGE,  
AND MAXIMUM FLOWS, 2000 THROUGH 2021**

Month	Minimum Flow (cfs)	Average Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	1,110	3,735	19,500	5,129	2,162
February	1,390	3,518	13,000	4,909	2,191
March	1,450	4,625	27,300	6,998	2,450
April	1,960	9,296	42,800	18,320	3,720
May	1,510	6,957	23,500	14,000	2,731
June	1,100	4,371	30,400	8,513	1,740
July	1,260	3,158	20,300	5,118	1,720
August	1,140	2,679	37,900	3,819	1,530
September	1,050	2,263	10,400	3,343	1,390
October	998	3,715	34,900	6,997	1,470
November	925	4,253	22,800	7,774	1,940
December	1,210	4,353	33,400	7,056	1,890
<b>Annual</b>	<b>925</b>	<b>4,410</b>	<b>42,800</b>	<b>8,375</b>	<b>1,720</b>

### Existing and Proposed Uses of Project Waters

Water uses within the Project vicinity include hydroelectric generation and industrial uses. ND Paper has rights to use up to 100 cfs of water for its operation. ND Paper has two intakes located

next to the Project’s Lower Station intakes, which discharge at the tailrace of the Lower Station. No additional existing or proposed uses of Project waters have been identified.

### Existing Instream Flow Uses

Existing instream flow uses of waters of the Androscoggin River within the Project Boundary include hydroelectric generation and industrial uses with limited recreation (i.e., fishing and boating). No other existing instream flow uses of Project waters have been identified.

#### 5.5.1.2 Water Quality

### Water Quality Classification and Standards

Water quality standards and the water quality classifications of the State of Maine are established in 38 Maine Revised Statute (M.R.S.) §464-467. Waters within the Project Boundary are classified as Class C waters (Table 5.5-2). Class C waters must meet an instantaneous dissolved oxygen (DO) standard of 5.0 parts per million (ppm) or 60 percent saturation, whichever is higher, and must meet a 30-day average 6.5 ppm requirement (Table 5.5-3).

**TABLE 5.5-2  
CLASSIFICATION OF THE RUMFORD FALLS PROJECT**

River Segment	Water Quality Classification	Designated Uses
From its confluence with the Ellis River to a line formed by the extension of the Bath-Brunswick boundary across Merrymeeting Bay in a northwesterly direction	Class C	Class C waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as a habitat for fish and other aquatic life.



**TABLE 5.5-3  
DISSOLVED OXYGEN STANDARDS FOR CLASS C WATERS**

Parameter	Numeric Standards and Verbal Description
	Physical and Biological
Dissolved Oxygen	<p>May not be less than 5 parts per million or 60% of saturation, whichever is higher, except that in identified salmonid spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained. In order to provide additional protection for the growth of indigenous fish, the following standards apply.</p> <p>(1) The 30-day average dissolved oxygen criterion of a Class C water is 6.5 parts per million using a temperature of 22 degrees centigrade or the ambient temperature of the water body, whichever is less, if:</p> <p>(a) A license or water quality certificate other than a general permit was issued prior to March 16, 2004, for the Class C water and was not based on a 6.5 parts per million 30-day average dissolved oxygen criterion; or</p> <p>(b) A discharge or a hydropower project was in existence on March 16, 2005, and required but did not have a license or water quality certificate other than a general permit for the Class C water.</p> <p>This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004.</p> <p>(2) In Class C waters not governed by subparagraph (1), dissolved oxygen may not be less than 6.5 parts per million as a 30-day average based upon a temperature of 24 degrees centigrade or the ambient temperature of the water body, whichever is less. This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004.</p>

### Existing Water Quality Data

#### 2020 Water Quality Study

In 2020, RFH conducted a Water Quality Study<sup>4</sup> at the Project, which consisted of the four following components:

- 1) An Impoundment Trophic State Study;
- 2) Continuous water temperature and DO monitoring;

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<sup>4</sup> RFH reviewed three years of Upper Dam impoundment elevation data and outflow data for the Project with the MDEP. Per an October 15, 2021 email, the MDEP indicated that it has no additional questions, and an Impoundment Aquatic Habitat Study was not needed.

- 3) A Benthic Macroinvertebrate Study; and
- 4) An Outlet Stream Aquatic Habitat Study<sup>5</sup>.

The Water Quality Study Report was provided in the ISR (RFH 2021), which was filed with the Commission on August 6, 2021. The results are summarized below.

#### *Impoundment Trophic State Study*

Water quality sampling was conducted at a single, deep-water site within the Upper Dam and Middle Dam impoundments from June through October. In October, and in consultation with the MDEP, the Upper Dam impoundment was sampled once (not twice) due to sampling constraints. Table 5.5-4 includes the parameters, methods, and frequency of sampling that occurred during the study.

**TABLE 5.5-4  
IMPOUNDMENT TROPHIC STATE STUDY SAMPLING PARAMETERS, METHODS,  
AND FREQUENCY**

Parameter	Method	Frequency
Water Temperature Dissolved Oxygen	Vertical profile <sup>2</sup>	Twice a month from June through October <sup>4</sup>
pH Color Total Alkalinity Chlorophyll <i>a</i> Total Phosphorus <sup>1</sup>	Integrated core sampler <sup>3</sup>	
Secchi Disk Transparency	View scope	
Total Phosphorus <sup>1</sup> Nitrate <sup>1</sup> Chlorophyll <i>a</i> Color DOC pH Total Alkalinity Total Iron Total and Dissolved Aluminum <sup>1</sup> Total Calcium Total Magnesium Total Sodium Total Potassium	Integrated core sampler <sup>3</sup>	Single, late summer sample

<sup>5</sup> As specified in the ISR that was filed with FERC on August 6, 2021, the Outlet Stream Aquatic Habitat Study is still in progress and the results of this study will be included in the USR, which is to be filed with FERC on or before August 7, 2022.

Parameter	Method	Frequency
Total Silica Specific Conductance Chloride Sulfate		

<sup>1</sup> Did not meet the MDEP laboratory detection limits and RFH is collecting these parameters again in 2022. Although Secchi disk transparency and chlorophyll *a* met the MDEP specified detection limits, sampling for these parameters will also occur again in 2022, which will be used with total phosphorus to determine the trophic status of the impoundments.

<sup>2</sup> Measurements were taken from just below the water surface (0.1 meter) and then at 1-meter intervals to 0.5 meter from the bottom depth.

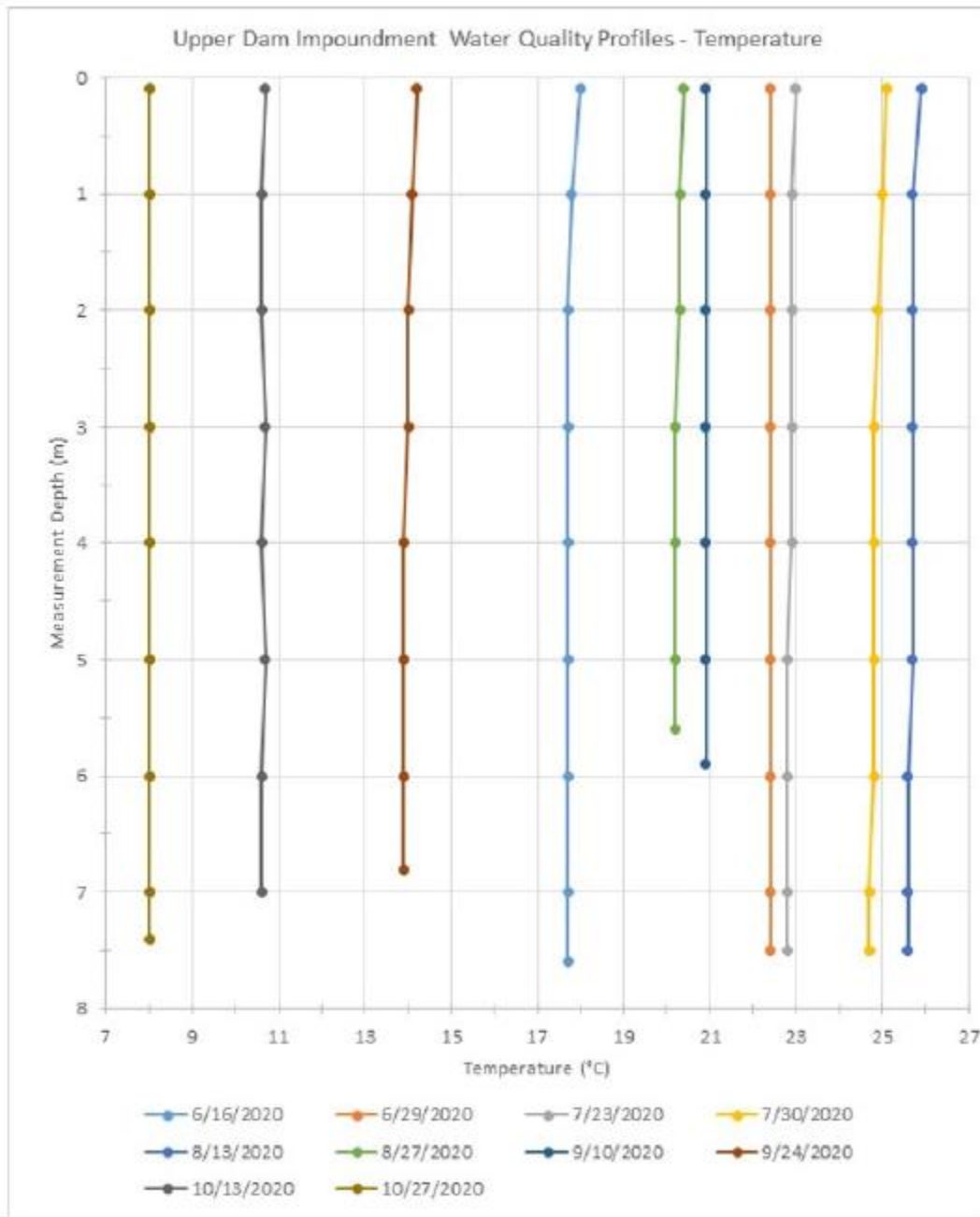
<sup>3</sup> Weighted tube was lowered to a specific water depth and transferred to a sample container.

<sup>4</sup> In October, the Upper Dam impoundment was sampled once (not twice) due to sampling constraints.

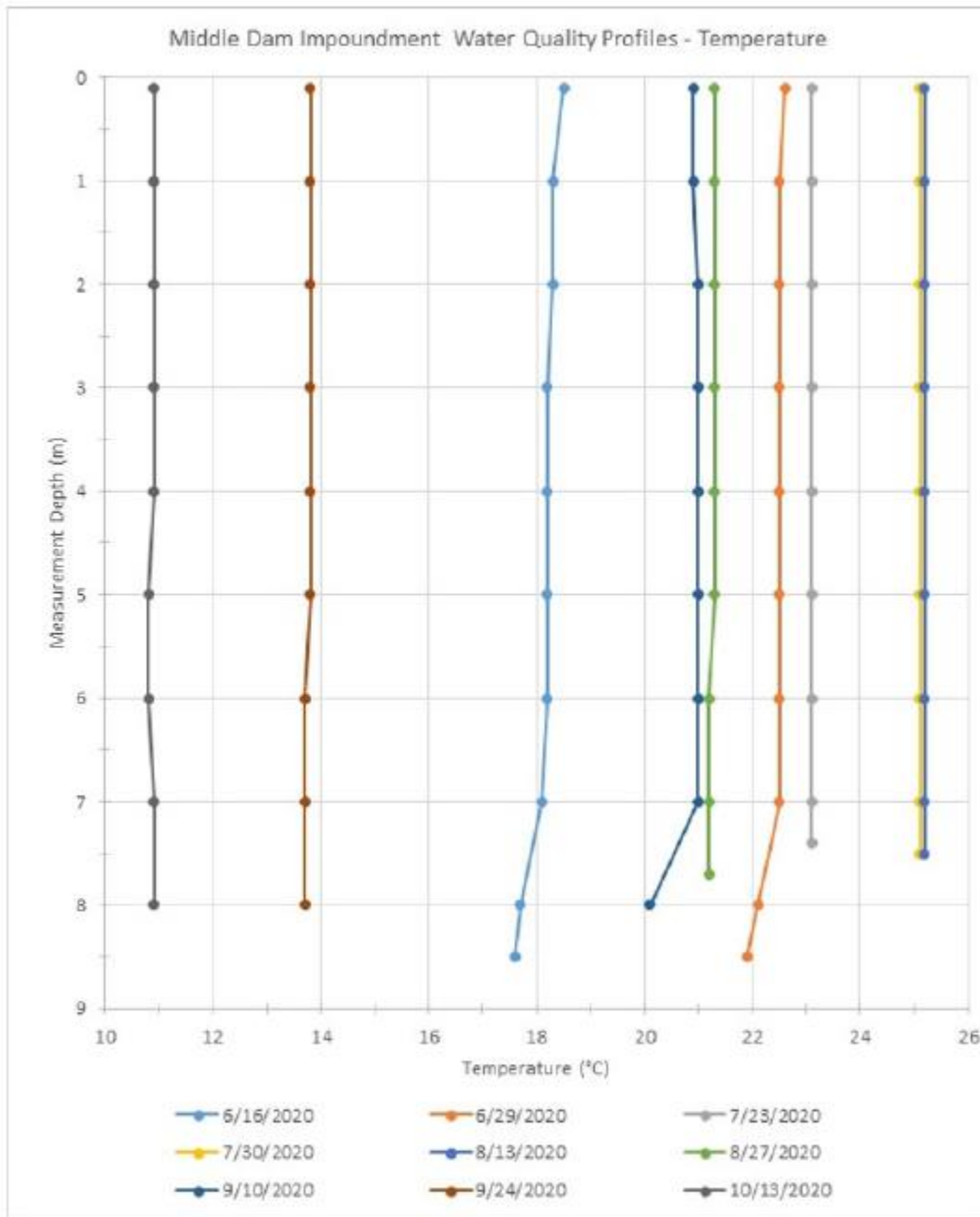
Water temperatures were similar between sites and ranged from 8.0°C to 25.9°C in the Upper Dam impoundment and from 10.8°C to 25.2°C in the Middle Dam impoundment. Water temperatures were relatively consistent throughout the water column and no thermal stratification was observed (Figure 5.5-1 and Figure 5.5-2). DO concentrations ranged from 7.7 milligrams per liter (mg/L) to 11.3 mg/L and from 85.3 to 103.0 percent saturation in the Upper Dam impoundment. DO concentrations ranged from 7.6 mg/L to 9.8 mg/L and from 83.7 to 102.2 percent saturation in the Middle Dam impoundment. DO concentrations were relatively consistent throughout the water column and met state standards (Figure 5.5-3 and Figure 5.5-4).

The lowest water temperature and highest DO concentration was recorded in the Upper Dam impoundment on October 27, 2020. As noted, the Middle Dam impoundment was not sampled on this date due to sampling constraints, which likely contributed to the differences in the minimum water temperatures and maximum DO concentrations between sites.

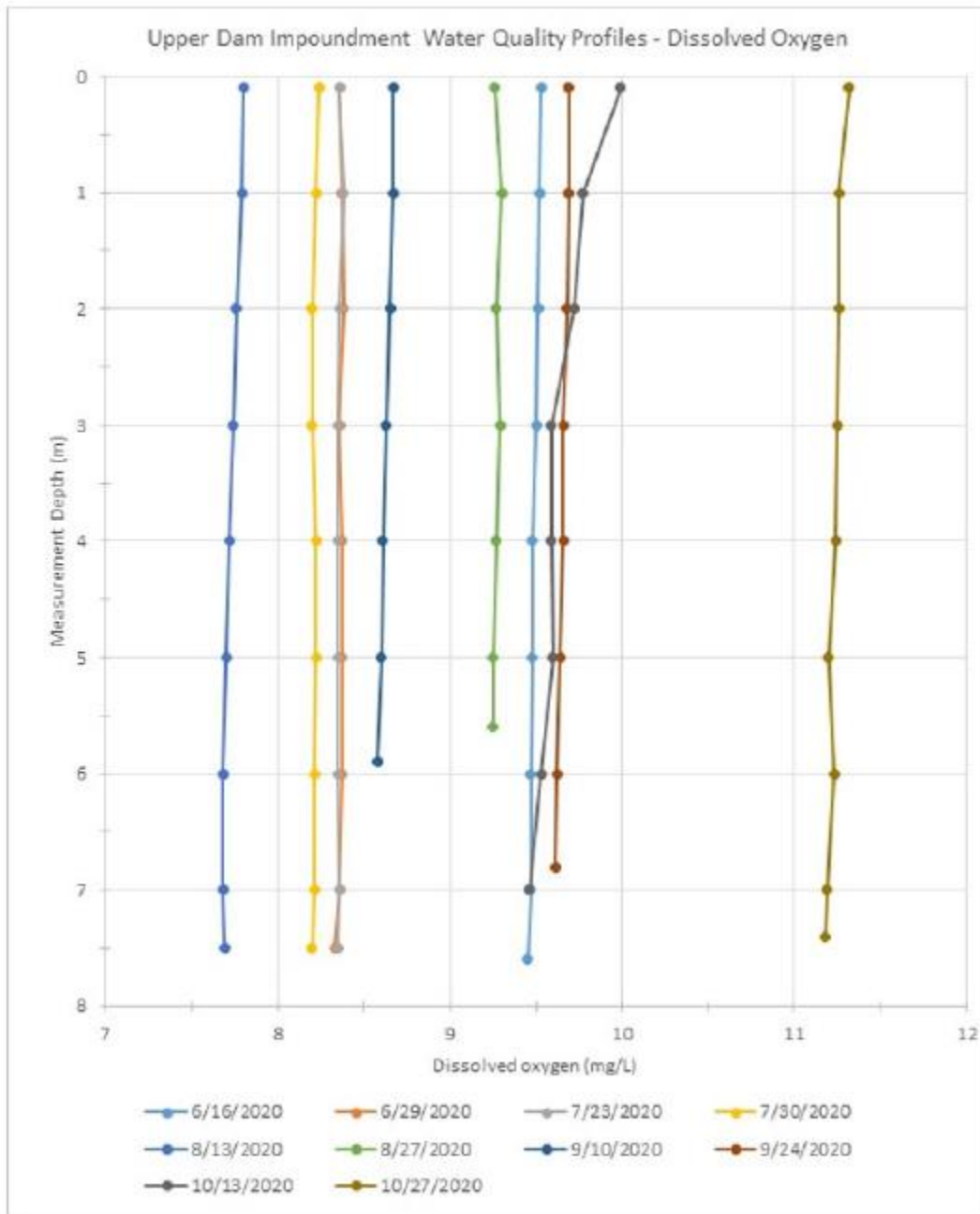
**FIGURE 5.5-1  
WATER TEMPERATURE AT THE UPPER DAM IMPOUNDMENT,  
JUNE-OCTOBER 2020 (RFH 2021)**



**FIGURE 5.5-2  
WATER TEMPERATURE AT THE MIDDLE DAM IMPOUNDMENT,  
JUNE-OCTOBER 2020 (RFH 2021)**



**FIGURE 5.5-3  
DISSOLVED OXYGEN AT THE UPPER DAM IMPOUNDMENT,  
JUNE-OCTOBER 2020 (RFH 2021)**



**FIGURE 5.5-4  
DISSOLVED OXYGEN AT THE MIDDLE DAM IMPOUNDMENT,  
JUNE-OCTOBER 2020 (RFH 2021)**

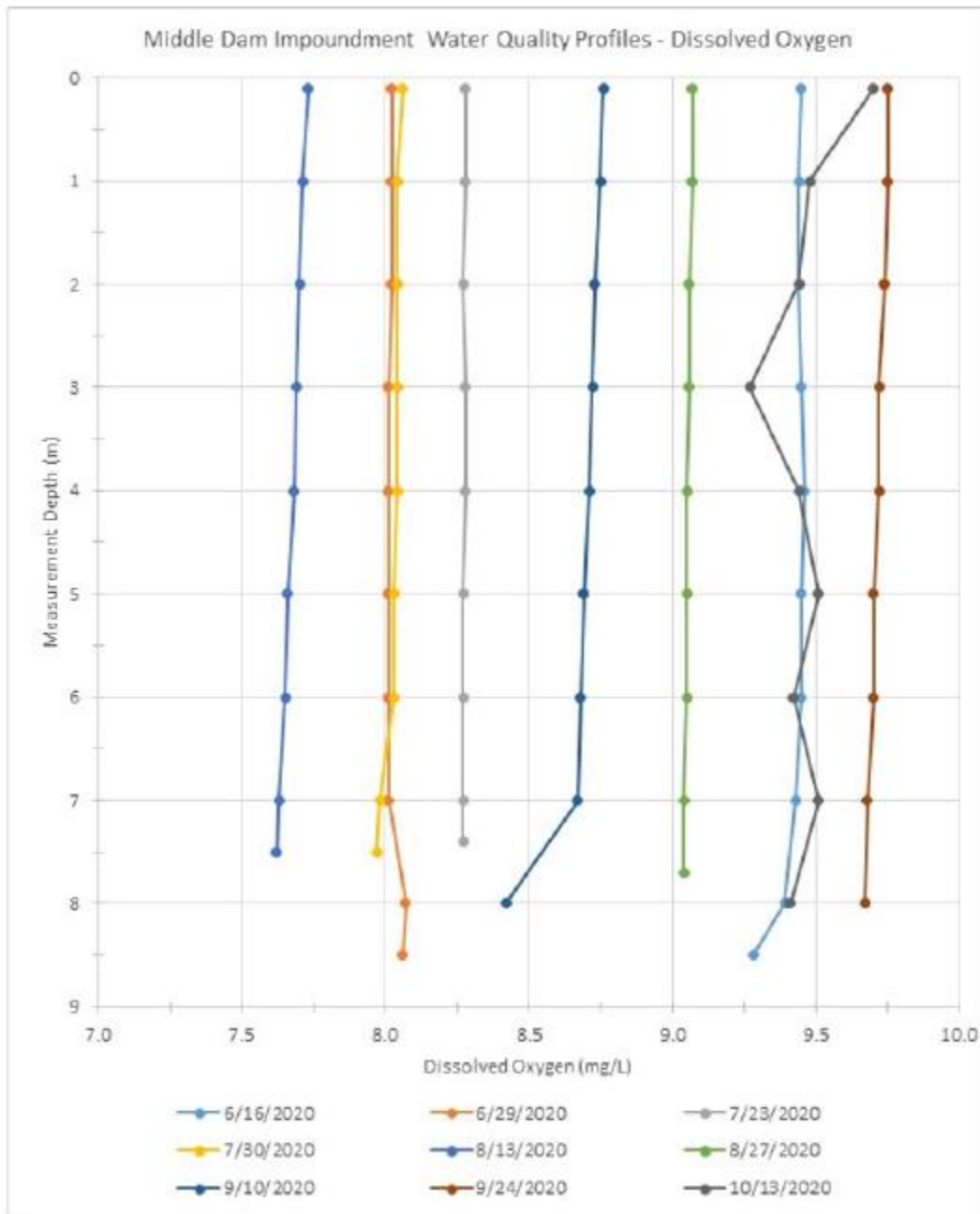


Table 5.5-5 provides a summary of the results from the routine integrated core sampling that occurred from June through October 2020. The pH varied from 6.5 to 7.5 standard units (SU) in the Upper Dam impoundment and generally ranged from 6.2 to 7.3 SU in the Middle Dam impoundment. In the Middle Dam impoundment, there was a single reading where the pH was 4.6 SU, which was identified as an outlier. Maine currently does not have numeric water quality standards for pH.

Alkalinity generally ranged from less than 5 to 11 mg/L in the Upper Dam impoundment and from less than 5 to 12 mg/L in the Middle Dam impoundment. There was a single event when alkalinity was 180 mg/L in the Upper Dam impoundment, which was considered an outlier. The results suggested the impoundments are poorly buffered and sensitive to acid precipitation.

Lake trophic status is determined by evaluating a number of indicators including color, chlorophyll *a*, Secchi disk transparency, and total phosphorus (TP) (MDEP 2016). Color ranged from less than 5 to 35 Standard Platinum-cobalt Units (SPU) in the Upper Dam impoundment and from 10 to 35 SPU in the Middle Dam impoundment, which indicated that application of Trophic State Indices (TSI) should be used to determine the lake trophic status of the waters. Chlorophyll *a* ranged from less than 1.0 to 2.7 micrograms per liter ( $\mu\text{g/L}$ ) in the Upper Dam impoundment and from less than 1.0 to 3.4  $\mu\text{g/L}$  in the Middle Dam impoundment and suggested the impoundments were oligotrophic or mesotrophic. Secchi disk transparency ranged from 2.7 to 5.0 meters in the Upper Dam impoundment and from 1.8 to 4.6 meters in the Middle Dam impoundment, which suggested the impoundments were eutrophic and mesotrophic. The laboratory reporting limit of 0.100 mg/L for TP exceeds the MDEP thresholds for assigning trophic classes (MDEP 2016) and was unable to be applied to the TSI. As noted above, in coordination with the MDEP, RFH is collecting these parameters again in 2022. Although Secchi disk transparency and chlorophyll *a* met the MDEP specified detection limits, sampling for these parameters will also occur again in 2022, which will be used with TP to determine the trophic status of the impoundments.



**TABLE 5.5-5  
ROUTINE INTEGRATED CORE SAMPLING RESULTS, JUNE – OCTOBER 2020**

Parameter		Upper Dam Impoundment	Middle Dam Impoundment
pH (SU)	Min.	6.5	4.6
	Max.	7.5	7.3
Alkalinity (mg/L)	Min.	<5	<5.0
	Max.	180.0	12.0
Color (SPU)	Min.	<5	10
	Max.	35	35
Chlorophyll <i>a</i> (µg/L)	Min.	<1.0	<1.0
	Max.	2.7	3.4
Secchi Disk Transparency (m)	Min.	2.7	1.8
	Max.	5.0	4.6
Total Phosphorus (mg/L)	Min.	<0.1	<0.1
	Max.	<0.1	<0.1

Table 5.5-6 provides the laboratory results from the single, late summer sample event, which occurred in mid-August. Iron and chloride levels were below state standards of 1 mg/L and 230 mg/l, respectively. Due to the laboratory reporting limit for aluminum, it was inconclusive if it met the state standard (i.e., 0.087 mg/L); therefore, RFH will sample again for this parameter in 2022. There are no state water quality standards for the other parameters.

**TABLE 5.5-6  
SINGLE INTEGRATED CORE SAMPLING RESULTS, AUGUST 2020**

Parameter	Units	Middle Dam Impoundment	Upper Dam Impoundment
Aluminum <sup>1</sup>	mg/L	<0.3	<0.3
Calcium	mg/L	3.32	3.25
Chloride	mg/L	3.1	3.1
Dissolved Organic Carbon	mg/L	4.3	3.7
Iron	mg/L	0.249	0.236
Magnesium	mg/L	0.824	0.806
Nitrate as N <sup>1</sup>	mg/L	<0.05	<0.05
Potassium	mg/L	<1	<1
Silica	mg/L	4.38	4.39
Silicon	mg/L	2.05	2.05

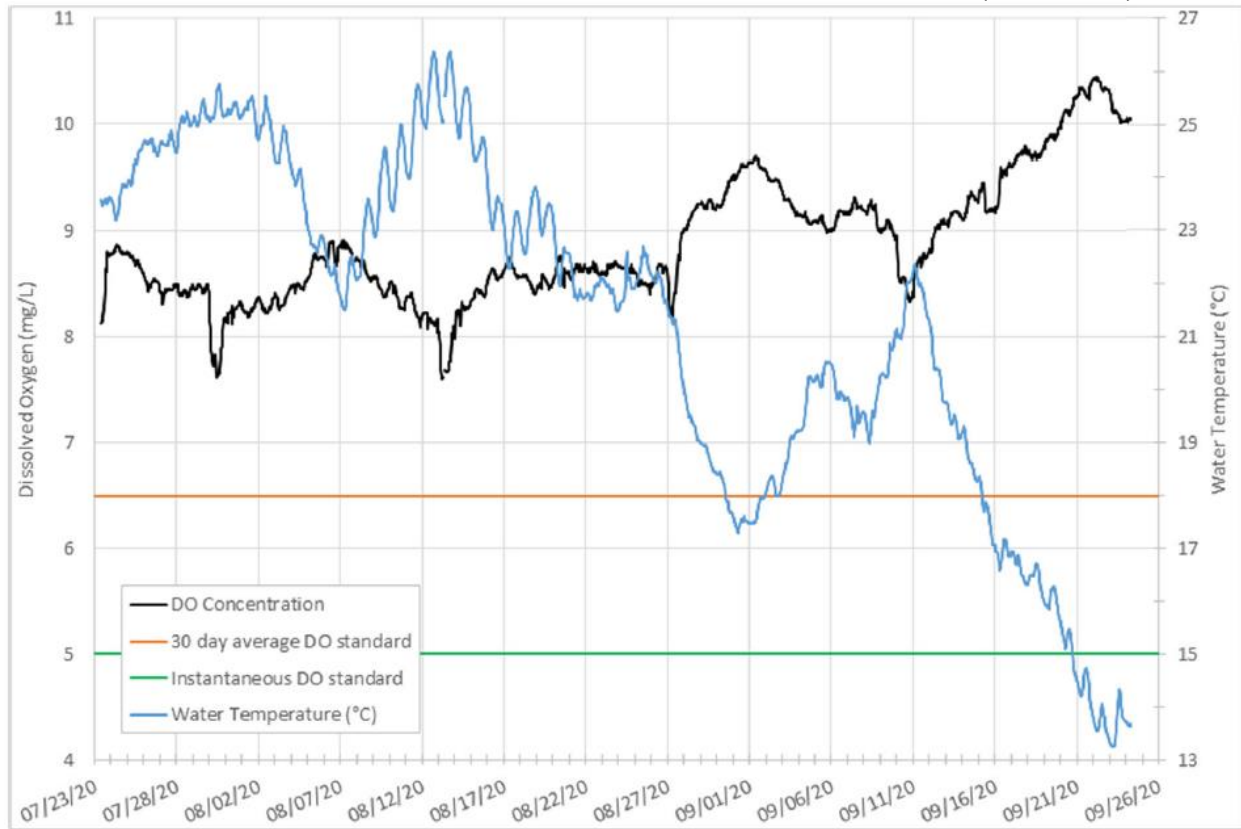
Parameter	Units	Middle Dam Impoundment	Upper Dam Impoundment
Sodium	mg/L	3.1	2.96
Sulfate	mg/L	15	1.9

<sup>1</sup> Did not meet the desired MDEP laboratory detection limit identified in DEP *Sampling Protocol for Hydropower Studies* (MDEP 2019a); therefore, in coordination with the MDEP, RFH is collecting these parameters again in 2022.

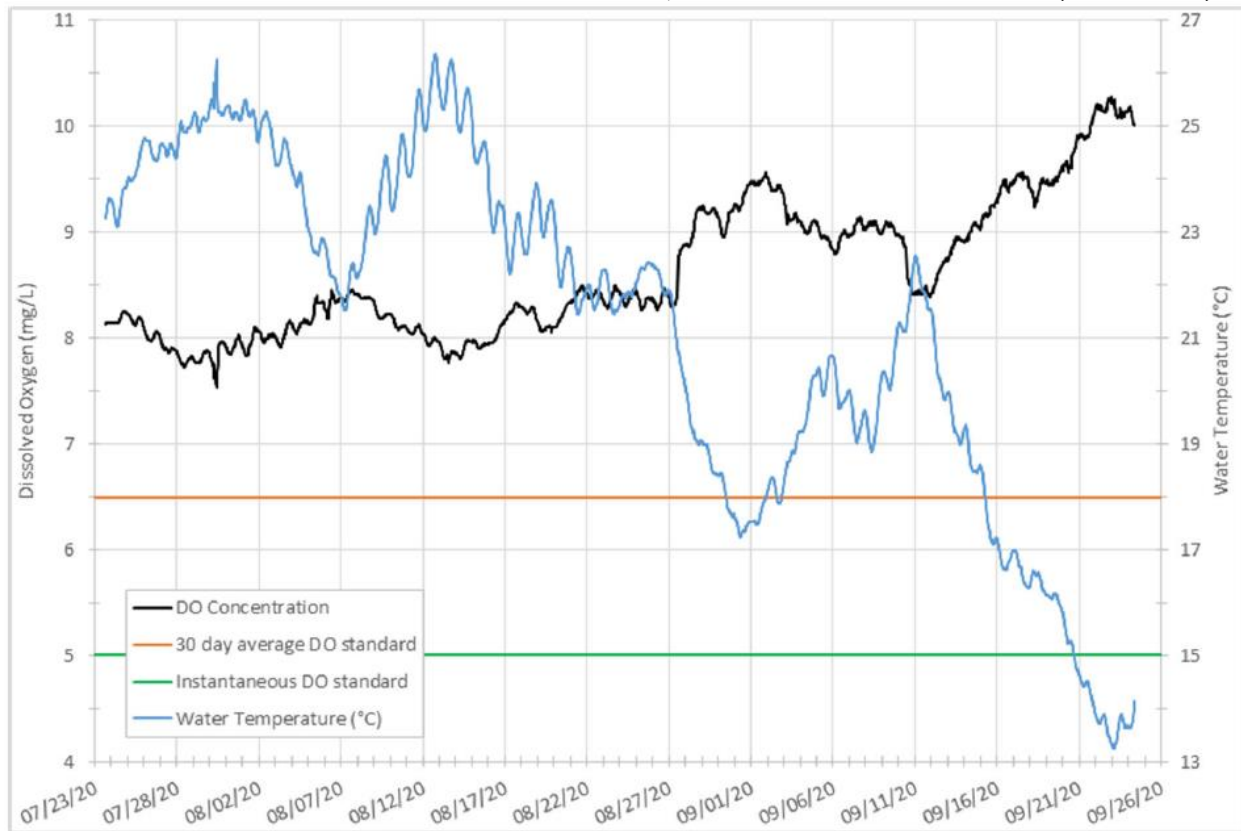
*Continuous Water Temperature and DO Monitoring*

Hourly water temperature and DO data were monitored at a single site in the Middle Dam bypass reach and in the Middle Dam canal adjacent to the intake at the lower powerhouse (representative of water discharged from powerhouse) from late-July to late-September during the summer low-flow, high-temperature period. Water temperatures were comparable between the two sites and DO met state standards throughout the monitoring period (Figure 5.5-5 and Figure 5.5-6).

**FIGURE 5.5-5  
CONTINUOUS WATER TEMPERATURE AND DISSOLVED OXYGEN IN THE  
MIDDLE DAM BYPASS REACH, JULY-SEPTEMBER 2020 (RFH 2021)**



**FIGURE 5.5-6**  
**CONTINUOUS WATER TEMPERATURE AND DISSOLVED OXYGEN AT THE**  
**INTAKE OF THE LOWER POWERHOUSE, JULY-SEPTEMBER 2020 (RFH 2021)**



#### *Benthic Macroinvertebrate Study*

Macroinvertebrate sampling was conducted in the bypass reach downstream of the Middle Dam and data were provided to the MDEP for analysis using the Department's linear discriminant model. The MDEP issued a final report on September 15, 2022, which determined the macroinvertebrate community in the Middle Dam bypass reach meets water quality standards (Appendix E.1). Water quality data collected during the macroinvertebrate sampling are included in Table 5.5-7.

In 2018, the MDEP conducted macroinvertebrate sampling in the Androscoggin River downstream from the Project in the Town of Mexico, which also met state water standards.

**TABLE 5.5-7**  
**WATER QUALITY DATA COLLECTED DURING THE DEPLOYMENT AND**  
**RETRIEVAL OF MACROINVERTEBRATE ROCK BASKETS IN THE MIDDLE DAM**  
**BYPASS REACH, 2021**

Parameter	Sample Location	
	Deployment	Retrieval
Date-Time	7/30/2020-09:30	8/27/20-08:45
DO (mg/L)	7.95	9.05
Temperature (°C)	25.3	21.3
pH (SU)	6.6	6.7
Specific Conductance (µS/cm)	38	37

Source: RFH 2021

### Historical Water Quality Data

The following, less recent, water quality data also demonstrate that water quality standards within the Project vicinity have been met:

- 2018 Aquatic Life Classification Attainment Report by the MDEP Biological Monitoring Program, which analyzed the macroinvertebrate community in the Androscoggin River in Mexico, Maine (the Town east of Rumford), to determine aquatic life classification; and
- Monitoring data collected by the MDEP and Androscoggin River Watershed Council (ARWC) at numerous sample sites along the Androscoggin River from 1995 to 2020 (MDEP 2019b, MDEP 2022).

The 2018 Aquatic Life Classification Attainment Report indicated that the macroinvertebrate community on the Androscoggin River in Mexico (the Town east of Rumford) met state water quality standards. Water quality data were collected during the deployment and retrieval of macroinvertebrate samplers and met water quality standards (Table 5.5-8).

Table 5.5-9 provides the discrete water quality data obtained by the MDEP and the ARWC at various sites within the Project vicinity. Sites AR2 and AR3 were located approximately 10 RM upstream from the Upper Dam, upstream from the Project Boundary. Site AR6 was located within the Project Boundary, approximately 2 RM upstream from the Upper Dam. Veterans Street Bridge

is located outside of the Project Boundary approximately 1 RM downstream from the Lower Station powerhouse. Water quality data met DO water quality standards at all sites.

**TABLE 5.5-8  
WATER QUALITY DATA COLLECTED DURING THE DEPLOYMENT AND  
RETRIEVAL OF MACROINVERTEBRATE ROCK BASKETS, 2018**

Parameter	7/23/2018	8/20/2018
Water Temperature (degrees Celsius)	23.2	22.8
Dissolved Oxygen (mg/L)	9.3	10.0
Dissolved Oxygen (% Saturation)	107.2	114.3
Specific Conductance (microsiemens per centimeter [ $\mu\text{S}/\text{cm}$ ])	79.4	70.3
pH	7.3	7.3

**TABLE 5.5-9  
DISCRETE WATER QUALITY DATA COLLECTED WITHIN THE RUMFORD  
FALLS PROJECT VICINITY, 1995-2020.**

Site	Year (June - September)	Parameter	Water temperature	DO (ppm)	DO (% Saturation)	pH	Specific Conductance ( $\mu\text{S}/\text{cm}$ )
AR2 – Rumford Point	2013	No. Sample Days	4	4	4	-	1
		Mean	20.4	8.0	89.1	-	30
		Minimum	19.2	7.8	87.4	-	30
		Maximum	22.0	8.3	90.3	-	30
AR3 – Rt. 232	2008	No. Sample Days	-	4	4	4	4
		Mean	-	6.8	73.5	-	29
		Minimum	-	6.1	71.4	6.1	20
		Maximum	-	7.4	76.4	6.3	37
Rt. 232	1999	No. Sample Days	9	9	-	9	-
		Mean	20.4	8.1	-	-	-
		Minimum	17.5	7.7	-	6.8	-
		Maximum	23.0	8.5	-	7.1	-
Rt. 232	1995	No. Sample Days	11	11	-	-	-
		Mean	18.1	8.9	-	-	-
		Minimum	12.0	7.8	-	-	-
		Maximum	23.0	11.6	-	-	-

Site	Year (June - September)	Parameter	Water temperature	DO (ppm)	DO (% Saturation)	pH	Specific Conductance ( $\mu$ S/cm)
AR6 – Rumford Boat Launch	2017	No. Sample Days	7	7	7	-	7
		Mean	20.1	8.2	89.9	-	32
		Minimum	16.1	7.5	84.2	-	22
		Maximum	21.7	9.3	98.0	-	38
	2018	No. Sample Days	7	7	7	-	7
		Mean	20.6	8.6	94.9	-	39
		Minimum	15.2	7.3	87.1	-	30
		Maximum	25.3	10.1	100.1	-	40
	2019	No. Sample Days	5	5	5	-	-
		Mean	18.9	8.6	91.1	-	-
		Minimum	15.3	7.6	88.0	-	-
		Maximum	23.4	9.4	93.7	-	-
	2020	No. Sample Days	3	3	3	-	3
		Mean	23.8	7.4	87.2	-	34.6
		Minimum	23.0	7.3	87.1	-	33.5
		Maximum	24.4	7.5	87.2	-	35.5
Veterans Bridge Mexico, ME	2008	No. Sample Days	-	4	4	4	4
		Mean	-	6.7	75.0	-	42
		Minimum	-	6.5	73.5	6.0	27
		Maximum	-	6.9	76.8	6.3	55
Minimum			12.0	6.1	71.4	6.0	20.0
Maximum			25.3	11.6	100.1	7.1	55.3

Source: MDEP 2019b; MDEP 2022

Additionally, during the previous relicensing, a water quality study was conducted to characterize the DO within the Project vicinity (Rumford Falls Power Co. 1991). The study revealed that DO concentrations were consistently high within the Project vicinity. It also showed that there was little, if any, stratification of DO concentrations within the Project vicinity. Therefore, it was determined that significant DO increases could not be realized from modifying the operating mode of the Project because the existing DO concentrations are consistently high. The MDEP concurred and stated that “based upon the data collected for this report together with DEP’s data it appears that the DO requirements for Class C are being met above and immediately below the Rumford Falls Project...Because of relatively high DO levels (relative to percent saturation) above the project, only a small increase in DO (<1 milligram per liter [mg/L]) can be realized even with

substantial (50%) spillage. Spillage (or turbine venting) does not appear to be required to meet current Class C limits.” The USFWS and MDIFW also concurred with the conclusions of the report. Immediately below the Project vicinity, the velocity of the Androscoggin River is swift and natural aeration is good (Rumford Falls Power Co. 1991).

### **Impoundment Information**

The Upper Dam impoundment has a normal maximum surface area of 419 acres and gross storage capacity of 2,900 ac-ft, with a corresponding normal maximum surface elevation of 601.24 feet USGS. Depths in the Upper Dam impoundment are unknown. The shoreline length of the Upper Dam impoundment is approximately 16 miles.

The Middle Dam impoundment has a normal maximum surface area of 21 acres and a gross storage capacity of 141 ac-ft, with a corresponding normal maximum surface elevation of 502.74 feet USGS. The maximum depth in the Middle Dam impoundment is approximately 30 feet. The shoreline length of the Middle Dam impoundment is approximately 0.6 miles.

Refer to Section 5.6 of this Exhibit E for additional information on impoundment habitat.

### **Downstream Reach Gradients**

Immediately downstream of the Upper Dam, the Androscoggin River drops from elevation 566 feet above msl to elevation 502 feet above msl at the top of the Middle Dam, a distance of approximately 0.34 RM or 1,817 feet, with an average river gradient of 3.5 percent (188.2 feet per mile).

The next downstream river reach, beginning immediately downstream of the Middle Dam, through the bypass reach to the Lower Station Powerhouse, drops in elevation from 479 feet above msl to 423 feet above msl over approximately 0.59 RM or 3,121 feet, with a river gradient of 1.8 percent (94.9 feet per mile).

Downstream of the Lower Station Powerhouse, the river has a more gradual slope and drops from elevation 423 feet above msl to 410 feet above msl over approximately 2 RM or 10,534 feet, having an average river gradient of 0.1 percent (6.5 feet per mile).

### 5.5.2 Environmental Analysis

FERC identified the following potential resource issue related to water resources in their SD1:

- Effects of Project operation on water quality, especially DO concentration and temperature, in the Project area.

RFH operates the Project pursuant to the existing FERC-issued license, which requires the Project to be operated in a run-of-river mode within 1 foot of full pond elevation and to minimize the fluctuations of the reservoir surface elevation at all times. As a run-of-river facility, the Project operations have a limited ability to affect water quality.

Regardless, recent data collected throughout the Project area demonstrate that there are no effects of Project operations on water quality. Water temperatures and DO concentrations were similar between monitoring locations throughout the Project. The vertical profile data showed that the Upper Dam and Middle Dam impoundments do not thermally stratify and DO concentrations meet state standards throughout the summer. Similarly, continuous DO data collected in the Middle Dam bypass reach and at the Lower Station powerhouse intake also met state standards. Additionally, the MDEP indicated that the macroinvertebrate community in the Middle Dam bypass reach is in attainment of water quality standards and met aquatic life standards.

As part of the recent LIHI recertification for the Project, the MDEP submitted a letter dated April 17, 2019, supporting the recertification for the Project and specified that it had reviewed its most recent water quality data for surface waters within the Project and it had “*no evidence to suggest that the continued operation of the Project would negatively impact the designated uses, numeric or narrative criteria of its classification standards*” (LIHI 2022). RFH is not proposing any changes to Project operations; therefore, it does not anticipate that continued operation of the Project will affect water resources.

RFH will be reporting the results of the Outlet Aquatic Habitat Study component of the Water Quality Study within the USR, which will be filed with FERC on or before August 7, 2022. The study results will also be incorporated into the FLA. The additional trophic data that RFH is collecting in 2022 will be filed with the Commission as a supplement to the FLA soon after the sampling is complete.



### **5.5.3 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to water resources at the Project.

### **5.5.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of water resources.

## **5.6 Fish and Aquatic Resources**

### **5.6.1 Affected Environment**

The Androscoggin River has a steep gradient, dropping more than 1,200 vertical feet from its origin at Lake Umbagog to tidewater. Five major cascades in the drainage (Great Falls [in Brunswick], Lewiston Falls, Rumford Falls, Snow Falls, and Biscoe Falls) exist as natural barriers to diadromous fish movement upstream within the watershed. Historically, Atlantic sturgeon, shortnose sturgeon, and rainbow smelt likely did not pass beyond Great Falls in Brunswick. Lewiston Falls stopped the upstream migration of alewife, American shad, blueback herring, striped bass, and possibly sea lamprey, while Rumford Falls was the natural barrier to Atlantic salmon (Foster and Atkins 1868; as cited in MDMR et al. 2017). Given the addition of the downstream man-made barriers on the river, Atlantic salmon have not been caught upstream of Lewiston Falls since 1815. Upstream and downstream fish passage exists at the first three dams on the Androscoggin River (i.e., Brunswick, Pejepscot, and Worumbo), but the MDMR only monitors Atlantic salmon returns at Brunswick on the Androscoggin River – where there have been a total of 19 returns from 2012 – 2020 (MDMR 2022). Historically, Rumford Falls is believed to be the upstream limit for American eel (MDMR and MDEP 2008; as cited in Moore and Reblin 2010).

#### **5.6.1.1 Aquatic Habitat**

During the previous relicensing, and in coordination with the USFWS and MDIFW, a study was conducted to assess flows within the bypass reaches of the Project (Rumford Falls Power Co. 1991). Habitat within the bypass reaches is poor to non-existent. The upper bypass reach is steep

and consists predominantly of bedrock substrate. Habitat within the lower bypass reach is also steep with cascades over bedrock and boulders.

Information on aquatic habitat within the Middle Dam bypass reach was collected by RFH in the fall of 2021 during the Flow Study for Aquatic Habitat Evaluation. The associated study report will be filed with FERC in the USR on or before August 7, 2022, and will be incorporated into the FLA.

Information on the aquatic habitat within the Upper Dam impoundment was collected by RFH during the 2020 Impoundment Bass Spawning Survey (RFH 2021). Dominant substrate/habitat types were visually characterized along both banks from the boat barrier to the upper extent of the FERC Boundary (approximately 6.0 miles) during boat-based surveys on five days in June 2020. The results of the visual observations are presented in Table 5.6-1 and Figure 5.6-1. The lower third of the Upper Dam impoundment was characterized as generally having steep banks with predominantly silty substrates. Upstream of that, littoral habitat becomes more varied with areas of sand, cobble, and submerged aquatic vegetation. Littoral habitat towards the upper end of the Upper Dam impoundment is predominantly boulder substrate. The identified littoral substrate/habitat types indicated that there is suitable spawning habitat for smallmouth bass (i.e., gravel or coarse sand substrate in the vicinity of physical cover) within the Upper Dam impoundment (RFH 2021).

Information on aquatic habitat was also obtained at two sites upstream (i.e., RM 88.7 and 83.1) and at two sites downstream (i.e., 79.3 and 78.5) from the Project (RM 80) during a fish assemblage study conducted along the Androscoggin River in August 2003 by Yoder (2006). Table 5.6-2 provides the habitat characteristics of these sites.

As described in Section 5.5 of this Exhibit E, water quality data collected in the impoundments, Middle Dam bypass reach, and at the intake at the lower powerhouse met state water quality standards. Additionally, the macroinvertebrate community in the Middle Dam bypass reach attained water quality standards.

**TABLE 5.6-1  
HABITAT CLASSIFICATIONS, ESTIMATED LENGTH, AND PERCENTAGE OF  
TOTAL LITTORAL ZONE AS IDENTIFIED DURING THE JUNE 2020 UPPER DAM  
IMPOUNDMENT BASS SPAWNING SURVEY**

Habitat Classification	Shoreline Length (ft)	Percent of Total
Boulders	5,919	8%
Boulders & Riffle	9,695	14%
Cobble	1,931	3%
Deep & Vegetation	5,170	7%
Mud	1,706	2%
Muddy & Vegetation	4,047	6%
Muddy/Deep	28,705	40%
Sand	13,529	19%
Sand & Vegetation	766	1%
<b>Total</b>	<b>71,468</b>	<b>100%</b>

Source: RFH 2021

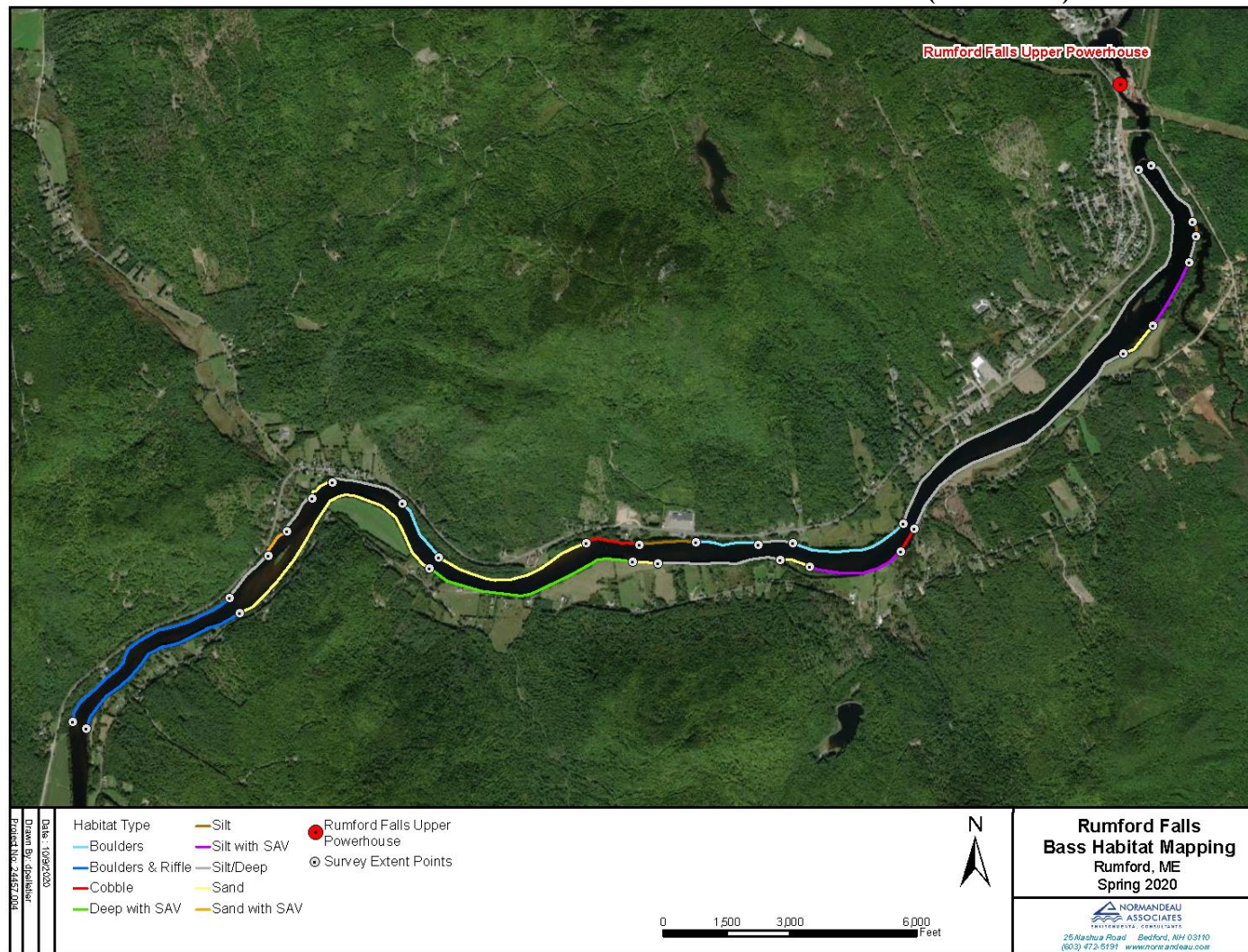
**TABLE 5.6-2  
HABITAT CHARACTERISTICS AT FOUR SITES IN THE  
PROJECT AREA\***

RM	Habitat Characteristics
88.7	<ul style="list-style-type: none"> <li>• boulder, cobble, gravel substrates</li> <li>• five or more substrate types</li> <li>• moderate to extensive cover</li> <li>• low to normal embeddedness</li> <li>• maximum depth greater than one meter</li> <li>• low to normal riffle/run embeddedness</li> </ul>
83.1	<ul style="list-style-type: none"> <li>• moderate to extensive cover</li> <li>• maximum depth greater than one meter</li> <li>• moderate to high silt cover</li> <li>• slow or no flow</li> <li>• moderate to high overall embeddedness</li> <li>• there were no riffles or runs present</li> </ul>
79.3 and 78.5	<ul style="list-style-type: none"> <li>• boulder, cobble, gravel substrate</li> <li>• silt free substrate</li> <li>• moderate to extensive cover</li> <li>• fast current/eddies</li> <li>• low to normal overall embeddedness</li> <li>• maximum depth greater than one meter</li> <li>• low to normal riffle/run embeddedness</li> </ul>

\*Information on aquatic habitat was obtained at two sites upstream (i.e., RM 88.7 and 83.1) and as two sites downstream (i.e., 79.3 and 78.5) from the Project (RM 80).

Source: Yoder 2006

**FIGURE 5.6-1**  
**SURVEY AREA AND HABITAT CLASSIFICATIONS FOR THE UPPER DAM IMPOUNDMENT AS NOTED**  
**DURING THE JUNE 2020 BASS SPAWNING SURVEYS (RFH 2021)**



## 5.6.1.2 Fish Community

There is a vast amount of information available on the fish community on the Androscoggin River. In August and September 1986, a comprehensive survey was conducted along the Androscoggin River at various locations from the Upper Dam impoundment downstream approximately 60 RM to the Lewiston Falls impoundment (Rumford Falls Power Co. 1991). Multiple gear types were used in the study including electrofishing, gill nets, seines, and trap (fyke) nets. Table 5.6-3 provides a list of species collected in the Upper Dam impoundment, which provides good habitat for a variety of warmwater and coldwater fishes. A total of 1,810 fish were collected (Rumford Falls Power Co. 1991).

**TABLE 5.6-3  
PERCENT COMPOSITION OF FISH SPECIES COLLECTED (GEARS COMBINED)  
IN THE UPPER DAM IMPOUNDMENT AT THE RUMFORD FALLS PROJECT IN  
AUGUST AND SEPTEMBER 1986**

Species	Scientific Name	Percent Composition
Fallfish	<i>Semotilus corporalis</i>	44.1
Common Shiner	<i>Luxilus cornutus</i>	30.1
White Sucker	<i>Catostomus commersonii</i>	7.1
Golden Shiner	<i>Notemigonus crysoleucas</i>	6.3
Yellow Perch	<i>Perca flavescens</i>	4.6
Chain Pickerel	<i>Esox niger</i>	4.6
Brown Bullhead	<i>Ameiurus nebulosus</i>	1.2
White Perch	<i>Morone americana</i>	1.2
Lake Chub	<i>Couesius plumbeus</i>	0.6
Burbot	<i>Lota lota</i>	0.1
Pumpkinseed	<i>Lepomis gibbosus</i>	0.1
	<b>TOTAL</b>	100

Source: Rumford Falls Power Co. 1991

As discussed previously, a fish assemblage study was conducted along the entire Androscoggin River in August of 2003 using boat-mounted electrofishing methods (Yoder 2006). Electrofishing was conducted at two locations upstream of the Upper Station Development (RM 81.0), at RMs

88.7 and 83.1. Section 5.6.1.1 above summarizes the habitat characteristics of the sites. A total of 509 fish representing 11 species and a total of 486 fish representing 12 species were collected in a 1,000-meter sampling area at RM 88.7 and 83.1, respectively (Yoder 2006). The data collected at these two sampling locations are presented in Table 5.6-4. A few brown trout (*Salmo trutta*) were collected at RM 88.7 during these surveys, and both brown trout and rainbow trout (*Oncorhynchus mykiss*) were found in several sampling locations further upstream (Yoder 2006).

Electrofishing was also conducted at two locations downstream of the Lower Station Development (RM 80.0), at RMs 79.3 and 78.5. A total of 630 fish representing nine different species were collected in a 1,000-meter sampling area downstream of the Rumford Falls Project at RM 79.3. A total of 388 fish representing 10 different species were collected in a 1,000-meter sampling area further downstream from the Project at RM 78.5. The data collected at these two sampling locations are presented in Table 5.6-5.

**TABLE 5.6-4**  
**LIST OF FISH SPECIES COLLECTED UPSTREAM OF THE RUMFORD FALLS PROJECT AT RIVER MILE 83.1 AND 88.7 IN AUGUST 2003**

Species	Scientific Name	Number of Fish Collected		Percent Composition	
		RM 83.1	RM 88.7	RM 83.1	RM 88.7
Black Crappie	<i>Pomoxis nigromaculatus</i>	1	0	0.2	0.0
Brown Bullhead	<i>Ameiurus nebulosus</i>	3	1	0.6	0.2
Brown Trout	<i>Salmo trutta</i>	0	3	0.0	0.6
Burbot	<i>Lota lota</i>	2	3	0.4	0.6
Chain Pickerel	<i>Esox niger</i>	14	2	2.9	0.4
Common Shiner	<i>Luxilus cornutus</i>	2	25	0.4	4.9
Creek Chub	<i>Semotilus atromaculatus</i>	0	1	0.0	0.2
Fallfish	<i>Semotilus corporalis</i>	9	192	1.9	37.7
Golden Shiner	<i>Notemigonus crysoleucas</i>	17	0	3.5	0.0
Pumpkinseed	<i>Lepomis gibbosus</i>	28	0	5.8	0.0
Smallmouth Bass	<i>Micropterus dolomieu</i>	33	107	6.8	21.0
Spottail Shiner	<i>Notropis hudsonius</i>	359	5	73.9	1.0

Species	Scientific Name	Number of Fish Collected		Percent Composition	
		RM 83.1	RM 88.7	RM 83.1	RM 88.7
White Sucker	<i>Catostomus commersonii</i>	2	125	0.4	24.6
Yellow Perch	<i>Perca flavescens</i>	16	45	3.3	8.8
<b>Total Number of Fish/Percentage</b>		<b>486</b>	<b>509</b>	<b>100</b>	<b>100</b>

Source: Yoder 2006.

**TABLE 5.6-5  
LIST OF FISH SPECIES COLLECTED AT RIVER MILE 79.3 AND 78.5  
DOWNSTREAM OF THE RUMFORD FALLS PROJECT IN AUGUST 2003**

Species	Scientific Name	Number of Fish Collected		Percent Composition	
		RM 79.3	RM 78.5	RM 79.3	RM 78.5
Burbot	<i>Lota lota</i>	10	3	1.6	0.8
Brown Trout	<i>Salmo trutta</i>	8	5	1.3	1.3
Chain Pickerel	<i>Esox niger</i>	2	0	0.3	0.0
Fallfish	<i>Semotilus corporalis</i>	2	3	0.3	0.8
Golden Shiner	<i>Notemigonus crysoleucas</i>	0	3	0.0	0.8
Longnose Dace	<i>Rhinichthys cataractae</i>	5	2	0.8	0.5
Rainbow Trout	<i>Oncorhynchus mykiss</i>	2	1	0.3	0.3
Smallmouth Bass	<i>Micropterus dolomieu</i>	570	290	90.5	74.6
White Perch	<i>Morone americana</i>	0	1	0.0	0.3
White Sucker	<i>Catostomus commersonii</i>	27	75	4.3	19.3
Yellow Perch	<i>Perca flavescens</i>	4	5	0.6	1.3
<b>Total Number of Fish/Percentage</b>		<b>630</b>	<b>388</b>	<b>100</b>	<b>100</b>

Source: Yoder 2006.

In June of 2008, MDIFW conducted fish surveys from Rumford Falls to the Riley Impoundment, the next impoundment downstream of the Project. The purpose of these surveys was to collect information on the smallmouth bass (*Micropterus dolomieu*) population in this reach of the river. Approximately 43 hours of experimental angling was performed from June 9 through June 18, 2008 (MDIFW 2019a). The results of the sampling effort are presented in Table 5.6-6.

Compared to previous sampling conducted in 1996, where approximately 3.8 fish were caught per hour, catch rates were significantly lower in 2008 with approximately 1.6 fish caught per hour. The 2008 catch rates suggest that the density of smallmouth bass declined considerably. However, high flows and low temperatures negatively influenced angling success in 2008, whereas the 1996 sampling effort occurred during ideal conditions (MDIFW 2019a).

**TABLE 5.6-6**  
**LIST OF FISH SPECIES COLLECTED DURING 2008 SURVEYS BETWEEN**  
**RUMFORD FALLS AND THE RILEY IMPOUNDMENT**

Species	Number of Fish Caught	Percent Hatchery
Smallmouth Bass	95	*
Rainbow Trout	6	100
Brown Trout	3	100
Fallfish	37	*

Source: MDIFW 2019a.

\* Not Applicable.

As discussed previously, RFH conducted a bass spawning survey on the Upper Dam impoundment in June 2020 (RFH 2021). Visual boat-based surveys for smallmouth and largemouth bass spawning activity were conducted within the Upper Dam impoundment on five dates during June 2020 (June 2, 10, 15, 24, and 30). Visual surveys were conducted along both banks of the Upper Dam impoundment from the boat barrier to the upstream extent of the FERC Project Boundary (approximately 6.0 miles). During four of the five survey dates, visibility was good. Visibility was somewhat reduced during the June 30, 2020 survey due to increased flows associated with a precipitation event. Regardless, no bass nests were observed during the five June survey dates. Although no nests were observed during the surveys, visual mapping of littoral substrate/habitat types suggest that suitable spawning habitat for smallmouth bass (i.e., gravel or coarse sand substrate in the vicinity of physical cover) exists within the impoundment; however, bass are likely spawning at depths greater than those observed during the survey. Smallmouth bass were observed on June 10, while a total of five smallmouth bass were captured on June 24 and 30, 2020. No largemouth bass were observed during the study (RFH 2021).



## Fish Stocking

The historical assemblage of native fish in the Androscoggin River is not known with certainty; however, smallmouth bass, brown trout, and rainbow trout found in the upper Androscoggin are not indigenous to Maine. The present recreational trout fishery is dependent upon annual stocking of hatchery brook trout, rainbow trout, and brown trout (MDIFW 2014). Brown trout and rainbow trout have been the focus of MDIFW’s trout management on the upper river, partly because these species are more tolerant of elevated water temperatures that occur during much of the angling season. Habitat within the Gilead to Bethel reach, which is upstream of the Project, has been considered more suitable for rainbow trout, while habitat from Bethel to Rumford Falls has been considered more suitable for brown trout and bass (MDIFW 2014). MDIFW performs annual fish stocking of brook, brown, and rainbow trout in the mainstem of the upper Androscoggin River at three locations upstream of the Project (Gilead, Bethel, and Hanover) and one location downstream of the Project (Mexico). Fish stocking records for the last five years are presented in Table 5.6-7.

**TABLE 5.6-7**  
**MDIFW FISH STOCKING IN THE MAINSTEM OF THE ANDROSCOGGIN RIVER**  
**FOR THE LAST 5 YEARS IN GILEAD, BETHEL, HANOVER, AND MEXICO, MAINE**

City/Town	Species	Number of Fish Stocked Each Year				
		2017	2018	2019	2020	2021
Gilead	Brook Trout	1,100	1,075	1,075	1,075	1,075
Gilead	Brown Trout	750	750	750	750	750
Gilead	Rainbow Trout	1,105	1,300	1,000	1,300	1,300
Bethel	Brook Trout	700	675	675	675	675
Bethel	Brown Trout	1,600	1,600	1,600	1,600	1,600
Bethel	Rainbow Trout	595	700	500	700	700
Hanover	Brook Trout	1,100	1,000	1,000	1,000	1,000
Hanover	Brown Trout	2,000	2,000	2,000	2,000	2,000
Mexico	Brook Trout	270	250	250	250	125
Mexico	Brown Trout	250	250	250	250	125
Mexico	Rainbow Trout	1,148	1,350	940	1,350	1,350

Source: MDIFW 2022a.

### 5.6.1.3 Essential Fish Habitat

EFH as designated under the Magnuson-Stevens Fishery Conservation and Management Act or established by the NMFS has been identified as existing downstream of the Upper Dam of the Rumford Falls Project. The area upstream of the Upper Dam of the Project is considered outside of the DPS (NMFS 2019).

### 5.6.1.4 Temporal and Spatial Distribution/Life History Information of Fish Communities

The distribution and life history information of important management and game species are described below.

#### **Smallmouth Bass**

Smallmouth bass have a native range extending from the St. Lawrence River north, west through the Great Lakes region, and south to the northern portions of Alabama and Oklahoma (Langdon et al. 2006). This species has also been introduced widely throughout the United States. In lacustrine systems, smallmouth bass tend to inhabit rocky and sandy habitat. In riverine systems of higher gradient, they generally inhabit deeper pools. Regardless of the waterbody, smallmouth bass tend to seek the cover of large boulders and logs. Like many predatory fish, this species tends to forage most readily during the crepuscular periods (Langdon et al. 2006). Juvenile smallmouth bass feed on plankton and gradually feed on crayfish, larger insects, and other small fish as they mature.

The male smallmouth bass begins nest building in gravel or rocky substrate in slow-flowing reaches between April and June when water temperatures are between 12.8 and 22.8°C (Langdon et al. 2006). Nests are typically found near a stump or gravel depression in the substrate. Smallmouth bass will spawn in water depths from 3 to 15 feet. Egg deposition and fertilization starts when water temperatures are between 16.1 and 18.3°C. Spawning occurs between one male, and one or more females. Females are capable of depositing 5,000 to 14,000 eggs. The adhesive eggs sink into the nest and are protected by the male until they hatch 4 to 10 days later. If water temperatures drop below 15.5°C, spawning may be interrupted and the male may abandon the eggs, leaving them susceptible to predation (Langdon et al. 2006).

## **Largemouth Bass**

Largemouth bass range over the majority of the eastern half of the United States and are found as far north as southern Quebec and south throughout Florida and Texas (Langdon et al. 2006; Rohde et al. 2009). The wide distribution of largemouth bass is a function of extensive historical stocking. Largemouth bass prefer warm waters of lakes, ponds, and slow-moving riverine systems. Substrate preference is generally muddy bottoms with significant aquatic vegetation. Typical weight for adult largemouth bass is 2 to 3 pounds (Langdon et al. 2006). Age at maturity ranges from 3 to 4 years in males and 4 to 6 years in females and the maximum age reported is 15 years (Langdon et al. 2006). The diet of juvenile largemouth bass consists primarily of plankton and insects. Adults are predominantly piscivorous, but they are also known to eat crayfish, frogs, mice, and aquatic insects (Langdon et al. 2006; Rohde et al. 2009). Most feeding occurs in the early morning hours and in the evening (Scarola 1987).

Spawning occurs between May and July, while nest building begins once water temperatures have risen past 15.5°C (Langdon et al. 2006). Eggs are laid when water temperature is between 16.7 and 18.3°C. Males build nests in gravel or sand to a depth of approximately 1 to 4 inches, and a diameter of 2 to 3 feet (Langdon et al. 2006). Largemouth bass will typically spawn in water depths from 3 to 5 feet. After the female deposits 2,000 to 109,000 adhesive eggs, the male guards the nest for up to a month after the eggs have hatched (Langdon et al. 2006). The eggs hatch 2 to 7 days later (Scarola 1987).

## **Brown Trout**

Brown trout prefer medium-to-large streams with swift riffles and large, deep pools, but can be found inhabiting a wide range of water bodies from small streams to large lakes and reservoirs. They require well-oxygenated cold water, though they are tolerant of warmer temperatures. Brown trout generally grow faster and live longer than native brook trout and compete with them for food and habitat (Hartel et al. 2002). Juvenile trout can inhabit a variety of habitats, from riffles to pools, feeding primarily on invertebrates. Adult brown trout inhabit deep pools with deep cover and are highly piscivorous, including preying on their own young or young of other trout species. This trout species typically spawns in the fall in tributary streams and small rivers, over gravel to small cobble substrate ranging in size from 0.25 to 3 inches in diameter (Hartel et al. 2002).

## Rainbow Trout

In contrast to brown trout, rainbow trout spawn in the spring, from March to May when water temperatures are rising. Other life history habits and spawning requirements are similar to brown trout (Hartel et al. 2002).

### 5.6.1.5 Macroinvertebrates

RFH conducted benthic macroinvertebrate sampling during the Water Quality Study in the Middle Dam bypass reach in 2020, the results were included in Appendix A of the ISR filed with FERC on August 6, 2021. Benthic macroinvertebrate sampling was conducted using rock basket samplers consistent with MDEP's *Methods for Biological Sampling and Analysis of Maine's Rivers and Streams* (Davies and Tsomides 2014). The samplers were deployed during the late summer low-flow period from July 30 to August 27, 2020. Mean flow during this period ranged from approximately 1,500 cfs to 3,000 cfs. Macroinvertebrate samples were sorted, identified, and enumerated in a laboratory and data were provided to the MDEP for analysis using the Department's linear discriminant analysis to assess the attainment of aquatic life standards. The MDEP issued a final report on September 15, 2022, which determined the macroinvertebrate community in the Middle Dam bypass reach met water quality standards (Appendix E.1).

In 2018, the MDEP conducted macroinvertebrate sampling in the Androscoggin River downstream from the Project in the Town of Mexico, which also met water quality standards.

## 5.6.2 Environmental Analysis

FERC identified the following potential resource issues related to fish and aquatic resources in their SD1:

- Effects of Project operation on aquatic habitat, including habitat distribution and suitability in the Project-affected areas.
- Effects of Project operation on EFH for Atlantic salmon.
- Effects of Project operation on fish impingement, entrainment, and survival in the Androscoggin River.

RFH operates the Project pursuant to the existing FERC-issued license, which requires the Project to be operated in a run-of-river mode within 1 foot of full pond elevation and to minimize the fluctuations of the reservoir surface elevation at all times. The Upper Dam at the Project is equipped with 2.5-foot-high, wooden flashboards that are designed to fail at certain river flows or when substantial debris loading occurs. Occasionally, high river flows and/or debris loading result in flashboard failure and the Upper Dam impoundment elevation will decrease with the river flow until the water level reaches the crest of the concrete dam (i.e., elevation 598.74 feet USGS; 2.5 feet below the normal maximum headwater elevation of 601.24 feet USGS). Upon such events, RFH notifies the appropriate agencies (i.e., USFWS, MDEP, and MDIFW) consistent with the FERC-issued license. The flashboards are repaired as soon as safely possible but cannot be done until the river is under control and the spillway is accessible. As described above, RFH conducted the Impoundment Bass Spawning Survey in consultation with the MDIFW to address concerns the agency identified on the potential impacts to early spawning bass. The study concluded that bass are not spawning at depths that would be affected when the 2.5-foot flashboards are out at the Upper Dam. RFH consulted with the MDIFW regarding the study results, and MDIFW determined a second year of study was not necessary.

Aquatic habitat within the Upper Dam bypass reach, also known as Rumford Falls, is steep and comprised of bedrock/ledge with limited habitat. Habitat within the Middle Dam bypass reach has also been identified as steep with cascades over bedrock and boulders with limited habitat. EFH habitat has been designated downstream of the Upper Dam, the historic natural barrier to Atlantic salmon, and is the upstream extent of designated EFH on the Androscoggin River. However, Atlantic salmon do not occur within the Project vicinity and have not been caught upstream of Lewiston Falls, which is approximately 60 RM downstream of the Project, since 1815 (Foster and Atkins 1868; as cited in MDMR et al. 2017).

During the previous relicensing, and in coordination with the USFWS and MDIFW, a study was conducted to assess flows within the bypass reaches of the Project (Rumford Falls Power Co. 1991). Based on the affected habitat and assessment of flows, the study found that modifying the flow regime within the bypass reaches would not enhance instream habitat. The USFWS concurred with these findings and agreed to limit recommendations regarding minimum flows to the Project's tailrace areas, which are primarily driven by inflow to the Project given that the Project is operated

as a run-of-river facility. The MDIFW also concurred that altering the existing flow regime was not warranted (Rumford Falls Power Co. 1991).

Additionally, based on results from the water quality study conducted for the previous relicensing of the Project, the USFWS specified that the DO and percent saturation levels in the impoundments and tailraces were sufficiently high and water quality standards were consistently exceeded and “therefore, spillage, turbine venting or other measures to increase DO do not appear to be necessary to protect and enhance fish and wildlife resources” (Rumford Falls Power Co. 1991). The MDIFW also concluded “...little benefit to fisheries resources or their utilization would be gained by additional releases into the bypassed reaches, and that present dissolved oxygen conditions are above the water quality classification standards and adequate to sustain aquatic resources within and below the project area” (Rumford Falls Power Co. 1991).

Additional information on aquatic habitat within the Middle Dam bypass reach was collected by RFH in the fall of 2021 during the Flow Study for Aquatic Habitat Evaluation. The associated study report will be filed with FERC in the USR on or before August 7, 2022, and will be incorporated into the FLA. Based on information obtained by RFH during the Water Quality Study, as discussed in Section 5.5 of this Exhibit E, water quality throughout the Project area is meeting state standards. Additionally, the macroinvertebrate community in the Middle Dam bypass reach attained water quality standards. No changes or new developments are being proposed to the Project; therefore, continued Project operation and maintenance activities would not adversely affect aquatic habitat or the quality and/or quantity of EFH for Atlantic salmon.

Whereas hydropower projects can have potential effects on fish impingement, entrainment, and population survival, neither diadromous fish nor American eel are known to occur in, or near, the Project given the number of natural and man-made barriers located downstream of the Project. Historically, Rumford Falls was the natural barrier to Atlantic salmon which have not been caught upstream of Lewiston Falls since 1815 (Foster and Atkins 1868; as cited in MDMR et al. 2017). In addition, Rumford Falls is also believed to be the upstream limit for American eel (MDMR and MDEP 2008; as cited in Moore and Reblin 2010). Additionally, the existing recreational trout fishery on the upper Androscoggin River is dependent upon annual stocking of hatchery Rainbow and Brown Trout, which are not indigenous to Maine or this portion of the Androscoggin River.

### **5.6.3 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to fish and aquatic resources at the Project.

### **5.6.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of fish and aquatic resources. In addition, American eel or diadromous fish are not known to occur in or near the Project.

## **5.7 Wildlife and Botanical Resources**

### **5.7.1 Affected Environment**

The Rumford Falls Project is located within a major subdivision of the Appalachian Highlands Province designated as the New England Province. This province is further subdivided into the Seaboard Lowland Section and the New England Upland Section. The Project is located entirely within the New England Upland Section (RJ Associates 2014).

The Project area, as defined by the Project Boundary, is generally long and narrow. The Project Boundary adheres to the highwater elevation along both of the impoundments and is positioned close to the shoreline of the Androscoggin River in other locations. As such, the Project Boundary only encompasses a small amount of land outside of the wetted portions of the Project.

There are some areas of developed lands within the Project Boundary, including electric transmission lines. Developed areas within the Project Boundary or utilized in connection with the operation of the Project and Project-related recreation facilities, are comprised of gravel surfaces, paved surfaces, mowed grass, an electric transmission line corridor, and unvegetated surfaces. These areas provide habitat opportunities for generalist, grassland, and edge-habitat species. The Licensee annually maintains the Project's transmission line corridor; however, no tree-clearing occurs.

### 5.7.1.1 Wildlife Resources

Based on identified habitats within the Project Boundary and in its immediate vicinity, several mammalian, herptile, and avian wildlife species have the potential to occur within the Project vicinity. As previously noted, the FERC Project Boundary encompasses only a small amount of land outside of the wetted portions of the Project impoundments and downstream reaches. This, in turn, limits upland habitat and associated wildlife within the Project Boundary.

#### **Mammals**

White-tailed deer (*Odocoileus virginianus*) is likely the most common big game species in the Project vicinity, occurring in a wide variety of habitats ranging from forests to agricultural land. This species is prevalent along forest edges characterized by brushy and woody vegetation, swamp borders, and areas interspersed with fields and woodland openings (DeGraaf and Yamasaki 2001; Douth et al. 1977). Raccoon (*Procyon lotor*) are likely also common, especially along the riparian corridor associated with the Androscoggin River within the Project Boundary. Other mammals common to the Project vicinity include furbearers, small game species, and rodents. These wildlife species reside in many different habitat types such as woodland, scrub-shrub, or early successional areas, and grassland areas; use of these areas may shift during different life stages and/or times or year (DeGraaf and Yamasaki 2001; Douth et al. 1977).

Table 5.7-1 lists the mammalian species that may exist or may utilize habitat in the vicinity of the Project. Since terrestrial portions of the Project are limited, it is likely that many of the species identified in the table below may not occur within the Project Boundary. Mammals that likely inhabit the forest and shrub communities in the vicinity of the Project include white-tailed deer, eastern coyote (*Canis latrans*), beaver (*Castor canadensis*), mink (*Mustela vison*), gray squirrel (*Sciurus carolinensis*), red squirrel (*Tamiasciurus hudsonicus*), raccoon, opossum (*Didelphis virginiana*), muskrat (*Ondatra zibethicus*), and red fox (*Vulpes vulpes*) (American Society of Mammalogists 2022).

Mammals typically found in woodland and riparian areas include raccoon, long-tailed weasel (*Mustela frenata*), eastern gray squirrel, striped skunk (*Mephitis mephitis*), and white-footed mouse (*Peromyscus leucopus*).



**TABLE 5.7-1**  
**LIST OF MAMMALS POTENTIALLY OCCURRING IN THE VICINITY OF THE**  
**RUMFORD FALLS PROJECT**

<b>Species</b>	<b>Scientific Name</b>	<b>Habitat Preference</b>
Masked Shrew	<i>Sorex cinereus</i>	Damp woodlands with structures
Water Shrew	<i>Sorex palustris</i>	Riparian and wetland areas in coniferous areas
Smoky Shrew	<i>Sorex fumeus</i>	Moist, bouldery upland areas with moss, clear cuts
Long-tailed Shrew	<i>Sorex dispar</i>	Deep coniferous/mixed forests, with moss covered rocks
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	Variety of open wooded habitats
Pygmy Shrew	<i>Sorex minutus</i>	Variety of wooded habitats
Hairy-tailed Mole	<i>Parascalops breweri</i>	Open wooded areas, fields
Star-nosed Mole	<i>Condylura cristata</i>	Moist, open areas
Little Brown Bat	<i>Myotis lucifugus</i>	Near waterbodies and wetlands, tree cavities
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Mixed forested landscapes
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Wooded areas with loose bark near watercourses
Keen's Myotis	<i>Myotis keenii</i>	Wooded areas, under bark
Eastern Small-footed Bat	<i>Myotis leibii</i>	In or near woodland in caves, mine tunnels, buildings, crevices in rocks
Tri-colored Bat	<i>Perimyotis subflavus</i>	Open woods near water, crevices in cliffs, buildings, caves
Big Brown Bat	<i>Eptesicus fuscus</i>	Wooded areas, tree cavities
Red Bat	<i>Lasiurus borealis</i>	Edge of wooded areas
Hoary Bat	<i>Lasiurus cinereus</i>	Wooded coniferous areas
New England Cottontail	<i>Sylvilagus transitionalis</i>	Brushy areas, open woodlands, swamps, mountains
Snowshoe Hare	<i>Lepus americanus</i>	Woodlands with dense cover, clear cuts, regeneration
Eastern Chipmunk	<i>Tamias striatus</i>	Deciduous woodlands, right-of way (ROW) edge
Woodchuck	<i>Marmota monax</i>	Woodland edges, open areas
Gray Squirrel	<i>Sciurus carolinensis</i>	Deciduous and mixed forest
Red Squirrel	<i>Sciurus vulgaris</i>	Coniferous forests
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	Deciduous and mixed forest above 1,000 feet
Beaver	<i>Castor canadensis</i>	Slow moving waterbodies, wetlands
Deer Mouse	<i>Peromyscus maniculatus</i>	Coniferous or mixed forests, edges, and clear cuts
Southern Red-backed Vole	<i>Myodes gapperi</i>	Cool, moist forest with mossy rocks, clear cuts
Meadow Vole	<i>Microtus pennsylvanicus</i>	Open areas such as fields, marshes, and clear cuts
Rock Vole	<i>Microtus chrotorrhinus</i>	Coniferous and mixed forests at higher elevations
Muskrat	<i>Ondatra zibethicus</i>	Marshes and slow waterbodies with cattail

Species	Scientific Name	Habitat Preference
Southern Bog Lemming	<i>Synaptomys cooperi</i>	Marshes, meadows, and mixed woodlands with duff
Northern Bog Lemming	<i>Synaptomys borealis</i>	Sphagnum bogs, black spruce, and hemlock areas
Norway Rat	<i>Rattus norvegicus</i>	Industrial, farm, and residential areas
House Mouse	<i>Mus musculus</i>	Buildings, fields, corncribs
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	Moist, open meadows, shrub swamps, and wooded uplands
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	Meadows, marshes, clear cuts, and wooded areas
Porcupine	<i>Hystricomorph Hystricidae</i>	Mixed or coniferous forest
Coyote	<i>Canis latrans</i>	Forest edge, existing right-of-way (ROW)
Red Fox	<i>Vulpes vulpes</i>	Forest edge, existing ROW, meadows
Gray Fox	<i>Urocyon cinereoargenteus</i>	Dense northern hardwood or mixed forests
Black Bear	<i>Ursus americanus</i>	Mixed Forest and swamps
Raccoon	<i>Procyon lotor</i>	Wooded areas along waterbodies
Marten	<i>Martes americana</i>	Deciduous and coniferous forest
Fisher	<i>Martes pennanti</i>	Mixed and coniferous forest
Ermine	<i>Mustela erminea</i>	Variety of brushy, wooded habitats, close to waterbodies
Long-tailed Weasel	<i>Mustela frenata</i>	Open areas, forest edge, existing ROW
Mink	<i>Neovison vison</i>	Riparian and wetland areas
Striped Skunk	<i>Mephitis mephitis</i>	Open woodlands, meadows
River Otter	<i>Lontra canadensis</i>	Riparian areas and wetlands
Lynx	<i>Felis lynx</i>	Extensive forest
Bobcat	<i>Lynx rufus</i>	Mixed and deciduous forest, brushy fields, swamps
White-tailed Deer	<i>Odocoileus virginianus</i>	Forest edge, coniferous swamps
Moose	<i>Alces alces</i>	Emergent wetlands, waterbodies edges, forest

Source: Devine Tarbell and Association (DTA) 2002; DeGraaf and Rudis 1983.

According to the MDIFW's *Wildlife Habitat Data Web Mapping Application* (MDIFW 2022b), there is a Deer Wintering Area (DWA)<sup>6</sup> (ID:060133) located near the upstream end the Project

<sup>6</sup> DWAs are forested areas used by deer when snow gets more than 12 inches deep in the open and in hardwood stands, when the depth that deer sink into the snow exceeds 8 inches in the open and in hardwood stands, and when mean daily temperature is below 32 degrees F (MDIFW 2019b).

Boundary near Rumford Center. However, this area is located approximately 0.2 mile north of the Project Boundary.

### Avifauna

A wide range of avifauna, including both resident and migratory species, may occur in the Project vicinity. The variety of avian fauna found along the Androscoggin River includes red-winged blackbird (*Agelaius phoeniceus*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaidura macroura*), gray catbird (*Dumetella carolinensis*), belted kingfisher (*Ceryle alcyon*), chimney swift (*Chaetura pelagica*), and warblers (*Dendroica* spp.). Common game birds inhabiting the forested and agricultural lands bordering the Androscoggin River include eastern wild turkey (*Meleagris gallopavo*) and ruffed grouse (*Bonasa umbellus*). Additional avian species that may occur in the vicinity of the Project are noted in Table 5.7-2.

**TABLE 5.7-2  
LIST OF AVIAN SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF THE  
RUMFORD FALLS PROJECT**

Species	Scientific Name	Habitat Preference
Common Loon	<i>Gavia immer</i>	Large waterbodies
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Ponds, marshes with heavy emergent vegetation
American Bittern	<i>Botaurus lentiginosus</i>	Marshes, bogs, and waterbodies
Great Blue Heron	<i>Ardea herodias</i>	Shallow shores of marshes and waterbodies
Wood Duck	<i>Aix sponsa</i>	Shallow water ponds, lakes, and wetlands near wooded areas
American Black Duck	<i>Anas rubripes</i>	Emergent and shrub wetlands, flowages, rivers, and lakes
Mallard	<i>Anas platyrhynchos</i>	Emergent and shrub wetlands, rivers, and lakes
Ring-necked Duck	<i>Aythya collaris</i>	Marshes, bogs, and flowages
Common Goldeneye	<i>Bucephala clangula</i>	Ponds, lakes, and rivers near wooded areas
Hooded Merganser	<i>Lophodytes cucullatus</i>	Wooded ponds, lakes, and rivers
Common Merganser	<i>Mergus merganser</i>	Rivers and lakes
Red-breasted Merganser	<i>Mergus serrator</i>	Rivers and lakes
Osprey	<i>Pandion haliaetus</i>	Near large waterbodies
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Near large waterbodies
Northern Harrier	<i>Circus cyaneus</i>	Meadows, emergent wetlands, bogs
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Isolated forested areas, edges

Species	Scientific Name	Habitat Preference
Cooper's Hawk	<i>Accipiter cooperii</i>	Extensive forests
Northern Goshawk	<i>Accipiter gentilis</i>	Extensive forests
Red-shouldered Hawk	<i>Buteo lineatus</i>	Woodlands, forested wetlands
Broad-winged Hawk	<i>Buteo platypterus</i>	Woodlands, forested wetlands
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Woodlands, ROW corridors, old fields
Rough-legged Hawk	<i>Buteo lagopus</i>	Open fields, marshes
American Kestrel	<i>Falco sparverius</i>	ROW edges, old fields near tree cavities
Ruffed Grouse	<i>Bonasa umbellus</i>	Forested areas with herbaceous openings, ROW edges
Spruce Grouse	<i>Falcapennis canadensis</i>	Dense interior coniferous forest, cedar bogs
Sora	<i>Porzana carolina</i>	Marshes, ponds, swamps, bogs, wet grassy meadows, sloughs having abundant and dense vegetation
Spotted Sandpiper	<i>Actitis macularius</i>	Edges of lakes and rivers
Killdeer	<i>Charadrius vociferus</i>	Barren areas, pastures, gravel pits
Common Snipe	<i>Gallinago gallinago</i>	Marshes, emergent bogs
Herring Gull	<i>Larus argentatus</i>	Large waterbodies
Rock Dove	<i>Columba livia</i>	Near human dwellings
Eastern Screech Owl	<i>Otus asio</i>	Shade trees in towns, orchards, small woodlots, and open woodlands
Great Horned Owl	<i>Bubo virginianus</i>	Interior woodlands, forest edges, wetlands
Barred Owl	<i>Strix varia</i>	Forested wetlands, bottomlands
Long-eared Owl	<i>Asio otus</i>	Dense (usually coniferous) forests or groves
Boreal Owl	<i>Aegolius funereus</i>	Dense coniferous and mixed hardwood forests
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Woodlands, edges
Common nighthawk	<i>Chordeiles minor</i>	Open woodlands, railroad beds, clearings
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Woodlands, edges, swamps
Hairy Woodpecker	<i>Picoides villosus</i>	Forests
Three-toed Woodpecker	<i>Picoides dorsalis</i>	Coniferous forest, clear cuts with dead timber
Black-backed Woodpecker	<i>Picoides arcticus</i>	Coniferous forest, clear cuts with dead timber
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Interior second growth forest, forested wetlands
Eastern Wood Pewee	<i>Contopus virens</i>	Forest interior
Alder Flycatcher	<i>Empidonax alnorum</i>	Shrub wetlands with openings
Least Flycatcher	<i>Empidonax minimus</i>	Deciduous woodlands, edges, forested wetlands
Eastern Phoebe	<i>Sayornis phoebe</i>	Wooded or shrub areas near waterbodies
Great crested Flycatcher	<i>Myiarchus crinitus</i>	Woodlands, forested swamps
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Open woodlands, shrub wetlands

Species	Scientific Name	Habitat Preference
Horned Lark	<i>Eremophila alpestris</i>	Open areas, fields, pastures
Tree Swallow	<i>Tachycineta bicolor</i>	Open areas near water, beaver flowages
Bank Swallow	<i>Riparia riparia</i>	Riverbanks, gravel pits
Cliff Swallow	<i>Hirundo pyrrhonota</i>	Farmlands, villages, cliffs, bridges, dams, fresh or salt-water areas, open forests
Blue Jay	<i>Cyanocitta cristata</i>	Woodlands, towns
Gray Jay	<i>Perisoreus canadensis</i>	Coniferous forest, cedar bogs
American Crow	<i>Corvus brachyrhynchos</i>	Woodlands, ROW corridors
Black-capped Chickadee	<i>Poecile atricapillus</i>	Woodlands, towns
Boreal Chickadee	<i>Poecile hudsonicus</i>	Coniferous forest, spruce bogs
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Deciduous woodlands
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Coniferous Forest
Brown Creeper	<i>Certhia americana</i>	Dense woodlands
House Wren	<i>Troglodytes aedon</i>	Near human dwellings, brushy clearings
Winter Wren	<i>Troglodytes hiemalis</i>	Dense coniferous undergrowth, bog edges
Sedge Wren	<i>Cistothorus platensis</i>	Sedge meadows, shallow sedge marshes with scattered shrubs and little or no standing water, coastal brackish marshes
Marsh Wren	<i>Cistothorus palustris</i>	Marshes
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Coniferous forest
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Coniferous forest, edges
Eastern Bluebird	<i>Sialia sialis</i>	Open woodlands, clearings, edges
Veery	<i>Catharus fuscescens</i>	Moist deciduous woodlands
Swainson's Thrush	<i>Catharus ustulatus</i>	Coniferous forest, near water
Hermit Thrush	<i>Catharus guttatus</i>	Wooded swamps, coniferous edges
Wood Thrush	<i>Hylocichla mustelina</i>	Mature lowland forests, shady, cool, mature upland forests, often near a swamp, pond, stream, or lake
American Robin	<i>Turdus migratorius</i>	Open woodlands, clearings pastures
Gray Catbird	<i>Dumetella carolinensis</i>	Brushy edges, shrub wetlands, clear cuts
Brown Thrasher	<i>Toxostoma rufum</i>	Bushes, low trees, tangle of vines in open pastures or woodland edges and clearings in early stages of second growth
Bohemian Waxwing	<i>Bombycilla garrulus</i>	Unreported
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Open woodlands, open orchards, towns
Northern Shrike	<i>Lanius excubitor</i>	Open woodlands, brushy areas
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Open country with scattered trees, shrubs, roadside hedges

Species	Scientific Name	Habitat Preference
European Starling	<i>Sturnus vulgaris</i>	Towns, farms, and fields
Solitary Vireo	<i>Vireo solitarius</i>	Mixed woodlands with dense understory
Yellow-throated Vireo	<i>Vireo flavifrons</i>	Tall deciduous trees in woodlands with partially opened canopy, seldom in dense forests, rarely in conifers
Philadelphia Vireo	<i>Vireo philadelphicus</i>	Forests, edges, ROW corridors
Red-eyed Vireo	<i>Vireo olivaceus</i>	Open deciduous forest
Nashville Warbler	<i>Vermivora ruficapilla</i>	Moist deciduous forest, edges
Northern Parula	<i>Setophaga americana</i>	Mix forest with old man's beard, forested wetlands
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Coniferous forest, edges
Black-throated Green Warbler	<i>Dendroica virens</i>	Mixed forest, forested wetlands
Blackburnian Warbler	<i>Dendroica fusca</i>	Deep coniferous woods or swampy woods
Palm Warbler	<i>Dendroica palmarum</i>	Bogs and bog edges
Bay-breasted Warbler	<i>Dendroica castanea</i>	Coniferous forest, coniferous shrub areas
Black-and-white Warbler	<i>Mniotilta varia</i>	Forest and second growth
American Redstart	<i>Setophaga ruticilla</i>	Deciduous woodlands, forested wetlands
Ovenbird	<i>Seiurus aurocapillus</i>	Mature deciduous forest, no undergrowth
Northern Waterthrush	<i>Parkesia noveboracensis</i>	Forested wetlands near waterbodies
Mourning Warbler	<i>Oporornis philadelphia</i>	ROW corridors, clear-cuts
Common Yellowthroat	<i>Geothlypis trichas</i>	Shrub wetlands, brushy areas
Wilson's Warbler	<i>Wilsonia pusilla</i>	Bogs, shrub wetlands
Canada Warbler	<i>Wilsonia canadensis</i>	Moist forest with undergrowth, forested wetlands
Scarlet Tanager	<i>Piranga olicacea</i>	Mature deciduous and mixed wood lands, roadside shade trees
Chipping Sparrow	<i>Spizella passerina</i>	Towns, farms, fields
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Brushy areas, clear-cuts, bogs
Dark-eyed Junco	<i>Junco hyemalis</i>	Forest, clearings, ROW edges
Lapland Longspur	<i>Calcarius lapponicus</i>	Cultivated fields, open weedy meadows, beaches, sandy waste places with sparse vegetation
Snow Bunting	<i>Plectrophenax nivalis</i>	Lake shores, salt marshes, open beaches, cultivated fields and windswept grasslands
Bobolink	<i>Dolichonyx oryzivorus</i>	Hayfields, meadows, marshes, fallow fields
Eastern Meadowlark	<i>Sturnella magna</i>	Open farmlands, especially pastures, hayfields and grassy meadows
Common Grackle	<i>Quiscalus quiscula</i>	Farmlands, suburbs, marshes, swamps, meadows at low elevations

Species	Scientific Name	Habitat Preference
Pine Grosbeak	<i>Pinicola enucleator</i>	Northern spruce-fir forests
Purple Finch	<i>Carpodacus purpureus</i>	Edges of coniferous forests, evergreen plantations, ornamental conifers in residential areas, parks, open mixed woodlands
Red Crossbill	<i>Loxia curvirostra</i>	Coniferous forests from wooded marine islands to mountain tops
Common Redpoll	<i>Carduelis flammea</i>	Near alders and birches
Hoary Redpoll	<i>Carduelis hornemanni</i>	Old fields, pastures, and birch or alder swamps
Pine Siskin	<i>Carduelis pinus</i>	Coniferous forests, natural conifer stands or evergreen plantations, alder thickets, weed patches adjacent to forests
American Goldfinch	<i>Carduelis tristis</i>	Open weedy fields, pastures with scattered trees near villages and farms, forest edges, open swamps
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Coniferous forests
House Sparrow	<i>Passer domesticus</i>	Villages, farms, cities, parks

Source: DTA 2002; DeGraaf and Rudis 1983.

According to the MDIFW’s Bald Eagle Nest Locations and Buffer Zones map (MDIFW 2022b), there are no bald eagle nests within the Project Boundary. Two bald eagle nest sites are located in the general Project vicinity; however, the nests and the associated 660-foot buffer zone established around each nest site are outside of the Project Boundary. Nests 586A and 802A are located approximately 2.6 miles downstream and 4.2 miles upstream of the Project Boundary, respectively. The nests were occupied by a breeding pair of bald eagles and were last monitored in 2018 (MDIFW 2022b). Bald eagles prefer large bodies of water containing abundant fish resources and large trees for nesting and perching (DeGraaf and Yamasaki 2001). Although the bald eagle is no longer listed as Federally threatened or endangered, protection continues under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act (MDIFW 2010). The bald eagle was delisted by the State of Maine in 2009.

There was no designated Inland Waterfowl/Wading Bird Habitat located within the Project Boundary (MDIFW 2022b). However, there is some designated habitat located on Logan Brook, a tributary to the Androscoggin River upstream of the Upper Dam, but it is close to a half a mile east of the Project Boundary. These habitats typically include nesting and feeding areas for waterfowl and wading birds.

No Essential Habitats are known to exist within the Project Boundary or vicinity. Essential Habitats are defined by MDIFW as “areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine and which may require special management considerations” (MDIFW 2019b).

### Amphibians and Reptiles

A wide range of amphibian and reptile species may occur in the Project vicinity. Table 5.7-3 lists those amphibian and reptile species that may exist or may utilize habitat in the vicinity of the Project.

**TABLE 5.7-3  
LIST OF AMPHIBIANS AND REPTILES POTENTIALLY OCCURRING IN THE  
VICINITY OF THE RUMFORD FALLS PROJECT**

Species	Scientific Name	Habitat Preference
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Moist areas such as vernal pools and forested wetlands
Spotted Salamander	<i>Ambystoma maculatum</i>	Moist forested areas, vernal pools, marshy areas, mixed woods
Red-spotted Newt	<i>Notophthalmus viridescens</i>	Juveniles (red efts) in moist forested areas, adults in slow moving waters
Northern Dusky Salamander	<i>Desmognathys fuscus</i>	Cool running waters at forest margin
Redback Salamander	<i>Plethodon cinereus</i>	Mixed deciduous woodlands; under decaying logs, rocks, and litter
Four-toed Salamander	<i>Hemidactylum scutatum</i>	Wet forested areas with sphagnum moss, bogs
Northern Spring Salamander	<i>Gyrinophilus porphyriticus</i>	Forested areas with clear, cold water, springs, mountain streams, creeks, boggy areas
Northern Two-lined Salamander	<i>Eurycea bislineata</i>	Floodplains, moist forests near seeps
Eastern American Toad	<i>Bufo a. americanus</i>	Forested habitats, existing ROW
Northern Spring Peeper	<i>Hyla crucifer</i>	Wetlands such as emergent and scrub-shrub, edges of waterbodies
Gray Treefrog	<i>Hyla versicolor</i>	Forested areas, scrub-shrub swamps
Bullfrog	<i>Rana catesbeiana</i>	Shorelines of large waterbodies
Green Frog	<i>Rana clamitans melanota</i>	Riparian areas along waterbodies and shallow pools
Mink Frog	<i>Rana septentrionalis</i>	Margins of ponds, waterbodies
Wood Frog	<i>Rana sylvatica</i>	Forested areas, vernal pools



Species	Scientific Name	Habitat Preference
Northern Leopard Frog	<i>Rana pipiens</i>	Wet open fields, emergent wetlands
Pickerel Frog	<i>Rana palustris</i>	Wet open areas, waterbodies, and pond margins
Common Snapping Turtle	<i>Chelydra serpentina</i>	Permanent waterbodies
Wood Turtle	<i>Glyptemys insculpta</i>	Slow-moving sandy/gravel bottom waterbodies, fields, and woods
Eastern Painted Turtle	<i>Chrysemys picta</i>	Slow, quiet waterbodies
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	Quiet water, preferably shallow areas with dense vegetation
Northern Water Snake	<i>Nerodia sipedon</i>	Permanently flooded wetlands, waterbodies
Northern Redbelly Snake	<i>Storeria occipitomaculata occipitomaculata</i>	Moist woodlands, bogs with sphagnum
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	Variety of terrestrial habitats
Maritime Garter Snake	<i>Thamnophis sirtalis pallidula</i>	Mature hardwood stands and fir stands with mixed understory
Northern Ribbon Snake	<i>Thamnophis sauritus septentrionalis</i>	Sunny areas with low dense vegetation near bodies of shallow quiet water
Northern Ringneck Snake	<i>Diadophis punctatus edwardsii</i>	Shady woodlands and under logs, rocks
Eastern Smooth Green Snake	<i>Ophedryx vernalis vernalis</i>	Upland areas, scrublands, existing ROW
Eastern Milk Snake	<i>Lampropeltis tiangulum</i>	Variety of habitats such as scrublands, woodlands, and ROW edge

Sources: DTA 2002; DeGraaf and Rudis 1983.

### 5.7.1.2 Botanical Resources

Botanical resources of the Project vicinity are typical of rural river valleys with alluvial deposits and rugged hillsides. Portions of the Project vicinity near the Upper Station and Lower Station Developments have been heavily developed for paper production and related industries. The majority of the land adjacent to the Project Boundary upstream of the Upper Dam is pasture and forested lands.

The upland cover types along the Upper Dam impoundment shoreline include a mixture of northern hardwood forest and shrubland (Rumford Falls Power Co. 1991). Red maple (*Acer rubrum*), black cherry (*Prunus serotina*), paper birch (*Betula papyrifera*), American beech (*Fagus grandifolia*), red oak (*Quercus rubra*), and white ash (*Fraxinus americana*) are the dominant overstory trees in these upland hardwood forests, whereas witch-hazel (*Hamamelis virginiana*),

red raspberry (*Rubus idaeus*), broadleaf meadowsweet (*Spiraea latifolia*), sweet fern (*Comptonia peregrina*), staghorn sumac (*Rhus typhina*), and speckled alder (*Alnus incana* ssp. *rugosa*) are the major shrubland species. Upland old fields, shrublands, and northern hardwood forest are more prevalent upslope of the western shorelines (Rumford Falls Power Co. 1991). These areas do not clearly fit into a larger community type description and are small inclusions of variation in the Northern Hardwoods Forest matrix (Gawler and Cutko 2010). The botanical resources within the Project Boundary were evaluated in 1987 and 1988 and a list of vegetation observed within the Project area is provided in Appendix E.2.

### **Invasive Species**

Invasive species are defined as non-indigenous plant or animal species that aggressively compete with native species. These species often out-compete local native species, impacting biodiversity, recreation, and human health. Invasive plants tend to appear on disturbed ground, and the most aggressive have the ability to invade existing ecosystems.

The Maine Department of Agriculture, Conservation and Forestry (MDACF) Advisory List of Invasive Plants (Advisory List) is a list of non-native plants found to pose a threat to habitats and natural resources in Maine. The Advisory List is an informal tool for landowners, wildlife biologists, foresters, land stewards, conservation commissions, and others interested in controlling invasive plants and preventing their spread (MDACF 2021). Table 5.7-4 lists plant species typical of the Project region considered to be severely invasive and very invasive. According to the MDEP (2020), no infestation of aquatic invasive species is known to occur within the boundary of the Project. The Project has not experienced any operational or other issues related to invasive species.

**TABLE 5.7-4  
INVASIVE BOTANICAL SPECIES TYPICAL OF THE PROJECT REGION  
CONSIDERED TO BE SEVERELY INVASIVE AND VERY INVASIVE**

Common Name	Scientific Name
<i>Severely Invasive</i>	
Amur Honeysuckle*	<i>Lonicera maackii</i>
Asiatic Bittersweet*	<i>Celastrus orbiculatus</i>
Black Locust*	<i>Robinia pseudoacacia</i>
Black Swallowwort	<i>Cynanchum louiseae</i>
Bohemian Knotweed	<i>Fallopia x bohemica</i>
Brazilian Waterweed**	<i>Egeria densa</i>
Canada Thistle	<i>Cirsium arvense</i>
Common Buckthorn	<i>Rhamnus cathartica</i>
Common Reed	<i>Phragmites australis</i>
Curly Pondweed**	<i>Potamogeton crispus</i>
Eurasian Milfoil**	<i>Myriophyllum spicatum</i>
European Alder	<i>Alnus glutinosa</i>
European Frog's Bit**	<i>Hydrocharis morsus-ranae</i>
Fanwort**	<i>Cabomba caroliniana</i>
Flowering Rush	<i>Butomus umbellatus</i>
Garlic Mustard*	<i>Alliaria petiolata</i>
Glossy Buckthorn*	<i>Frangula alnus</i>
Goutweed*	<i>Aegopodium podagraria</i>
Hydrilla**	<i>Hydrilla verticillata</i>
Japanese Barberry*	<i>Berberis thunbergii</i>
Japanese Honeysuckle*	<i>Lonicera japonica</i>
Japanese Knotweed*	<i>Fallopia japonica</i>
Morrow's Honeysuckle*	<i>Lonicera morrowii</i>
Ornamental Jewelweed*	<i>Impatiens glandulifera</i>
Pale Swallowwort	<i>Cynanchum rossicum</i>
Parrot Feather**	<i>Myriophyllum aquaticum</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Slender-Leaved Naiad**	<i>Najas minor</i>
Starry Stonewort	<i>Nitellopsis obtusa</i>
Tartarian Honeysuckle*	<i>Lonicera tatarica</i>
Tree Of Heaven*	<i>Ailanthus altissima</i>
Variable Milfoil**	<i>Myriophyllum heterophyllum</i>
Water Chestnut**	<i>Trapa natans</i>
Winged Euonymus*	<i>Euonymus alatus</i>
Yellow Floating Heart**	<i>Nymphoides peltata</i>

Common Name	Scientific Name
Yellow Iris*	<i>Iris pseudacorus</i>
<i>Very Invasive</i>	
Autumn Olive*	<i>Elaeagnus umbellata</i>
Common Barberry*	<i>Berberis vulgaris</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Dame’s Rocket*	<i>Hesperis matronalis</i>
English Water Grass	<i>Glyceria maxima</i>
European Blackberry	<i>Rubus fruticosus</i>
Lesser Celandine	<i>Ficaria verna</i>
Linden Arrowwood	<i>Viburnum dilatatum</i>
Mile-a-minute Vine*	<i>Persicaria perfoliata</i>
Multiflora Rose*	<i>Rosa multiflora</i>
Norway Maple*	<i>Acer platanoides</i>
Privet*	<i>Ligustrum vulgare</i>
Purple Loosestrife*	<i>Lythrum salicaria</i>
Rugosa Rose	<i>Rosa rugosa</i>

Source: MDACF 2021.

Notes:

\*Plant regulated by the Do Not Sell list, Horticulture Program, MDACF.

\*\*Aquatic plant regulated by the MDEP.

### 5.7.2 Environmental Analysis

FERC identified the following potential resource issues related to wildlife and botanical resources in their SD1:

- Effects of Project operation and maintenance on nesting bald eagles, and state-designated significant wildlife habitats including deer wintering areas and inland waterfowl and wading bird habitat.
- Effects of Project transmission line-related electrocution and collision hazards on birds.

Flows on the Androscoggin River are regulated by upstream, non-project, and non-RFH storage reservoirs. RFH operates the Project pursuant to the existing FERC-issued license, which requires the Project to be operated in a run-of-river mode within 1 foot of full pond elevation and to minimize the fluctuations of the reservoir surface elevation at all times. As with any hydropower project, routine maintenance activities are periodically required. Pursuant to the existing FERC-issued license, RFH consults with the appropriate agencies (i.e., USFWS, MDEP, and MDIFW) if

operational requirements in the license need to be temporarily modified for maintenance activities. There are no tree-clearing activities within the Project Boundary.

Although two bald eagle nests were observed in 2018 in the general Project vicinity, the nests and the associated 660-foot buffer zone established around each nest site are well outside of the Project Boundary. Additionally, bald eagles have not been observed to use Project waters regularly nor have nests been observed in the Project Boundary. For these reasons, coupled with the run-of-river operations and limited maintenance activities, the Project is not anticipated to have an effect on bald eagle nests.

Similarly, there are no designated DWAs, Inland Waterfowl/Wading Bird Habitat, or other state-designated significant wildlife areas within the Project Boundary. The closest DWA area and Inland Waterfowl/Wading Bird Habitat to the Project is approximately 0.2 mile and 0.5 mile from the Project Boundary, respectively. Therefore, Project operations (run-of-river mode with limited impoundment fluctuations) are not anticipated to have effects on these, or other wildlife habitats.

A total of four transmission lines exist from the Upper Station, only two of which are energized<sup>7</sup>. There is also a single short transmission line at the Lower Station development. Detailed information on the Project's existing transmission lines is provided in Exhibit A – "Project Description" in this application.

Transmission lines may pose an electrocution and collision risk to birds. Electrocution can occur if a bird simultaneously contacts an energized and/or grounded structure, conductors, hardware, or equipment. There have been no observed instances of bird electrocution at the Project and natural perches are abundant along the shoreline of the Androscoggin River in the Project area.

Transmission lines can also cause mortality of birds through direct collision, which can be affected by a number of biological, environmental, and engineering factors. A substantial portion of the transmission lines at the Project are located away from the water, which has been shown to reduce the potential for collisions (APLIC 2012). Additionally, portions of the transmission lines at the Upper Station are situated within a forested area, which can also reduce the risk of collision

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<sup>7</sup> Line 4 is approximately 3,100 feet long and was owned and abandoned by Catalyst Paper.

because larger birds fly over the tree line and smaller tree-dwelling birds are able to maneuver the lines (APLIC 2012). There has been no evidence of bird collisions along the Project's transmission line corridors.

### **5.7.3 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to wildlife and botanical resources at the Project.

### **5.7.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of wildlife and botanical resources.

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

Wetlands are generally defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Most formal wetland definitions emphasize three primary components that define wetlands: the presence of water, unique soils, and hydrophytic vegetation. The USFWS (Cowardin et al. 1979) defines wetlands as follows:

*Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

MDEP's wetland definition is consistent with the USFWS. The USFWS, MDEP, and the U.S. Army Corps of Engineers (USACE) each have jurisdiction over wetlands within the State of Maine and specifically within the vicinity of the Rumford Falls Project.

Riparian habitats are areas that support vegetation found along waterways such as lakes, reservoirs, rivers, and streams. The boundary of the riparian area and the adjoining uplands is gradual and not always well defined. However, riparian areas differ from the uplands because of their high levels of soil moisture, frequency of flooding, and unique assemblage of plant and animal communities (Virginia State University 2000). These habitats can range from mature forests to areas covered by emergent vegetation and shrubs. Riparian habitats are unique because of their linear form and because they process large fluxes of energy and materials from upstream systems (Mitsch and Gosselink 1993). Riparian areas and the associated vegetation provide important habitat for wildlife and often contain a higher number of species, both plant and animal, than surrounding upland areas due to the proximity to water. These areas are also important avian habitats for resident and migratory birds. Riparian habitats typically function as travel corridors for migratory wildlife species.

### **5.8.1 Wetland and Riparian Vegetation**

Based on a field survey conducted for the previous relicensing in 1987 and 1988, the vegetation along the upstream portion of the Upper Dam impoundment is comprised of shoreline riparian cover types. Due to the stable water level regime of the impoundment, shoreline vegetation is not usually subject to flooding. Silver maple (*Acer saccharinum*), red maple (*A. rubrum*), speckled alder (*Alnus incana* ssp. *rugosa*), red-osier dogwood (*Cornus sericea*), and pickerelweed (*Pontederia cordata*) were some of the prevalent species in the riparian shorelines. Some of the shoreline is not vegetated and there are small sections of upland herbaceous cover including grasses, goldenrod, and other typical old field species (Rumford Falls Power Co. 1991).

Palustrine (i.e., freshwater) forested wetland habitat is characterized by woody vegetation that is 6 meters tall or taller. Palustrine wetlands, often called fens, swamps, marshes, or bogs, are non-tidal wetlands. These wetlands are dominated by trees, shrubs, and/or persistent plants and mosses. These wetlands may also be composed of shallow, open-water ponds. Palustrine wetlands are often situated shoreward of lakes, river channels, on river floodplains, in isolated catchments, or on slopes. They may also occur on islands in lakes or rivers (Cowardin et al. 1979). Forested wetlands are most common in the eastern United States and in those sections of the west where moisture is relatively abundant, particularly along rivers and in the mountains. With the exception of the riverine and a small area of lacustrine wetlands underlying the Project's impoundment, all

wetlands mapped within the Project's vicinity are categorized as palustrine. Some common canopy species occurring in forested wetlands included red maple, box-elder (*Acer negundo*), eastern hemlock (*Tsuga canadensis*), and yellow birch (*Betula alleghaniensis*). Common shrub and herbaceous species included various willows (*Salix* spp.), sweetgale (*Myrica gale*), steeplebush (*Spiraea tomentosa*), jewelweed (*Impatiens capensis*), cinnamon fern (*Osmundastrum cinnamomeum*), sensitive fern (*Onclea sensibilis*), and poison ivy (*Toxicodendron radicans*).

Palustrine emergent wetlands are areas characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et al. 1979). Emergent wetlands include areas commonly referred to as marshes and wet meadows. Surface water inundation may be relatively brief (less than three months) to permanent, but water depth is sufficiently shallow (usually less than 3 feet) so that rooted plants are emergent in at least part of the wetland. Common wetland plants include cinnamon fern, royal fern (*Osmunda spectabilis*), sensitive fern, bluejoint (*Calamagrostis canadensis*), tussock sedge (*Carex stricta*), and pickerelweed.

The shoreline vegetation of the Androscoggin River from the Upper Dam to the Railroad Street Bridge is dominated by forested cover types. Since most of this shoreline is not subject to flooding, upland slope forests are prevalent. Yellow birch, paper birch, red maple, quaking aspen (*Populus tremuloides*), black willow (*Salix nigra*), red oak, white ash, black cherry, box-elder, hemlock, white pine (*Pinus strobus*), and big-toothed aspen (*Populus grandidentata*) are the principal overstory trees in these forests. Forested areas do not extend far beyond the river's edge for the most part due to extensive business, industrial, and residential development in this area (Rumford Falls Power Co. 1991).

### **5.8.2 Wetland and Riparian Wildlife**

Lists of wildlife known to occur in wetland and riparian habitats in the Project vicinity are not available; however, many of the species likely to occur in the Project vicinity typically use wetland or riparian habitats at some time during their lives. Wildlife that may occur in the wetland habitats of the Project vicinity include mammals listed in Table 5.7-1, birds listed in Table 5.7-2, and the amphibians and reptiles listed in Table 5.7-3.

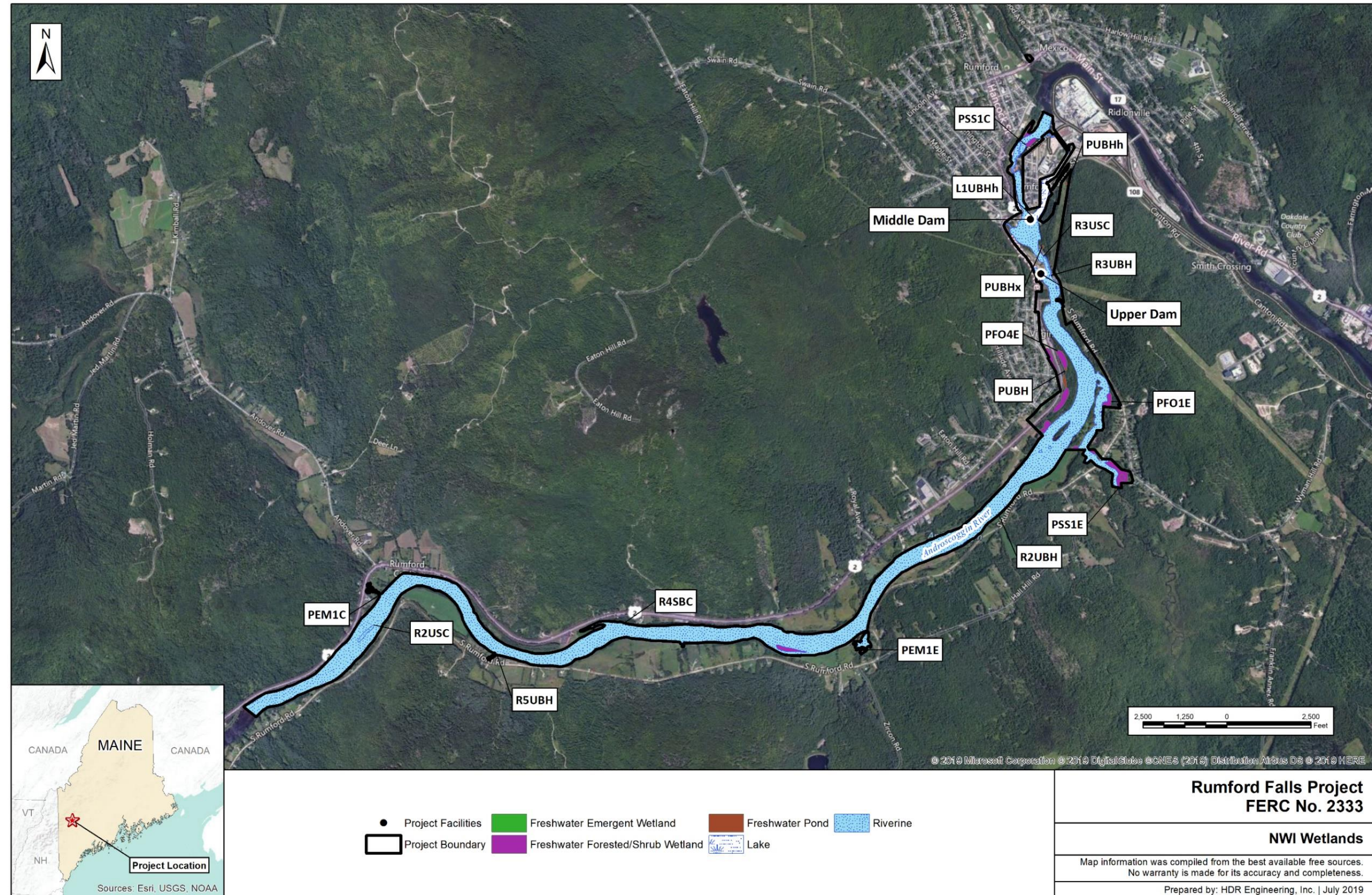


### **5.8.3 Wetland, Riparian, and Littoral Map**

A map of wetland habitats in the Project vicinity is presented in Figure 5.8-1. Based on USFWS National Wetland Inventory (NWI) mapping, wetlands along the Project portion of the Androscoggin River primarily consist of confined narrow bands adjacent to the river. Table 5.8-1 defines USFWS's NWI classification system used on the wetlands map and provides the acreage of each classification of wetlands within the Project Boundary. There are approximately 465 acres of NWI-mapped wetlands within the Project Boundary, about 430 of which are permanently flooded, lower perennial riverine habitat with unconsolidated bottom (R2UBH).



**FIGURE 5.8-1  
NWI WETLANDS MAPPED WITHIN THE PROJECT BOUNDARY**





**TABLE 5.8-1  
NATIONAL WETLAND INVENTORY CLASSIFICATIONS OCCURRING IN THE  
PROJECT BOUNDARY**

Wetlands Code	System	Subsystem	Class	Subclass	Regime	Qualifier	Estimated Acres
L1UBHh	Lacustrine	Limnetic	Unconsolidated Bottom	N/A	Permanently Flooded	Diked/Impounded	7.33
PEM1C	Palustrine	N/A	Emergent	Persistent	Seasonally Flooded	--	0.12
PEM1E	Palustrine	N/A	Emergent	Persistent	Seasonally Flooded/Saturated	--	0.11
PFO1E	Palustrine	N/A	Forested	Broad-Leaved Deciduous	Seasonally Flooded/Saturated	--	2.90
PFO4E	Palustrine	N/A	Forested	Needle-Leaved Evergreen	Seasonally Flooded/Saturated	--	3.40
PSS1C	Palustrine	N/A	Scrub-Shrub	Broad-Leaved Deciduous	Seasonally Flooded	--	1.75
PSS1E	Palustrine	N/A	Scrub-Shrub	Broad-Leaved Deciduous	Seasonally Flooded/Saturated	--	11.57
PUBH	Palustrine	N/A	Unconsolidated Bottom	N/A	Permanently Flooded	--	0.71
PUBHh	Palustrine	N/A	Unconsolidated Bottom	N/A	Permanently Flooded	Diked/Impounded	0.10
PUBHx	Palustrine	N/A	Unconsolidated Bottom	N/A	Permanently Flooded	Excavated	0.11
R2UBH	Riverine	Lower Perennial	Unconsolidated Bottom	N/A	Permanently Flooded	--	430.26
R2USC	Riverine	Lower Perennial	Unconsolidated Shore	N/A	Seasonally Flooded	--	4.17
R3UBH	Riverine	Upper Perennial	Unconsolidated Bottom	N/A	Permanently Flooded	--	0.56
R3USC	Riverine	Upper Perennial	Unconsolidated Shore	N/A	Seasonally Flooded	--	1.80
R4SBC	Riverine	Intermittent	Streambed	N/A	Seasonally Flooded	--	0.01
R5UBH	Riverine	Unknown Perennial	Unconsolidated Bottom	N/A	Permanently Flooded	--	0.35

Sources: USFWS 2016; Cowardin et al. 1979.

#### 5.8.4 Environmental Analysis

FERC identified the following potential resource issue related to wetlands, riparian, and littoral habitat in their SD1:

- Effects of Project operation and maintenance on riparian, littoral, and forested/shrub wetland habitats and associated wildlife.

Hydropower projects have the potential to affect wetland, riparian, and littoral habitats and wetland-associated wildlife through impoundment fluctuations and/or river flows. Flows on the Androscoggin River are regulated by upstream, non-project, and non-Rumford Falls Hydro storage reservoirs. RFH operates the Project pursuant to the existing FERC-issued license, which requires the Project to be operated in a run-of-river mode within 1 foot of full pond elevation and to minimize the fluctuations of the reservoir surface elevation at all times. As with any hydropower project, maintenance activities are periodically required. Pursuant to the existing FERC-issued license, RFH consults with the appropriate agencies (i.e., USFWS, MDEP, and MDIFW) if operational requirements in the license need to be temporarily modified for maintenance activities. Additionally, the state of Maine has a mandatory shoreline zoning ordinance that regulates a 250-foot buffer zone and there are no tree-clearing activities within the Project Boundary. Therefore, the Project is not anticipated to have an effect on wetland, riparian, and littoral habitats.

### **5.8.5 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to wildlife and botanical resources at the Project.

### **5.8.6 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of wetlands, riparian, and littoral resources.

## **5.9 Rare, Threatened, Endangered and Protected Species**

### **5.9.1 Affected Environment**

#### **5.9.1.1 Federally-Listed Threatened, Endangered, and Candidate Species**

On July 23, 2019, HDR, on behalf of RFH, requested information on species listed under the ESA and critical habitat from the USFWS. HDR also requested information on ESA species and EFH from the NMFS. The USFWS responded in a letter dated July 25, 2019, and directed the request to the USFWS Maine Field Office *Species List and Project Reviews* website. Based on guidance provided on this website, information obtained on February 8, 2022 (Appendix E.1), from the Information for Planning and Consultation (IPaC) system was used to confirm if there are listed

or candidate species or critical habitat present in the Project area (USFWS 2022). In response to this query, the USFWS identified one threatened, one endangered, and one candidate species as potentially occurring within the Project area (Table 5.9-1).

**TABLE 5.9-1  
FEDERALLY-LISTED OR CANDIDATE SPECIES IDENTIFIED AS POTENTIALLY  
OCCURRING WITHIN THE PROJECT BOUNDARY**

Common Name	Scientific Name	Status	Critical Habitat in the Project Boundary
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	None
Atlantic Salmon	<i>Salmo salar</i>	Endangered	None
Monarch Butterfly	<i>Danaus plexippus</i>	Candidate	None

Source: USFWS IPaC consultation (USFWS 2022).

Rumford Falls was the natural barrier to Atlantic salmon (Foster and Atkins 1868; as cited in MDMR et al. 2017). According to a letter dated September 19, 2019, NMFS indicated that the Middle and Upper Dams of the Project are within the listed area of the Federally endangered distinct population segment (DPS) of Atlantic salmon. EFH designated under the Magnuson-Stevens Fishery Conservation and Management Act or established by the NMFS has been identified as existing downstream of the Upper Dam of the Rumford Falls Project. The area upstream of the Upper Dam of the Project is considered outside of the DPS (NMFS 2019).

Given that the IPaC search indicated that Atlantic salmon could potentially occur in the Project area and that NMFS has designated EFH downstream of the Upper Dam, this species is being included in Table 5.9-1. However, given the number of natural and man-made barriers with no upstream fish passage located on the river downstream of the Project, as well as there being no record of Atlantic salmon being caught in the river upstream of Lewiston Falls since 1815, for the purpose of this relicensing, Atlantic salmon is not considered a species potentially occurring within the Project Boundary. See Section 5.6 of this Exhibit E for additional information regarding EFH. In addition, as a candidate species, the Monarch Butterfly is not being discussed at this time.

Although the bald eagle is no longer listed as Federally threatened or endangered, protection continues under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the

Lacey Act (MDIFW 2010). The bald eagle was delisted by the State of Maine in 2009 and is discussed further in Section 5.7 of this Exhibit E.

#### 5.9.1.2 State-Listed Threatened, Endangered, and Candidate Species

On July 23, 2019, HDR, on behalf of RFH, requested information on threatened, endangered, and special concern species and habitats from the MDIFW and MDACF. On August 16, 2019, MDIFW responded to the request for information on RTE species and habitats. MDIFW indicated that the state-listed species and species of concern listed in Table 5.9-2 potentially occur in the general vicinity of the Project.

**TABLE 5.9-2  
STATE-LISTED SPECIES AND SPECIES OF CONCERN IDENTIFIED AS  
POTENTIALLY OCCURRING WITHIN THE PROJECT BOUNDARY**

Common Name	Scientific Name	Status
Creeper	<i>Strophitus undulatus</i>	Special Concern
Little Brown Bat	<i>Myotis lucifugus</i>	Endangered
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Endangered
Eastern Small-footed Myotis	<i>Myotis leibii</i>	Threatened
Big Brown Bat	<i>Eptesicus fuscus</i>	Special Concern
Red Bat	<i>Lasiurus borealis</i>	Special Concern
Hoary Bat	<i>Lasiurus cinereus</i>	Special Concern
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Special Concern
Tri-colored Bat	<i>Perimyotis subflavus</i>	Special Concern

Source: MDIFW 2019c.

On August 8, 2019, the MDACF responded to the request for information from the Maine Natural Areas Program regarding state-listed threatened, endangered, and special concern species, critical habitats, and other important natural communities that may occur in the Project vicinity. The MDACF specified that there are no rare botanical features specifically within the Project area but provided a list of rare and exemplary botanical features documented to occur within the vicinity of the Project (Table 5.9-3).

**TABLE 5.9-3  
RARE BOTANICAL SPECIES THAT MAY OCCUR IN THE PROJECT VICINITY**

Common Name	Scientific Name	State Status	State Rank <sup>1</sup>	Habitat
Auricled Twayblade	<i>Neottia auriculata</i>	Threatened	S2	Non-tidal rivershore (non-forested, seasonally wet), forested wetland
Fern-leaved False Foxglove	<i>Aureolaria pedicularia</i>	Special Concern	S3	Dry barrens (partly forested, upland), hardwood to mixed forest (forest, upland)
Few-flowered Spikerush	<i>Eleocharis quinqueflora</i>	Special Concern	S2	Non-tidal rivershore (non-forested, seasonally wet)
Fragrant Wood Fern	<i>Dryopteris fragrans</i>	Special Concern	S3	Rocky summits and outcrops (non-forested, upland), Alpine or subalpine (non-forested, upland)
Sandbar Willow	<i>Salix exigua</i>	Endangered	S1	Non-tidal rivershore (non-forested, seasonally wet)
Slippery Elm	<i>Ulmus rubra</i>	Potentially Extirpated	SH	Hardwood to mixed forest (forest, upland)

Source: personal communication, Kristen Puryear, MDACF, 2019.

<sup>1</sup> S1 - Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

S2 - Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 - Rare in Maine (20-100 occurrences).

SH - Possibly Extinct and known from only historical occurrences but still some hope of rediscovery.

### 5.9.1.3 Habitat Requirements and Temporal/Spatial Distribution of Rare, Threatened, Endangered Species

#### Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is found across much of eastern and north-central United States and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and British Columbia. It is a medium-sized bat, measuring 3 to 3.7 inches, with a wingspan of 9 or 10 inches. Its fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. The bat is distinguished by its long ears relative to other bats in the genus *Myotis* (USFWS 2019).

The northern long-eared bat spends winters hibernating in caves and mines, preferring hibernacula with very high humidity. During the summer months, the northern long-eared bat prefers to roost singly or in colonies underneath bark, in cavities, or in the crevices of live or dead trees. Breeding begins in late summer or early fall when males swarm near hibernacula. After a delayed fertilization, pregnant females migrate to summer colonies where they roost and give birth to a

single pup. Young bats start flying 18 to 21 days after birth, and adult northern long-eared bats can live up to 19 years (USFWS 2019).

Northern long-eared bats emerge at dusk and fly through the understory of forested hillsides feeding on moths, flies, leafhoppers, caddisflies, and beetles. They also feed by gleaning motionless insects from vegetation and water (USFWS 2019).

White-nose syndrome is the greatest immediate threat for the northern long-eared bat. As a result of this disease, numbers have declined by 99 percent in the northeast. Other significant sources of mortality include impacts to hibernacula from human disturbance. Loss or degradation of summer habitat as a result of highway or commercial development, timber management, surface mining, and wind facility construction and operation also contribute to mortality (USFWS 2019).

### **Atlantic Salmon**

Historically, Rumford Falls was known as the natural barrier to Atlantic salmon, which have not been caught upstream of Lewiston Falls since 1815. Therefore, this species is not discussed in greater detail.

#### **5.9.1.4 Biological Opinions, Status Reports, and Recovery Plans**

Several biological opinions, status reports, and recovery plans have been developed for Atlantic salmon, and several biological opinions have been developed for the northern long-eared bat; however, none of these biological opinions, status reports, or recovery plans for northern long-eared bats are specific to the Project vicinity. Atlantic salmon are not found within the Project vicinity.

#### **5.9.1.5 Designated Critical Habitat**

When a species is proposed for listing as endangered or threatened under the ESA, the USFWS or NMFS must consider whether there are areas of habitat believed to be essential to the species' conservation. Those areas may be proposed for designation as critical habitat. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Based on a review of USFWS's IPaC report, no critical habitat has been designated within the Project Boundary for



either of the identified species (USFWS 2022). NMFS stated in their September 19, 2019 letter that the Project does not occupy any listed critical habitat for Atlantic salmon (NMFS 2019).

### **5.9.2 Environmental Analysis**

FERC identified the following potential resource issue related to threatened and endangered species in their SD1:

- Effects of Project operation and maintenance on the Federally threatened northern long-eared bat and the Federally endangered Atlantic salmon Gulf of Maine Distinct Population Segment.

Project operations and maintenance are not expected to affect Atlantic salmon or the northern long-eared bat.

There are no tree-clearing activities within the Project Boundary. Therefore, the occurrence and distribution of RTE and protected species in the vicinity of the Project is not related to Project operations. Additionally, there are no known hibernacula or roost trees for any of the federal- or state-listed bat species. However, should RFH need to perform maintenance activities within the Project area that could affect bat habitat, such as tree clearing, RFH will perform the required consultation pursuant to applicable federal and state laws and regulations.

As stated previously, Rumford Falls was the natural barrier to Atlantic salmon (Foster and Atkins 1868; as cited in MDMR et al. 2017) and there is no record of Atlantic salmon being caught in the river upstream of Lewiston Falls, which is located approximately 58 RM downstream from the Project, since 1815 (Foster and Atkins 1868; as cited in MDMR et al. 2017). In addition, a number of dams downstream of Rumford do not have upstream fish passage.

### **5.9.3 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to RTE and protected species.

## **5.9.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of RTE or protected species.

## **5.10 Recreation and Land Use**

### **5.10.1 Affected Environment**

#### **5.10.1.1 Regionally or Nationally Important Recreation Areas in the Project Vicinity**

There are numerous all-season outdoor recreation opportunities located within a relatively short drive of the Project area (within approximately 50 miles). In the immediate Project vicinity, Black Mountain of Maine is a popular family alpine, Nordic, and backcountry ski and snowboard mountain providing over 50 trails (Maine Office of Tourism 2022). Snowmobiling is another popular winter activity in the Project vicinity, with a vast network of trails within the Town of Rumford as well as neighboring towns (River Valley Chamber of Commerce 2019; Maine Office of Tourism 2022). Similarly, there are over 1,000 miles of ATV trails available in the Rumford and Androscoggin River Valley area (Maine Office of Tourism 2022).

In addition to the winter recreation opportunities and motorsport trails available in the Project vicinity, there are many hiking and camping areas within a two-hour drive or less of the Project area. For example, the Rumford Whitecap Mountain Preserve includes two moderate difficulty scenic trails (Maine Office of Tourism 2022). Other popular hiking trails within a short drive of the Project area include the Mount Zircon Trail, Glassface Ledges Trail, and Mystery Mountain. Additional large outdoor recreation areas within an approximately 2-hour drive includes the Mahoosuc Public Land Reserve (MDACF 2013a), Umbagog National Wildlife Refuge (USFWS Undated), Mount Blue State Park (MDACF 2013b), and the Bigelow Preserve (MDACF 2013c). These recreation areas provide opportunities for wildlife viewing, hiking, camping, fishing, boating, hunting, mountain biking, snowshoeing, backcountry skiing, and more. In addition, the White Mountain National Forest in Maine and New Hampshire provides ample hiking, camping, and other recreational opportunities (Forest Service Undated).

According to American Whitewater (Undated), there is a 12-mile reach of Class II-III rapids on the Swift River upstream of the confluence with the Androscoggin. Other Class II-III reaches

within a relatively short drive of the Project area includes the Webb River (5-mile reach), Bear River (7.6-mile reach), and Sunday River (7.6-mile reach). Class IV-V+ reaches in the vicinity includes Black Brook (8-mile reach) and Bull Branch of Sunday River (2-mile reach). Commercial whitewater trips are available through a variety of outfitters on the Androscoggin River upstream of the Project area in New Hampshire.

#### 5.10.1.2 Existing Recreation Facilities and Opportunities within the Project Vicinity

There is one FERC-approved recreation facility at the Project, a carry-in canoe facility at the Carlton Bridge, located on the eastern edge of the Swift River just upstream of its confluence with the Androscoggin River (Figure 5.10-1 and Figure 5.10-2). In addition, RFH-owned sites or facilities, which are non-FERC-approved recreation facilities include:

- Rumford Falls Trail – a trail through the Project area<sup>8</sup>;
- Logan Brook Access – boat access off of Logan Brook near its confluence with the Androscoggin River;
- West Viewing Area – overlook located at the Upper Dam powerhouse<sup>9</sup>;
- ATV trail – trail used to pass by foot, ATV, or snowmobile;
- Veteran’s Park – park in the Town of Rumford; and
- Wheeler Island – an island located in the Upper Dam impoundment.

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<sup>8</sup> Access to a portion of the Rumford Falls Trail has been limited due to public safety concerns. RFH continues to work with the Town of Rumford and other stakeholders to evaluate the feasibility of reopening a portion of the Rumford Falls Trail. In addition, in consultation with the Town of Rumford, RFH plans to complete the development of an alternate trail in the spring of 2022. The alternate trail will run parallel to the gated portion of the existing trail, allowing residents and visitors to complete the Rumford loop with views of the upper falls from the river right.

<sup>9</sup> Access to the West Viewing Area has been limited due to public safety concerns associated with the site’s proximity to the powerhouse. These concerns are being evaluated as part of the Recreation Study.

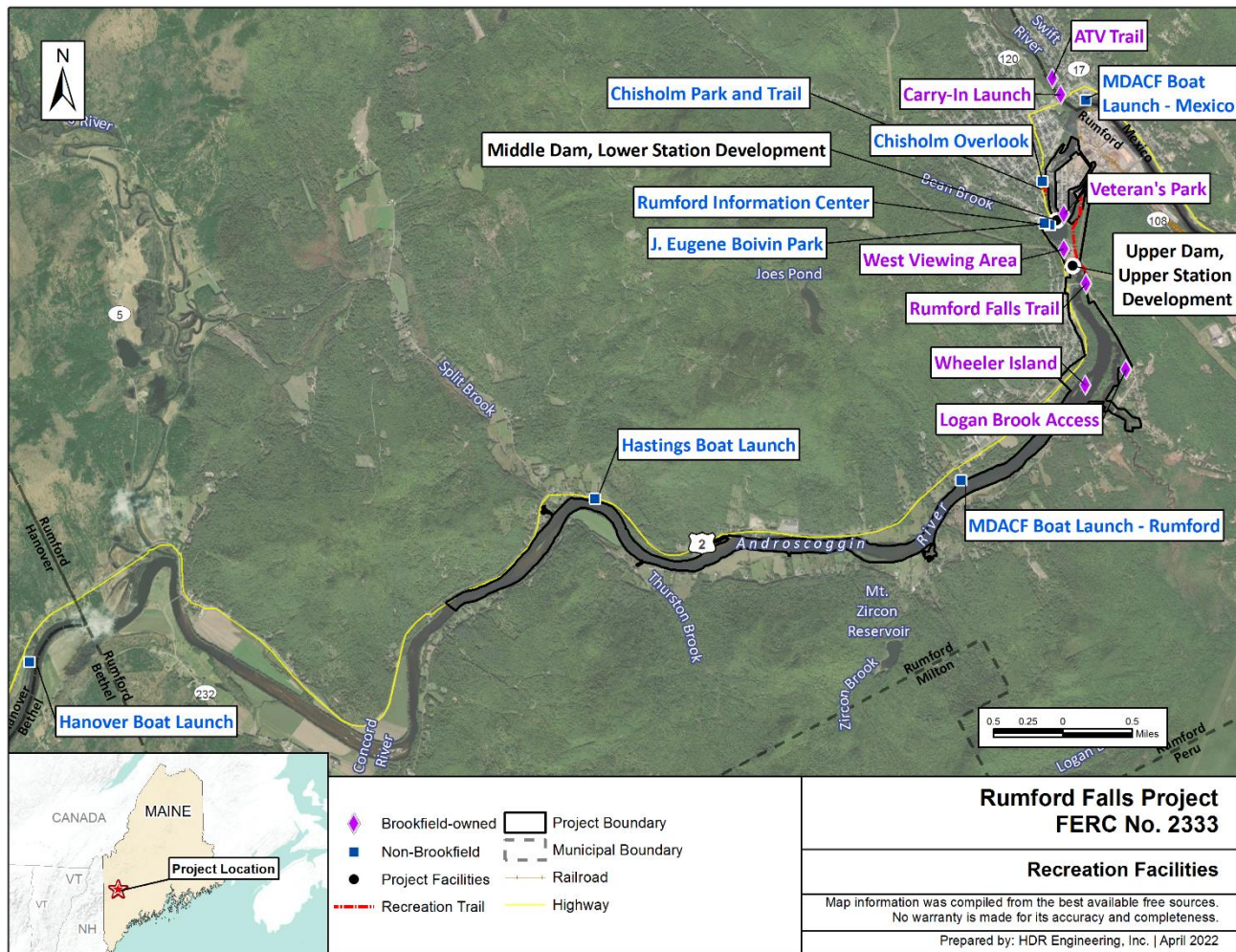
Non-FERC-approved recreation sites identified in Figure 5.10-1, which are not owned or operated by RFH, and provide access to Project lands and waters include (Figure 5.10-1 and Figure 5.10-2):

- Hanover Boat Launch<sup>10</sup>;
- Hastings Boat Launch;
- MDACF Boat Launch in Rumford;
- J. Eugene Boivin Park;
- Rumford Information Center;
- Chisholm Park and Trail;
- Chisholm Overlook; and
- MDACF Boat Launch in Mexico.

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<sup>10</sup> This site was required under Article 408 of the existing license, which was sold by RFPC to the MDIFW and the Town of Hanover in 1999-2000.

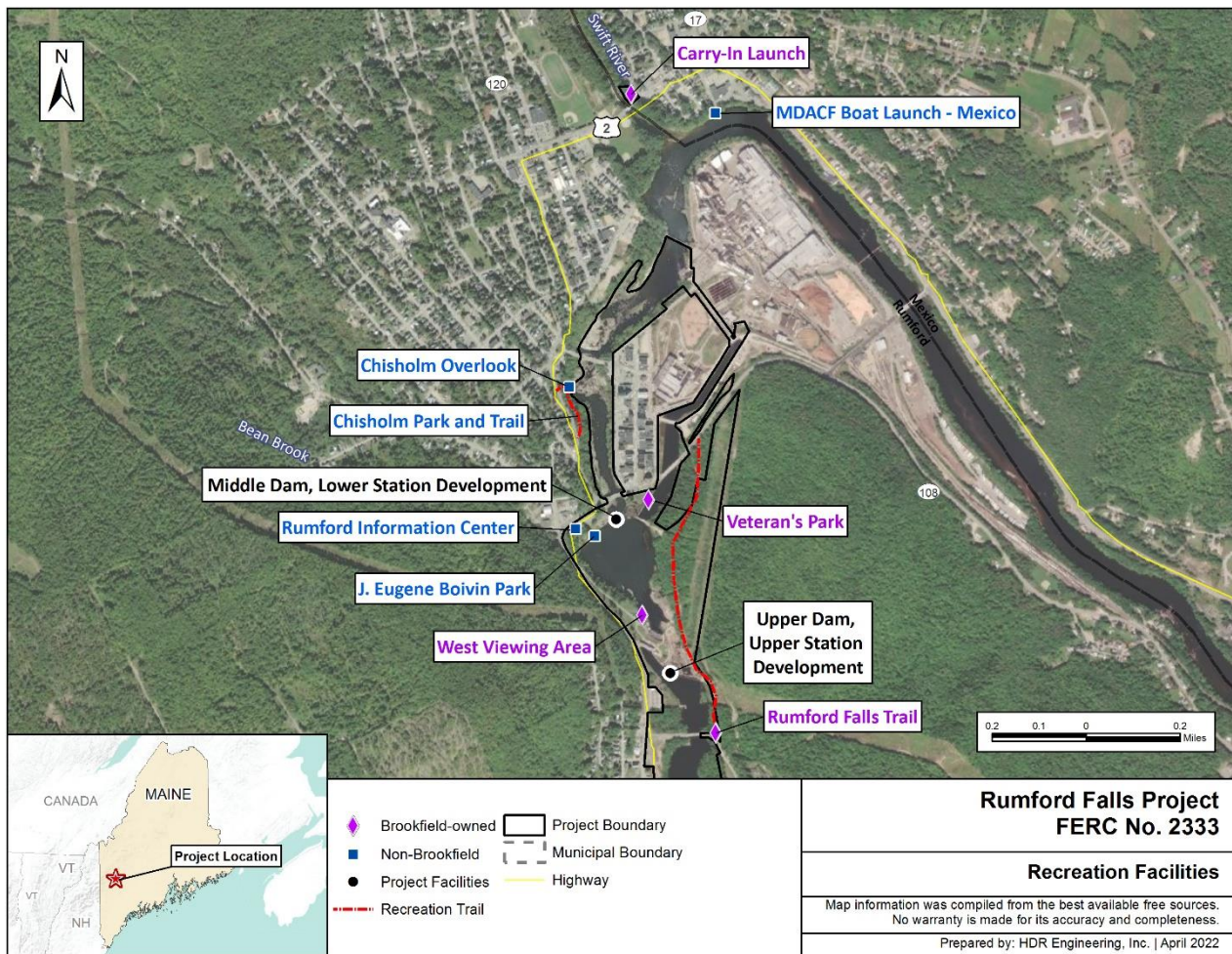
**FIGURE 5.10-1  
RECREATION FACILITIES IN THE PROJECT BOUNDARY  
AND PROJECT VICINITY\***



\*Access to the Rumford Falls Trail have been limited due to public safety concerns. There are also public safety concerns regarding the West Viewing Area due to the proximity of the site to the powerhouse, which are being evaluated as part of the Recreation Study.



**FIGURE 5.10-2  
RECREATION FACILITIES IN THE PROJECT BOUNDARY AND  
PROJECT VICINITY – PROJECT AND TOWN FOCUS\***



The Recreation Study for the Project was postponed to 2022 due to concerns regarding safety and data representativeness associated with the ongoing COVID-pandemic. This study will provide information on current recreation facilities, use, and opportunities pursuant to RFH's July 7, 2020 RSP, as approved with modification in the FERC's August 6, 2020 SPD.

#### 5.10.1.3 Current Project Recreation Use Levels

Recreation use levels have been documented as previously required in the FERC Licensed Hydropower Development Recreation Report (FERC Form 80). The most recent FERC Form 80 was filed with FERC in 2015 for Reporting Year 2014. The number of annual visits to the recreation areas at the Rumford Falls Project was estimated to be 5,410 daytime and zero nighttime visits in 2014. The recreation facilities did not appear to be utilized to the maximum capacity, with 30 percent utilization or less at all sites.

#### 5.10.1.4 Existing Shoreline Buffer Zones within the Project Boundary

RFH maintains a buffer zone above the Upper Dam impoundment that extends about one mile along both shorelines. The buffer zone is 10 to 800 feet wide and is accessible to the public from either U.S. Route 2 or Maine Route 120. Most of the remaining land adjacent to the shoreline and within the Project Boundary is owned by private individuals and the Town of Rumford. In addition, the state of Maine has a mandatory shoreline zoning ordinance that regulates a 250-foot buffer zone.

#### 5.10.1.5 Recreation Needs Identified in Management Plans

The *2020-2024 Maine State Comprehensive Outdoor Recreation Plan (SCORP)* identifies recreation needs for the State and New England as a whole but does not contain any recommendations or assessments that are specific to the Project area. The SCORP identifies recreation aspects of statewide importance and which of those will be addressed through Maine's share of the Federal Land and Water Conservation Fund grants. The 2009-2014 SCORP reports that Maine residents participate in outdoor recreation activities at an overall higher rate than both national and regional averages. Maine participation rates are especially high in nature-based activities (Maine Bureau of Parks and Land [BPL] 2019).

The five top issues of statewide importance identified in the plan include:

- Support active, engaged communities
- Address workforce attraction through outdoor recreation
- Sustain and grow tourism
- Promote ecological and environmental resilience
- Invest in maintenance and stewardship

From March through May 2019, an online survey was administered on outdoor recreation to inform the SCORP planning process. The survey examined recreational preferences in terms of outdoor recreation activities, amenities and settings, and Maine State Park use and perceptions of services offered. Results from the online survey indicated over three quarters of respondents were satisfied with the availability of outdoor recreation opportunities in their community. Additionally, almost all of the respondents were satisfied with the availability of outdoor recreation opportunities in Maine (Maine BPL 2019).

#### 5.10.1.6 Licensee’s Shoreline Permitting Policies

The Project Boundary adheres to the highwater elevation along both of the Project’s impoundments and follows close to the shoreline of the Androscoggin River in other locations. Therefore, RFH owns minimal land in the Project vicinity surrounding the impoundment. Zoning along the impoundment is regulated by municipal zoning ordinances as required by State Law. The land within 250 feet of the impoundment is subject to each town’s Shoreline Zoning Ordinance.

#### 5.10.1.7 Specially Designated Recreation Areas in or Adjacent to the Rumford Falls Project or in the Project Vicinity

### **National Wild and Scenic River System**

The Androscoggin River is not designated as part of, and is not under study for inclusion in, the National Wild and Scenic River System.

### **Nationwide Rivers Inventory**

The Androscoggin River upstream and downstream of the Rumford Falls Project has been listed by the National Park Service (NPS) on the Nationwide Rivers Inventory (NRI). The description of



the river reach and outstandingly remarkable values identified by the NPS for these sections of the river are detailed below.

The reach from Hastings Island to South of Rumford Center (upstream of the Project) has been listed in the NRI for its hydrologic value. The 17-mile reach of river is a sparsely-developed, high-order river. Segments in this reach include the Lovejoy Bridge and the Sunday River Bridge, both are National Historic Register Sites. A small portion (<1 mile) of this reach within the upper end of the 6-mile-long Upper Dam impoundment is included within the Project Boundary (NPS 2019).

A 16-mile reach from Southeast of Dixfield to Bean Island (downstream of the Project) has also been listed in the NRI for its hydrologic value as a sparsely-developed, high-order river. This reach of the Androscoggin River is outside of the Project Boundary (NPS 2019).

#### 5.10.1.8 National Trails System and Wilderness Areas

The Rumford Falls Project is not located within or adjacent to lands included in, or under study for inclusion in, the National Trails System or designated as, or under study for inclusion as, a Wilderness Area.

#### 5.10.1.9 Scenic Byways

There are no Federally designated scenic byways in the vicinity of the Project.

#### 5.10.1.10 Recreational and Non-Recreational Land Use and Management Adjacent to the Project Boundary

Land use in the general vicinity of the Project facilities is considered urban and use is primarily industrial and commercial. Along the Upper Dam impoundment, the land is rural and primarily used for agriculture. There is limited recreational land use adjacent to the Project Boundary.

#### 5.10.1.11 Non-Recreational Land Use and Management within the Project Boundary

Beyond lands needed for Project operations, RFH owns minimal land associated with the Project or located within the Project Boundary. There is no “non-recreational land use” within the Project Boundary.

### **5.10.2 Environmental Analysis**

FERC identified the following potential resource issues related to recreation and land use resources in their SD1:

- Effects of Project operation on recreational use in the Project area, including the adequacy of existing recreational access and facilities in meeting recreation needs.
- The need to and feasibility of rehabilitating and reopening the viewing area of Rumford Falls at the upper development and the Rumford Falls Trail.

The Recreation Study, which will include the Rumford Falls Trail, and Angler Creel Survey were postponed to 2022 due to concerns regarding safety and data representativeness associated with the ongoing COVID-pandemic. The associated study reports will be filed with the Commission soon after the studies are completed as a supplement to the FLA and will evaluate the potential resource issues identified by the Commission in SD1.

RFH continues to work with the Town of Rumford and other stakeholders to evaluate the feasibility of reopening a portion of the Rumford Falls Trail. In the interim, and in consultation with the Town of Rumford, RFH plans to complete the development of an alternate trail in the spring of 2022. The alternate trail will run parallel to the gated portion of the existing trail allowing residents and visitors to complete the Rumford loop with views of the upper falls from the river right.

RFH will also complete the Whitewater Boating Study in 2022 and the associated study report will be filed with the Commission with the USR on or before August 7, 2022, and will be incorporated into the FLA.

### **5.10.3 Proposed Environmental Measures**

RFH will complete the above-mentioned studies prior to determining if any measures related to recreation and land use resources at the Project are warranted. RFH plans to work with FERC, resource agencies, local government, and other stakeholders to develop a Recreation Management Plan that will use information gathered in the 2022 Recreation Study.

#### **5.10.4 Unavoidable Adverse Impacts**

Continued operation of the Project will not result in any unavoidable adverse impacts of recreation and land use resources.

### **5.11 Aesthetic Resources**

#### **5.11.1 Affected Environment**

The Project facilities and the Middle Dam impoundment are situated in an urban river setting and have been part of the Rumford, Maine, environment for over 100 years. The Upper Dam impoundment is bordered by forested areas and farmlands, which offer scenic views from the water or nearby roads.

The 650-foot-long bypass reach below the Upper Dam, which is known as Rumford Falls, consists of exposed bedrock over which water from spillage and leakage flows at a steep gradient. The 2,865-foot-long bypass reach below the Middle Dam includes pools, bedrock outcroppings, and steep cascades. The natural cascades within the bypass reaches are the prominent aesthetic resources at the Project and offer scenic views. The cascades within the Middle Dam bypass reach can be viewed from the Memorial Bridge, looking both upstream and downstream (FERC 1993).

In 1989, the previous licensee conducted a study to evaluate the appropriate flow requirements needed to protect the physical quality of the bypass reaches. Minimum flows in the bypass reaches were shown to meet aesthetic management objectives and it was determined that increased flows would not result in an appreciable aesthetic benefit (FERC 1993).

In 2021, RFH conducted an Aesthetic Flow Study to obtain information on the aesthetic character of water flowing over Rumford Falls and the associated viewing opportunities. The assessment and reporting activities continue and the associated study report will be filed with FERC in the USR on or before August 7, 2022, and will be incorporated in the FLA.

#### **5.11.2 Environmental Analysis**

FERC identified the following potential resource issue related to water resources in their SD1:

- Effects of Project operation on aesthetic resources in the Project area.

Over the past 100 years, the Project has become integrated with the environmental and visual setting of the surrounding area. There are no changes being proposed to the Project that are anticipated to affect aesthetic resources in the Project vicinity. Results from the Aesthetic Flow Study and the associated environmental analysis of potential issues related to Project operation on aesthetic resources will be included in the FLA.

### **5.11.3 Proposed Environmental Measures**

RFH will complete the Aesthetic Flow Study prior to determining if any environmental measures related to aesthetic flows at the Project are warranted.

### **5.11.4 Unavoidable Adverse Impacts**

Continued operation of the Project will not result in any unavoidable adverse impacts of aesthetic resources.

## **5.12 Cultural and Tribal Resources**

### **5.12.1 Affected Environment**

#### **5.12.1.1 Historic Architectural Resources**

Pursuant to Section 106 of the NHPA, the relicensing of the Project would be a Federal undertaking and a FERC-issued license would permit activities that may “cause changes in the character or use of historic properties, if such properties exist.” Therefore, SEARCH, on behalf of RFH, conducted an Historic Architectural Survey pursuant to the study plan in the RSP, as approved in the FERC’s August 6, 2020 SPD.

In compliance with Section 106 of the NHPA, an APE was identified in consultation with the MHPC as the Project Boundary and any lands outside the Project Boundary where resources may be affected by Project-related activities that are conducted in accordance with the FERC license<sup>11</sup>.

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<sup>11</sup> As specified in the study report, which was reviewed by MHPC, the APE was expanded to include the battery system pursuant to the June 3, 2021 FERC-issued order amending the license to include a battery system as part of the Project.

A historic architectural survey of the APE was conducted in October 2020. The associated study report was sent to the MHPC for review on October 25, 2021. The MHPC concluded that the proposed undertaking will have no adverse effect upon historic properties. The MHPC's conclusions and associated consultation documents are being implemented into the final report, which pursuant to the Commission's request, is being kept confidential and will be filed with the Commission as privileged in May 2022. Concurrent to filing the report with the Commission, RFH will provide the final hard copy of the report to the MHPC for their records.

#### 5.12.1.2 Archeological Resources

As a result of the previous relicensing, a Project-specific Programmatic Agreement, Cultural Resources Management Plan, and Cultural Resources Contingency Plan were developed and implemented. Consistent with the requirements of these documents, archaeological resource areas of interest within the Project's APE have been routinely monitored since issuance of the Project's existing license. Upon commencement of the monitoring program, the monitoring was performed on an annual basis. Following eight years of monitoring, the applicable parties agreed that the monitoring schedule could be adjusted to a biennial cycle. RFH continues to perform this monitoring, which includes the development of a report that is filed with FERC on a routine basis.

Additionally, and separate from this relicensing, RFH is in the process of completing the archaeological Phase III report (Hamilton and Mosher 2000) in consultation with the MHPC, which had not been completed to MHPC's satisfaction by the Licensee's predecessor. In 2021, MHPC requested that instead of revising the report filed by Hamilton and Mosher (2000) that two articles for eventual publication be completed. One article will focus on lithic tool production at Archaic period sites and the second article will focus on pottery recovered from two Ceramic period sites. However, access to Phase III materials and data currently curated at the University of Southern Maine has not been provided. Efforts to access the Phase III data is ongoing. MHPC has been able to provide access to some material from the Archaic period sites and analysis and reporting on these materials is underway and will be completed in 2022 and filed with FERC as privileged. To date, access to the Ceramic period site materials has not been provided.

### 5.12.1.3 Tribal Resources

There are no tribal lands, religious properties, or NRHP-eligible or -listed sites associated with Native American Nations within the Project Boundary or which would likely be affected by the relicensing. The following Tribes have been included on the distribution lists of the NOI, PAD, and ILP filings:

Aroostook Band of Micmacs 7 Northern Road Presque Isle, ME 04769	Passamaquoddy Tribe Indian Township PO Box 301 Princeton, ME 04668
Houlton Band of Maliseet Indians 88 Bell Road Littleton, ME 04730	Passamaquoddy Native American Nation Pleasant Point Reservation Tribal Building Office Route No. 190 Perry, ME 04667
Penobscot Nation 12 Wabanaki Way Indian Island, ME 04468	

Additionally, FERC consulted with the Penobscot Nation via letter dated October 3, 2019. No responses were received.

### 5.12.2 Environmental Analysis

FERC identified the following potential resource issue related to cultural resources in their SD1:

- Effects of Project operation and maintenance activities on properties that are included in or eligible for inclusion in the National Register of Historic Places.

As stated previously, RFH conducted a Historic Architectural Survey of the agreed upon APE in October 2020. Pursuant to a letter dated November 10, 2021, MHPC concluded that the proposed undertaking will have no adverse effect upon historic properties. Therefore, continued Project operation and maintenance will not have effects on cultural resources.

### **5.12.3 Proposed Environmental Measures**

RFH will develop an HPMP, which will include the treatment of the Project’s historic properties and will require the Licensee to consult with the Commission on future work in the eligible historic district that have the potential to affect historic properties.

### **5.12.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of cultural or tribal resources.

## **5.13 Socioeconomic Resources**

### **5.13.1 Affected Environment**

The Rumford Falls Project is located in Oxford County. The most recent, available census reported that 57,777 people resided in Oxford County in 2020, while the 2010 census reported 57,833 people resided in the County, representing an approximately 0.1-percent decrease over ten years. The community is mainly comprised of rural, small towns. In 2021, the median household income in Oxford County was \$49,761. The statewide median household income was \$59,489 the same year (U.S. Census Bureau [USCB] 2022).

Oxford County has an area of approximately 2,077 square miles and a population density of 27.8 persons per square mile using 2020 population data. The Town of Rumford is located adjacent to the Project and is the most populated community in Oxford County with a land area of 69 square miles and a population of 5,839 persons (85.2 persons per square mile) in 2020 (USCB 2022).

In 2020, the civilian labor force in Oxford County was estimated to be approximately 25,815, with 24,097 employed persons and 1,718 unemployed persons (Maine Department of Labor 2021). The top ten private employers, by average monthly employment, in Oxford County in 2018 are listed in Table 5.13-1 below.

**TABLE 5.13-1  
TOP TEN PRIVATE EMPLOYERS IN OXFORD COUNTY IN 3<sup>RD</sup> QUARTER 2021**

<b>Employer Name</b>	<b>Number of Employees</b>	<b>Business Description</b>
MaineHealth	501 to 1,000	General medical and surgical hospitals
ND Paper Inc.*	501 to 1,000	Paper, except newsprint, mills
Walmart/Sam’s Club	1 to 500	Warehouse Clubs and Supercenters
Sunday River Skiway	1 to 500	Skiing facilities
Oxford Casino	1 to 500	Casinos, except casino hotels
Hannaford Bros Co*	1 to 500	Supermarkets and other grocery stores
Irving Forest Products Inc.	1 to 500	Sawmills
Central Maine Healthcare Corp	1 to 500	General medical and surgical hospitals
C N Brown Co.*	1 to 500	Fuel dealers
Maine Machine Products Co	1 to 500	Fuel dealers

Source: Maine Department of Labor 2021.

\*Located in the Town of Rumford.

The estimated unemployment rate for Oxford County in November 2021 was 5.0 percent, compared to 4.8 percent unemployment in Maine and a national unemployment rate of 4.2 percent for the same time period. Prior to 2020, unemployment in Oxford County was experiencing a decreasing trend. Unemployment in Oxford County was at a near all-time low of 3.0 percent in November of 2019, then increased to 6.2 percent in November 2020 (Main Department of Labor 2021).

### **5.13.2 Environmental Analysis**

FERC has not identified any specific resource issues pertaining to socioeconomic resources.

As a generator of electric power, an employer, and a taxpayer in the region, RFH contributes to the socioeconomic resources of the region. RFH is not proposing any changes to Project operations and the socioeconomic benefits associated with the Project will continue. A discussion of the cost



and value of developmental resources associated with the Project is provided in Section 6.0 of this Exhibit E.

### **5.13.3 Proposed Environmental Measures**

RFH is not proposing any environmental measures related to socioeconomic resources at the Project.

### **5.13.4 Unavoidable Adverse Impacts**

Continued operation of the Project as proposed will not result in any unavoidable adverse impacts of socioeconomic resources.

## **6.0 Economic Analysis**

This section presents the estimated annual value of developmental resources associated with the Project under the current license, the cost of operating and maintaining the Project under the existing license, the cost of each PM&E measure proposed by RFH and stakeholders, and the reduction in the value of the developmental resources of each Project attributed to proposed PM&E measures.

### **6.1 Costs and Value of Developmental Resources Associated with the Project**

RFH operates the Project for the purposes of electrical power generation. In operating the Project, RFH also ensures dam safety, meets the requirements of the existing license articles, and implements required PM&E measures.

Consistent with the Commission’s approach to economic analysis, the value of the Project’s power benefits are determined by estimating the cost of obtaining the same amount of energy and capacity using likely alternative resources available in the region. This analysis is based on current costs and does not consider future escalation of fuel prices in valuing the Projects’ power benefits (Mead Corporation, Publishing Paper Division, 72 FERC ¶ 61,027 (July 13, 1995)).

The value of power for the Project based on the average annual generation will be presented in the FLA.

## 6.2 Cost of Proposed PM&E Measures

FERC identified the following potential resource issue related to developmental resources in their SD1:

- Effects of proposed or recommended environmental measures on Project generation and economics.

The estimated capital and annual costs of PM&E measures proposed by RFH and stakeholders will be presented in the FLA. The effects on costs of environmental measures on Project generation and economics will be assessed in the FLA, as well.

## 7.0 Consistency with Comprehensive Plans

Section 10(a)(2) of the Federal Power Act (FPA) requires FERC to consider the extent to which a project is consistent with Commission-approved federal and state comprehensive plans for improving, developing, and conserving waterways affected by the Project. In accordance with Section 10(a)(1) of the FPA, the list of Commission-approved federal and state comprehensive plans was reviewed to determine applicability to the Project (FERC 2021).

Under 18 CFR §5.18(b)(5)(ii)(F) each license application must identify relevant comprehensive plans and explain how and why the proposed project would, would not, or should not comply with such plans. In addition, the license application must include a description of any relevant resource agency or Native American Tribe determination regarding the consistency of the project with any such comprehensive plan.

The Commission's SD1 identified 17 comprehensive plans for the State of Maine that are potentially relevant to the Project, listed below. RFH has also reviewed the Commission's updated list of the available comprehensive plans (FERC 2021) and believes that the Project, as currently operated and proposed to be operated, is consistent with each of the 18 plans<sup>12</sup> listed below.

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<sup>12</sup> The NMFS 2020 Androscoggin River Watershed Comprehensive Plan for Diadromous Fish has been included in FERC's September 2021 List of Comprehensive Plans following FERC's issuance of SD1 for the Project in 2019.

The following provides additional information regarding each plan.

**Atlantic States Marine Fisheries Commission. 1999. Amendment 1 to the Interstate Fishery Management Plan for Shad and River Herring. (Report No. 35). April 1999.**

The goal of Amendment 1 of the Fishery Management Plan (FMP) was to protect, enhance, and restore East Coast migratory spawning stocks of American shad, hickory shad, and river herrings in order to achieve stock restoration and maintain sustainable levels of spawning stock biomass. Objectives identified in the plan were to prevent overfishing of American shad stocks by constraining fishing mortality; develop definitions of stock restoration; determine appropriate target mortality rates and specify rebuilding schedules for American shad populations within the management unit; maintain existing or more conservative regulations for hickory shad and river herring fisheries until new stock assessments suggest changes are necessary; and promote improvements in degraded or historic alosine habitat throughout the species range.

The Project is located approximately 60 RM upstream of Lewiston Falls, which historically was the natural upstream migration barrier of shad and river herring on the Androscoggin River.

**Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Plan for American Eel (*Anguilla rostrata*). (Report No. 36). April 2000.**

The FMP for the American eel was developed by the Atlantic States Marine Fisheries Commission (ASMFC) in order to protect and restore the species. The goal of the FMP is to conserve and protect the American eel resource to ensure its continued role in the ecosystems, while providing the opportunity for its commercial, recreational, scientific, and educational use. The primary objectives are to improve knowledge of eel utilization at all life stages through mandatory reporting of harvest and effort by commercial fishers and dealers, and through enhanced recreational fisheries monitoring; increase understanding of factors affecting eel population dynamics and life history through increased research and monitoring; protect and enhance American eel abundance in all watersheds where eel now occur; where practical, restore American eel to those waters where they had historical abundance, but may now be absent, by providing access to inland waters for glass eel, elvers, and yellow eel and adequate escapement to the ocean for pre-spawning adult eel; investigate the abundance level of eel at the various life stages

necessary to provide adequate forage for natural predators and support ecosystem health and food chain structure.

**Atlantic States Marine Fisheries Commission. 2000. Technical Addendum 1 to Amendment 1 of the Interstate Fishery Management Plan for Shad and River Herring. February 9, 2000.**

Technical Addendum 1 addresses clarifications and corrections in Amendment 1. Many of the clarifications and corrections are minor. Amendment 1 was written to “protect, enhance, and restore East Coast migratory spawning stocks of American shad, hickory shad, and river herrings in order to achieve stock restoration and maintain sustainable levels of spawning stock biomass.”

The Project is located approximately 60 RM upstream of Lewiston Falls, which historically was the natural upstream migration barrier of shad and river herring on the Androscoggin River (MDMR et al. 2017).

**Atlantic States Marine Fisheries Commission. 2008. Amendment 2 to the Interstate Fishery Management Plan for American Eel. Arlington, Virginia. October 2008.**

This Addendum recommends stronger regulatory language to improve upstream and downstream passage of American eel to state and federal regulatory agencies. Addendum 2 does not contain any new compliance requirements and does not alter any other provisions from the 2000 FMP and makes no changes to Addendum I of the FMP.

**Atlantic States Marine Fisheries Commission. 2009. Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring, Arlington, Virginia. May 2009.**

The goal of Amendment 2 to the Interstate FMP for shad and river herring is to protect, enhance, and restore East Coast migratory spawning stocks of American shad, hickory shad, alewife, and blueback herring in order to achieve stock restoration and maintain sustainable levels of spawning stock biomass. The management unit under this plan includes all migratory American shad, hickory shad, alewife, and blueback herring stocks of the East Coast.

The Project is located approximately 60 RM upstream of Lewiston Falls, which historically was the natural upstream migration barrier of shad and river herring on the Androscoggin River (MDMR et al. 2017).

**Atlantic States Marine Fisheries Commission. 2010. Amendment 3 to the Interstate Fishery Management Plan for Shad and River Herring, Arlington, Virginia. February 2010.**

Amendment 3 to the Interstate FMP for shad and river herring was developed to address only measures for American shad, whereas Amendment 2 addressed measures for alewife and blueback herring (collectively river herring). The goal of the Amendment is to protect, enhance, and restore Atlantic coast migratory stocks and critical habitat of American shad in order to achieve levels of spawning stock biomass that are sustainable, can produce a harvestable surplus, and are robust enough to withstand unforeseen threats.

The Project is located approximately 60 RM upstream of Lewiston Falls, which historically was the natural upstream migration barrier of shad and river herring on the Androscoggin River (MDMR et al. 2017).

**Atlantic States Marine Fisheries Commission. 2013. Amendment 3 to the Interstate Fishery Management Plan for American Eel. Arlington, Virginia. August 2013.**

The ASMFC American Eel Management Board Initiated Addendum 3 with the goal of reducing mortality and increasing conservation of American eel stocks across all life stages. This came in response to the 2012 Benchmark Stock Assessment which found that the population of American eels in U.S. waters was depleted. This Addendum established new management measures for both the commercial and recreational eel fisheries, as well as implements fishery dependent and independent monitoring requirements.

**Atlantic States Marine Fisheries Commission. 2014. Amendment 4 to the Interstate Fishery Management Plan for American Eel. Arlington, Virginia. October 2014.**

Following approval of Addendum 3 in August 2013, only certain management measures were approved, while other measures were split out for further consideration and development in

Addendum 4. This addendum addresses the commercial glass, yellow, and silver eel fisheries and modifies previous management programs.

**Maine Department of Agriculture, Conservation, & Forestry. Maine State Comprehensive Outdoor Recreation Plan (SCORP): 2014-2019. Augusta, Maine.**

The 2014-2019 Maine SCORP identifies recreation aspects of statewide importance, and which of those will be addressed through Maine's share of the Federal Land and Water Conservation Fund grants. The Maine SCORP assesses the supply and demand of outdoor recreation facilities based on available information and also relies on public input to identify outdoor recreation issues of statewide importance. The 2014 SCORP emphasizes the connection between outdoor recreation and health, and the connection of outdoor recreation with Maine's local, regional, and statewide economy.

Maine's SCORP was recently updated in December of 2019 for the period of 2020-2024. The SCORP does not contain any recommendations or assessments that are specific to the Project area. The Licensee is in the process of conducting a recreation study at the Project in support of the relicensing process. Additionally, details on existing recreation sites and facilities are provided in Section 5.10 of this Exhibit E.

**Maine Department of Conservation. 1982. Maine Rivers Study-Final Report. Augusta, Maine. May 1982.**

The purpose of the Maine Rivers Study was to first define a list of unique natural and recreation rivers, identifying and documenting important river-related resource values. The second objective was to identify a variety of actions that the State could initiate to manage, conserve, and enhance Maine's river resources in order to protect those important qualities. The Maine Rivers Study identified 4,264 miles of rivers and river segments which possess significant natural and recreation resource values. The Upper Androscoggin River was characterized as having importance to regional recreational boaters, particularly for canoe touring.

**Maine State Planning Office. 1987. Maine Comprehensive Rivers Management Plan Vols 1-3. Augusta, Maine. May 1987.**

Volumes 1 through 3 of the Comprehensive Rivers Management Plan constitute Maine’s plan for improving, developing, and conserving the State’s waterways as it relates to hydropower licensing. Volume 1 contains the Maine Rivers Policy, Statewide Fisheries Plan, and projected contributions of hydropower generation to meet State energy needs between 1990 and 2000. Volume 2 contains the 1982 Maine Rivers Study. Volume 3 contains a discussion of core laws that concern hydropower projects and river management, how to implement these laws and plans, and river-specific plan components (e.g., Saco River, Allagash Wilderness Waterway).

**Maine State Planning Office. 1992. Maine Comprehensive Rivers Management Plan. Volume 4. Augusta, Maine. December 1992.**

The Maine Comprehensive Rivers Management Plan, Volume 4 contains three parts. Part I describes the changes and supplements to core hydro laws subsequent to May 1987; Part II includes implementing orders and plans; and Part III includes reports and studies. Much of the information presented in the Management Plan is now outdated.

**National Marine Fisheries Service. 2018. Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon. Hadley, Massachusetts. January 2019.**

Section 4(f) of the ESA directs NMFS to develop and implement recovery plans for listed species. The GOM DPS of Atlantic salmon was listed as endangered in 2000, and the range of the DPS was expanded in 2009. This recovery plan specifically addresses the planning requirements of the GOM DPS of Atlantic salmon listed in 2009 and supersedes the 2005 recovery plan for the DPS listed in 2000. The updated plan presents a recovery strategy based on the species’ ecological and biological needs and also discusses threats to the species and conservation accomplishments that affect its long-term viability.

According to a letter dated September 19, 2019, NMFS indicated that the Middle and Upper Dams of the Project are within the listed area of the Federally endangered DPS of Atlantic salmon. Rumford Falls was the natural barrier to Atlantic salmon (Foster and Atkins 1868; as cited in MDMR et al. 2017). However, given the number of natural and man-made barriers with no

upstream fish passage located on the river downstream of the Project, as well as there being no record of Atlantic salmon being caught in the river upstream of Lewiston Falls since 1815, for the purpose of this relicensing, Atlantic salmon is not considered a species potentially occurring within the Project Boundary.

**National Marine Fisheries Service. 2020. Androscoggin River Watershed Comprehensive Plan for Diadromous Fish. Greater Atlantic Region Policy Series 20-01. NOAA Fisheries Greater Atlantic Regional Fisheries Office, Gloucester, MA. 2020.**

This plan was developed by NMFS as a framework to balance restoration of diadromous fish, the interests of diverse stakeholders, and the need for sustainable energy production on the lower Androscoggin River prior to the onset of several hydropower relicensing proceedings in the watershed. This plan builds off the existing management actions in the 2019 Recovery Plan for the GOM DPS of Atlantic salmon and the Draft Androscoggin Fisheries Management Plan. This plan focuses on restoration efforts downstream of Lewiston Falls, the Little Androscoggin River, the Sabattus River, and the Little River. The objective of the plan is to support development of terms and conditions in hydropower licenses and foster collaboration between agencies and stakeholders.

Historically, the natural upstream migration barrier for most diadromous fish was Lewiston Falls, which is located approximately 60 RM downstream of the Project. Rumford Falls was the natural barrier to Atlantic salmon (Foster and Atkins 1868; as cited in MDMR et al. 2017). However, given the number of natural and man-made barriers with no upstream fish passage located on the river downstream of the Project, as well as there being no record of Atlantic salmon being caught in the river upstream of Lewiston Falls since 1815, for the purpose of this relicensing, Atlantic salmon is not considered a species potentially occurring within the Project Boundary.

**National Park Service. 1993. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C.**

With passage of the Wild and Scenic Rivers Act, Congress called for an inventory of potential wild, scenic, and recreational river areas within the Nation in order to guide resource management decisions. Portions of the Androscoggin River have been listed by the NPS on the NRI. With the



exception of a less than one-mile reach at the upstream end of the Project Boundary, the reach of the Androscoggin River within the Project Boundary is not designated as NRI.

**U.S. Fish and Wildlife Service. 1989. Atlantic Salmon Restoration in New England: Final Environmental Impact Statement 1989-2021. Department of the Interior, Newton Corner, Massachusetts. May 1989.**

The USFWS, in participation with the fishery agencies of the New England states and other Federal agencies, proposes to restore self-sustaining populations of Atlantic salmon by the year 2021 to the species' historical range in New England. The historical range of Atlantic salmon includes the Androscoggin River among others. To accomplish the goal, USFWS will:

- Utilize USFWS hatcheries and Fisheries Assistance field stations to reestablish and evaluate salmon populations;
- Consider the needs of salmon restoration in the process of reviewing Federal projects, permits, and licenses;
- Provide funding to state agencies for salmon restoration through the administration of the Federal Aid programs; and
- Conduct research on the biology of the Atlantic salmon.

USFWS states that effective upstream and downstream fish passage is a fundamental requirement of the goal of restoring self-sustaining populations of Atlantic salmon by the year 2021. Upstream and downstream fish passage exists at the first three dams on the Androscoggin River (i.e., Brunswick, Pejepscot, and Worumbo). Since the goals of this plan are intended to be met by 2021, this management plan is now outdated.

Rumford Falls was the natural barrier to Atlantic salmon (Foster and Atkins 1868; as cited in MDMR et al. 2017). However, given the number of natural and man-made barriers with no upstream fish passage located on the river downstream of the Project, as well as there being no record of Atlantic salmon being caught in the river upstream of Lewiston Falls since 1815, for the purpose of this relicensing, Atlantic salmon is not considered a species potentially occurring within the Project Boundary.

**U.S. Fish and Wildlife Service. Undated. Fisheries USA: the Recreational Fisheries Policy of the U.S. Fish and Wildlife Service. Washington, D.C.**

The Recreational Fisheries Policy defines the USFWS's stewardship role in the management of the United States' recreational fishery resources. The USFWS is committed to promoting and enhancing freshwater, anadromous, and coastal fishery resources for long-term public benefit.

This commitment is outlined by the following policies:

1. Preserve, restore, and enhance fish populations and their habitats.
2. Promote recreational fishing on USFWS and other lands to provide the public with a high-quality recreational experience.
3. Ensure that recommendations concerning recreational fisheries potentials and opportunities are included as part of appropriate field studies and management assistance efforts performed by the USFWS on non-USFWS waters.
4. Serve as an active partner with other federal governmental agencies, states, Tribes, conservation organizations, and the public in developing recreational fisheries programs.
5. Promote the conservation and enhancement of the Nation's recreational fisheries through the USFWS's grant in aid programs.
6. Improve and expand quantifiable economic valuations of the Nation's recreational fisheries to demonstrate the importance of this resource to the health and welfare of our society and to the Nation's economy.

To accomplish these policies, the USFWS developed the following goals and strategies:

1. Effect the preservation and/or increased productivity of fishery resources.
2. Ensure and enhance the quality, quantity, and diversity of recreational fishing opportunities.
3. Develop and enhance partnerships between governments and the private sector for conserving and managing recreational fisheries.
4. Cooperate and maintain a healthy recreational fisheries industry.

**U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American Waterfowl Management Plan. Department of the Interior. Environment Canada. May 1986.**

The North American Waterfowl Management Plan, updated in 1994 and 2018, expands on the 1986 Plan seeking to restore waterfowl populations in Canada, the United States, and Mexico to levels recorded during the 1970s, which was considered a benchmark decade for waterfowl. The plan outlines the following three visions to advance waterfowl conservation:

1. Ensure that Plan implementation is guided by biologically-based planning and is refined through ongoing evaluation.
2. Define the landscape conditions needed to sustain waterfowl and other wetland associated species. Participate in the development of conservation, economic, management, and social policies and programs that affect the ecological health of these landscapes.
3. Collaborate with other conservation efforts and reach out to other sectors and communities to form alliances.

These visions are designed to improve the status of North America’s waterfowl, promote sustainable landscapes, and broaden partnerships internationally, nationally, regionally, and locally.

## **8.0 Consultation Documentation**

Appendix E.1 provides the consultation correspondence that has occurred since filing the PAD. Appendix A of the PAD includes prior consultation.

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**APPENDIX E.1**  
**CORRESPONDENCE LOG**

## Rumford Falls Correspondence Log

<b>Date</b>	<b>To</b>	<b>From</b>	<b>Subject</b>
January 17, 2020	Federal Energy Regulatory Commission (FERC)	Town of Rumford	Comments on Pre-Application Document (PAD)
January 21, 2020	Brookfield Renewable (Brookfield)	FERC	Requests for studies and additional information
January 25, 2020	FERC	Maine Department of Environmental Protection (MDEP)	Comments on PAD and study requests
January 28, 2020	FERC	Maine Department of Inland Fisheries and Wildlife (MDIFW)	Comments on PAD and study requests
January 28, 2020	FERC	Trout Unlimited	Comments on PAD and study requests
April 13, 2020	FERC	Town of Rumford Resident (Jenna Ginsberg)	Comments on Proposed Study Plan (PSP)
April 13, 2020	FERC	Town of Rumford Resident (Karen Wilson)	Comments on PSP
April 15, 2020	FERC	Town of Rumford Resident (John Preble)	Comments on PSP
April 18, 2020	FERC	Town of Rumford Resident (Linda Pepin)	Comments on PSP
April. 21, 2020	FERC	Town of Rumford	Comments on PSP
April 26, 2020	FERC	Town of Rumford Resident (John Preble)	Comments on PSP

<b>Date</b>	<b>To</b>	<b>From</b>	<b>Subject</b>
May 7, 2020	FERC	Maine Historic Preservation Commission (MHPC)	Comments on PSP
May 8, 2020	Brookfield	FERC	Comments on PSP
May 9, 2020	FERC	Town of Rumford Resident (John Bernard)	Comments on PSP
May 10, 2020	FERC	Town of Rumford Resident (Glenn Gordon)	Comments on PSP
May 10, 2020	FERC	Town of Rumford Resident (Robert Stickney)	Comments on PSP
May 10, 2020	FERC	Town of Rumford Resident (Vicki Broomhall Amoroso)	Comments on PSP
May 10, 2020	FERC	Town of Rumford Resident (Vickie Kuhl)	Comments on PSP
May 11, 2020	FERC	Sharon Wilbraham	Comments on PSP
May 12, 2020	FERC	Kristine Keeney	Comments on PSP
May 13, 2020	FERC	Kristen Giberson	Comments on PSP
May 13, 2020	FERC	Town of Rumford Resident (Beverly Ann Soucy)	Comments on PSP
May 14, 2020	FERC	James Radmore	Comments on PSP
May 16, 2020	FERC	Town of Rumford Resident (Dr. Richard Kent)	Comments on PSP
May 16, 2020	FERC	Town of Rumford Resident (Seth Carey)	Comments on PSP

<b>Date</b>	<b>To</b>	<b>From</b>	<b>Subject</b>
May 18, 2020	FERC	Town of Rumford Resident (Craig Zurhorst)	Comments on PSP
May 18, 2020	FERC	Pennacook Falls Investments, Ltd.	Comments on PSP
May 19, 2020	FERC	Town of Rumford Resident (Peter Wright)	Comments on PSP
May 21, 2020	FERC	Mia Purcell	Comments on PSP
May 22, 2020	FERC	Town of Rumford Resident (Curtis Rice)	Comments on PSP
May 26, 2020	FERC	Shane Smith	Comments on PSP
May 26, 2020	FERC	Town of Rumford Resident (Anthony Mazza)	Comments on PSP
May 26, 2020	FERC	Town of Rumford Resident (Sarah Marshall)	Comments on PSP
May 27, 2020	FERC	Dennis Blanchard	Comments on PSP
May 28, 2020	FERC	Town of Rumford Residents (John and Laurie Soucy)	Comments on PSP
May 28, 2020	FERC	Mahoosuc Land Trust	Comments on PSP
June 1, 2020	FERC	Town of Rumford Resident (Philip Blampied)	Comments on PSP
June 1, 2020	FERC	Trout Unlimited	Comments on PSP
June 2, 2020	FERC	River Valley Healthy Communities Coalition	Comments on PSP

<b>Date</b>	<b>To</b>	<b>From</b>	<b>Subject</b>
June 2, 2020	Brookfield	FERC	Comments on PSP
June 2, 2020	FERC	Lisa Arsenault	Comments on PSP
June 2, 2020	FERC	Maine State Senate, District 18	Comments on PSP
June 3, 2020	FERC	Town of Rumford Resident (Jolan Ippolito)	Comments on PSP
June 5, 2020	FERC	Maine Rivers	Comments on PSP
June 5, 2020	FERC	Town of Rumford	Comments on PSP
June 5, 2020	FERC	Maine Rivers	Comments on PSP
June 6, 2020	FERC	Alexander Kerney	Comments on PSP
June 7, 2020	FERC	Town of Rumford Resident (Brie Weisman)	Comments on PSP
June 7, 2020	FERC	Town of Rumford Resident (Jonathan Starr)	Comments on PSP
June 7, 2020	FERC	Town of Rumford Resident (John Preble)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Craig Zurhorst)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Dieter Kreckel)	Comments on PSP
June 8, 2020	FERC	EnvisionRumford	Comments on PSP
June 8, 2020	FERC	Nurture Through Nature	Comments on PSP



<b>Date</b>	<b>To</b>	<b>From</b>	<b>Subject</b>
June 8, 2020	FERC	Town of Rumford Resident (Jennifer Kreckel)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Jolan Ippolito)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Karen Wilson)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Kevin Kaulback)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Laurie Soucy)	Comments on PSP
June 8, 2020	FERC	Mahoosuc Pathways	Comments on PSP
June 8, 2020	FERC	MDEP	Comments on PSP
June 8, 2020	FERC	MDIFW	Comments on PSP
June 8, 2020	FERC	Maine Department of Agriculture, Conservation and Forestry (MDACF)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Stephanie Reed)	Comments on PSP
June 8, 2020	FERC	Town of Rumford Resident (Todd Papianou)	Comments on PSP
July 23, 2020	FERC	MDACF	Comments on Revised Study Plan (RSP)
July 24, 2020	FERC	MDIFW	Comments on RSP

<b>Date</b>	<b>To</b>	<b>From</b>	<b>Subject</b>
July 27, 2020	FERC	Town of Rumford Resident (John Preble)	Comments on RSP
July 27, 2020	FERC	Trout Unlimited	Comments on RSP
July 28, 2020	FERC	Town of Rumford	Comments on RSP
September 15, 2021	Normandeau Associates, Inc.	MDEP	Aquatic Life Class Attainment Report for Macroinvertebrate Sampling
October 25, 2021	MHPC	Brookfield	Historic Architectural Survey Report Submittal to MHPC
November 10, 2021	Brookfield	MHPC	Review of Historic Architectural Survey Report (Privileged)
February 8, 2022	HDR	U.S. Fish and Wildlife Service	List of threatened and endangered species

Mr. Ryan Hansen  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426  
Docket Number: P-2333-091

January 17, 2020

Dear Mr. Hansen,

The following written comment is submitted for the record by the Town of Rumford, Maine with regards to the relicensing process of the Rumford Falls Hydroelectric Project (FERC No. 2333).

In order to provide for a permanent and stable solution to the question of recreational use of the facilities within the project boundary the Town of Rumford believes that it is in the best interest of the public for the Federal Energy Regulatory Commission to direct the establishment of a formal, written recreation plan in accordance with established policies and procedures of the Commission for the establishment of such plans.

The Town notes the recent closure of the Falls Hill Trail (formerly South Rumford Road), and West Viewing Area amenities and other access issues which have contributed to concerns in regards to protecting the public interest.

The Town also notes a desire for aesthetic improvements at Veterans Park which at one time had ornamental fencing (two panels of which remain to this day) and requests a return and replacement of existing dilapidated chain link fencing with new ornamental fencing. The Town also notes the recent establishment of a hand carry boat launch for paddle craft at Hastings Landing on US Route 2 in Rumford Center. Hastings Landing is open to the public and operated by the Mahoosuc Land Trust. At the moment it appears that this facility is missing from project maps.

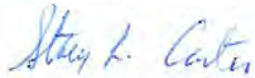
Finally, the Town notes the 2013 Rumford Comprehensive Plan which as adopted states the following in regards to recreation, "Outdoor recreation assets and opportunities can play a role in the economic diversification in Rumford and region." (Rumford Comprehensive Plan 2013, Page 104)

Outdoor recreation has been clearly and formally recognized by the people of the Town of Rumford as a critical means to providing for economic sustenance. Given the importance of outdoor recreation to the future of Rumford's economic development it is imperative that the Town's best recreation assets remain open and accessible to the public to every extent possible. Several prime assets, the Falls Hill Trail in particular are within the project boundaries and currently closed to the public.

This letter summarizes the most significant issues at hand in the current relicensing process for the Rumford Falls Hydroelectric Project. The Town notes that other smaller questions and concerns may arise over the course of the relicensing process and looks forward to communicating with all parties concerned.

We appreciate your consideration and concern for the needs of our community.

Sincerely,

A handwritten signature in blue ink that reads "Stacy L. Carter". The signature is written in a cursive style with a large initial 'S'.

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, DC 20426  
January 21, 2020

OFFICE OF ENERGY PROJECTS

Project No. 2333-091- Maine  
Rumford Falls Hydroelectric Project  
Rumford Falls Hydro, LLC

Luke Anderson  
Brookfield Renewable  
150 Main Street  
Lewiston, ME 04240

**VIA FERC Service**

**Reference: Requests for Studies and Additional Information**

Dear Mr. Anderson:

After reviewing the Pre-Application Document (PAD) for the Rumford Falls Hydroelectric Project, staff have determined that studies on water quality and cultural resources are likely needed. The study requests are discussed in the enclosed Schedule A. Additionally, staff have identified a need for certain additional information which is included in Schedule B. Unless otherwise specified, the additional information should be included with your proposed study plan, which needs to be filed on or before March 10, 2020.

Please include in your proposed study plan a master schedule that includes the estimated start and completion date of all field studies, when progress reports will be filed, who will receive the reports and in what format, and the filing date of the initial study report. All studies, including field work should be initiated and completed during the first study season, and the study reports should be filed as a complete package to avoid piecemeal review. Finally, if you are likely to propose any plans for measures to mitigate project impacts, drafts of those plans should be filed with the initial study report.

If you have any questions, please contact Ryan Hansen at (202) 502-8074, or via e-mail at [ryan.hansen@ferc.gov](mailto:ryan.hansen@ferc.gov).

Sincerely,

A handwritten signature in cursive script, appearing to read "David Turner".

David Turner, Chief  
Northwest Branch  
Division of Hydropower Licensing

Enclosure: Schedule A  
Schedule B

## STUDY REQUESTS

After reviewing the information in the PAD, we have identified a gap between the information in the PAD and the information needed to assess project effects. As required in section 5.9 of the Commission's regulations we have addressed the seven study request criteria for each of the study requests that follow.

### **Water Quality Monitoring**

*Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to provide information sufficient to enable staff to understand current water quality conditions at the project and assess any effects of project operation on dissolved oxygen and temperature in upper impoundment, Middle Dam impoundment, and downstream of the lower development. The study plan should be developed in consultation with the Maine Department of Environmental Protection (Maine DEP).

*Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resources to be studied.*

Not applicable.

*Criterion (3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the Federal Power Act require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

*Criterion (4) – Describe existing information concerning the subject of the study proposal and the need for additional information.*

The PAD contains limited water temperature and dissolved oxygen data from four sites in the vicinity, none of which is closer than one river mile from the project. The PAD includes 24 days of temperature data and 28 days of dissolved oxygen data taken 10 miles upstream of the Upper Dam between 1995 and 2017. Also included are 7 days of temperature data collected two miles downstream of the lower development collected in 2017 and one dissolved oxygen measurement taken in 2008 one mile downstream of the lower development. While this data is useful, staff need additional information on

current water quality collected near the project to assess whether continued project operation could affect water quality.

*Criterion (5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

The two project dams impound the river, slowing the flow of water through the project reach. This can affect DO and temperature levels which in turn affect aquatic biota and habitat. Current water quality data are necessary to establish a baseline against which proposed or required enhancements may be compared, as well to determine if project operation could affect water quality.

*Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

If the information is not already available from other studies, standard sampling methodologies such as in-situ water quality monitors or grab samples should be used to measure dissolved oxygen and temperature in both project impoundments, as well as downstream of the lower development.

*Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

Staff recommend summer season sampling (June, July, August) at one location in the upper impoundment, one location in the Middle Dam impoundment, and one location downstream of the lower development. In the upper and Middle Dam impoundments, dissolved oxygen and temperature should be monitored at the surface, middle water column, and bottom at a location near the center of the reservoir. The same parameters should be monitored downstream of the lower development during the summer immediately below the lower tailrace. Staff estimate that this sampling and reporting would cost approximately \$20,000. The specific methodology and scope can be refined during a study plan meeting(s).

### **Historic Architectural Survey**

*Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to identify and determine the potential effects of continued project operation and maintenance on historic architectural resources that have become historic over the course of the existing license for the Rumford Falls Project and



are eligible for the National Register of Historic Places (National Register). The study and study report should be prepared after consultation with the Maine State Historic Preservation Officer (Maine SHPO). The specific objectives of the study and subsequent report are to:

- (1) Conduct a historic architectural survey of all Rumford Falls project components that have become historic (50 years or older) since the previous licensing of the project.
- (2) Identify all components that are 50 years or older.
- (3) Assess the National Register-eligibility of each identified historic component.
- (4) Evaluate the potential effects of continued operation and maintenance on each identified historic component.

*Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Section 4(e) and 10(a) of the Federal Power Act require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power generation and other developmental values.

Cultural resources are resources of particular interest to the public. Preserving and protecting cultural resources provides a venue for understanding our Nation's past and respecting the various cultures of this county. Project operation and maintenance may affect the value and integrity of National Register-eligible historic properties in the vicinity of the project. Ensuring that potential measures associated with cultural resources are analyzed is relevant to the Commission's public interest determination.

Furthermore, pursuant to section 106 of the National Historic Preservation Act (section 106), the licensing of the proposed project would be a federal undertaking and a license issued by the Commission would permit activities that may "...cause changes in the character or use of historic properties, if any such historic properties exist..."<sup>1</sup> The Commission must, therefore, comply with section 106, which requires the head of any federal department or independent agency having authority to license an undertaking to take into account the effect of the undertaking on historic properties. In the case of this project, assessment of historic properties would be conducted in consultation with the Commission, the Maine SHPO, and other interested parties.

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<sup>1</sup> See 36 C.F.R. § 800.16(d) of the regulations implementing section 106.

*Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD states that the Rumford Falls project facilities were evaluated during the previous licensing proceeding, but none were found to be eligible for listing on the National Register. It is possible, however, that some project components have become historic since this time and therefore might be eligible. Therefore, all components of the project that have become 50 years or older during the current license term need to be identified and evaluated for National Register eligibility, and, if eligible, assessed for project-related effects so that the nature and extent of potential project effects and measures to avoid, lessen, or mitigate adverse effects can be properly determined.

*Criterion (5) - Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Section 106 requires that federal agencies take into account the effect of proposed undertakings on any district, site, building, structure, or object that is included in or eligible for the National Register. Operation and maintenance of project facilities could adversely affect historic properties through ground-disturbing activities and cause other indirect adverse effects on historic properties.

An evaluation of the Rumford Falls facilities for eligibility and project effects would provide updated information on historic resources located at the project sites. If appropriate, an applicant-prepared historic properties management plan (HPMP), would be needed to avoid, lessen, or mitigate any adverse effects on the National Register-eligible project facilities. A draft and final HPMP, if necessary, should be filed with the preliminary licensing proposal and the final license application, respectively.

*Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

The scope of work that would be required to complete a Historic Architectural Survey and evaluate the National Register-eligibility of each historic project component would be identified through consultation with the Maine SHPO and other interested parties. Prior to conducting the survey and completing a survey report, the applicant should consult with the Maine SHPO on: (a) methods and techniques on how the survey should be conducted; (b) anticipated effects (direct and indirect) on each project component; (c) whether each identified project component is considered eligible for the National Register, and (d) any other relevant details involving the survey and report. All

methods used to conduct the survey and National Register-eligibility evaluation should conform to the Maine SHPO guidelines.<sup>2</sup>

A preliminary report on the survey should be completed after the field inventory phase. At a minimum, this report should be reviewed by the Maine SHPO and the Commission. The applicant should seek concurrence from the Maine SHPO on its determination of whether or not each project component is considered eligible for the National Register. The applicant should also seek concurrence from the Maine SHPO on what, if any, adverse effects may occur on each project component as a result of project operation and/or maintenance, or project-related activities.

The evaluation of project effects on each historic project component should include both site-specific effects and indirect effects. The report should also be kept confidential and filed with the Commission and other consulting parties as “privileged,” a non-public document.

If any historic project component would be adversely affected by continued operation or maintenance of the project or from project-related activities, then an HPMP should be developed after consultation with the Maine SHPO, and other interested parties. When developing an HPMP the generally acceptable practice is to use the “Archaeology and Historic Preservation: Secretary of the Interior’s Standard and Guidelines” (*Federal Register*, September 29, 1983, Vol. 48, No. 190, Part IV, pp. 44716-11740) and the Advisory Council of Historic Preservation and Commission’s “Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects”<sup>3</sup> (issued May 20, 2002).

*Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The anticipated cost for the historic architectural survey is estimated to be about \$20,000.

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<sup>2</sup> Survey methodology should conform to the guidelines provided at <https://www.maine.gov/mhpc/programs/project-review>, unless the Maine SHPO provides alternative guidance.

<sup>3</sup> This document was issued jointly by the Commission and the Advisory Council on Historic Preservation on May 20, 2002. The document is available at <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/hpmp.pdf>.

### **ADDITIONAL INFORMATION REQUESTS**

1. On pages 5-10 of the PAD, you state that minor, local erosional undermining of the riverbanks of the Upper Dam impoundment is occurring but that the erosion and slumping that currently occurs is unavoidable and the adverse impacts are minor in nature. On pages 6-1 and 6-2, you do not propose any studies related to the erosion or slumping and you state that no change to geology and soils would be expected. We are aware of the erosion monitoring associated with identified cultural sites that occurred since 2015, but we are not aware of any other information of how much erosion may occurring in the upper impoundment or where. Please explain how you concluded that the adverse impacts of the local erosional undermining are minor in nature.



JANET T. MILLS  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



GERALD D. REID  
COMMISSIONER

January 25, 2020

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

RE: Comment on Pre-Application Document and Study Request  
Rumford Falls Hydroelectric Project (FERC No. 2333)

Dear Secretary Bose:

The Maine Department of Environmental Protection (Department) received and reviewed the Notice of Intent (NOI) to File License Application and Pre-Application Document (PAD), submitted on September 27, 2019, by Rumford Falls Hydro (Applicant), for the Rumford Falls Hydroelectric Project (Project) (FERC No. 2333). Department staff attended a project facilities site visit on October 24, 2019 and a joint agency meeting on December 17, 2019. Staff also reviewed appropriate project documents to prepare the following comments and study requests.

The proposed relicensing of the Rumford Falls Hydroelectric Project is subject to the water quality certification provisions of Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act). By Executive Order of the Governor of the State of Maine, the Department is the certifying agency for project located wholly or partially in organized towns and cities, and as such has jurisdiction over the Project.

The existing Rumford Falls Project is comprised of two generating stations. The Upper Station Development consist of a concrete gravity dam with a 464-foot-long, 37-foot-high ogee type spillway section with a crest elevation of 598.74 feet, topped with a 32-inch-high, pin-supported wooden flashboards; a forebay about 2,300 feet long by 150 feet wide; a gatehouse with eight headgates (two headgates for each of the four penstocks), trashracks, and other appurtenant equipment; underground steel-plate penstocks, each approximately 110 feet long, three being 12 feet in diameter and one being 13 feet in diameter; a masonry powerhouse integral with the dam which include the Old Station, equipped with one horizontal generating unity with a capacity of 4,300 kW, and the New Station, equipped with three vertical generating units, two with a capacity of 8,100 kW each and one with a capacity of 8,800 kW; an impoundment with a gross storage capacity of 2,900 acre-feet and a surface area of about 419 acres at a normal maximum headwater elevation of 601.24 feet and tailwater elevation of 502.74 feet; four overhead 11.5-kilovolt (kV) transmission lines; and appurtenant features. The Lower Station Development consists of a rock-filled, wooden-cribbed, and concrete-capped Middle Dam, having a 328.6-foot-long, 20-foot-high gravity spillway section with a crest elevation of 502.74 feet with 16-

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website: [www.maine.gov/dep](http://www.maine.gov/dep)

inch-high, pin-supported, wooden flashboards; a Middle Canal concrete headgate structure, located adjacent to the dam, approximately 120 feet long, with 10 steel headgates and a waste weir section perpendicular to the headgate structure, about 120 feet long with a crest elevation of 502.6 feet with 10-inch-high flashboards; a Middle Canal approximately 2,400 feet long, with width ranging from 75 to 175 feet and a depth from 8 to 11 feet; a gatehouse containing two headgates, trashracks, and other appurtenant equipment; two 12-foot-diameter, steel-plat penstocks, each extending approximately 815 feet to two cylindrical surge tanks, each about 36 feet in diameter by 50.5 feet high, and the penstocks continuing an additional 77 feet to the powerhouse; a masonry powerhouse, equipped with two vertical generating units, each with 7,600 kW capacity; an impoundment with a gross storage capacity of 141 acre-feet and a surface area of approximately 21 acres at a normal maximum headwater elevation of 502.7 feet and tailwater elevation of 423.24 feet; eight 600-foot-long 11.5 kV generator leads; and appurtenant facilities.

### **Comments on PAD**

The Department appreciates the effort that Rumford Falls Hydro, LLC and their consultants have made to prepare the PAD. The PAD provides an understanding of the project, the surrounding resources, and proposed Project operations. The PAD provides information about the Project that allows resource agencies to identify issues related to relicensing.

No changes to Project operations are proposed in the PAD; however, if operational changes are contemplated in its final license application additional studies and data may be required to establish conformance with Maine's water quality standards.

### **Water Quality Classifications and Standards**

Water Quality Standards and the water quality classifications of all surface water of the State have been established by Maine Legislature (38 M.R.S. §§ 464-467). The following classifications apply to the water affected by the Rumford Falls Project.

Androscoggin River, main stem, including all impoundments.

(b) From its confluence with the Ellis River to a line formed by the extension of the Bath-Brunswick boundary across Merrymeeting Bay in a northwesterly direction – Class C.

Class C water must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation except as prohibited under Title 12, section 403; navigation; and as habitat for fish and other aquatic life.

The dissolved oxygen content of Class C waters shall be not less than 5 parts per million or 60% of saturation, whichever is higher, except that in identified salmonid spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained. In order to provide additional protection for the growth of indigenous fish, the following standards apply.

- (1) The 30-day average dissolved oxygen criterion of a Class C water is 6.5 parts per million using a temperature of 22 degrees centigrade or the ambient temperature of the water body, whichever is less, if:
  - a. A license or water quality certification other than a general permit was issued prior to March 16, 2004 for the Class C water and was not based on a 6.5 parts per million 30-day average dissolved oxygen criterion; or
  - b. A discharge or a hydropower project was in existence on March 16, 2005 and required but did not have a license or water quality certificate other than a general permit for the Class C water.

This criterion for the water body applies to the licenses and water quality certificates issued on or after March 16, 2004.

- (2) In Class C waters not governed by subparagraph (1), dissolved oxygen may not be less than 6.5 parts per million as a 30-day average based upon a temperature of 24 degrees centigrade or the ambient temperature of the water body, whichever is less. This criterion of the water body applies to licenses and water quality certificates issued on or after March 16, 2004.

Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community.

The State's anti-degradation policy provides that water quality certification may be approved only if the applicable standards of classification of the affected water body are met, and existing in-stream uses and the level of water quality necessary to protect those existing uses are maintained and protected.

#### **Water Quality Certification Data Requirements**

In Section 6.1.2.2 (Water Resources, Proposed Studies), Rumford Falls Hydro, LLC indicates its intent to conduct water quality studies in cooperation with the Department and other stakeholders. It has been the Department's practice to determine specific metrics, methods, timing and duration of water quality monitoring and measurement necessary to ensure that the water quality data collected to demonstrate that the Project meets water quality standards under proposed operating conditions meets data quality objectives. The Department requests that Rumford Falls Hydro, LLC design the water quality studies to include the following parameters and follow the Department's established sampling protocols in support of water quality certification.

**Impoundment Trophic State Studies** – Water quality data presented in the PAD for the Rumford Falls Project does not indicate that data was collected from the deepest location within the impoundments (upper impoundment and lower impoundment), in accordance with the Department's *Sampling Protocol for Hydropower Studies* (September 2019), and therefore is insufficient to demonstrate that each of the impoundments exhibit a steady or improving trophic state; therefore, the Department is requesting that an Impoundment Trophic State Study be conducted in each of the two Project impoundments to determine if Maine's water quality standards are met. Sampling Protocols, including sample collection and analysis parameters, are



provided under “Lakes, Ponds, and Impoundments” in *Sampling Protocol for Hydropower Studies* (September 2019), which is attached to this letter.

**Impoundment Aquatic Habitat Studies** – The purpose of this study is to determine the effect of impoundment drawdowns on the impoundment’s littoral zone and the ability of the impoundment to support fish and other aquatic life. The Rumford Falls Project is reportedly operated in run-of-river mode but its upper spillway has an inflatable Obermayer spillway system (rubber dam) in addition to 32-inch-high wooden flashboards that could, potentially, lower the impoundment water level as much as 32 inches rather than the 1-foot water level fluctuation that defines run-of-river operations. Therefore, certain operating conditions at the upper spillway can affect the littoral zone and its ability to support fish and other aquatic life. The Applicant must demonstrate that water level fluctuations associated with operations do not adversely impact aquatic life and habitat standards, and so must conduct an Impoundment Aquatic Habitat Study in the upper impoundment following the “Habitat Study” protocol under Lake, Ponds, and Impoundments” in *Sampling Protocol for Hydropower Studies* (September 2019), which is attached to this letter or, alternatively, provide three years of impoundment elevation and inflow/outflow data for the Rumford Falls Hydro Project for Department analysis. The Department understands that the lower impoundment water level fluctuations are limited to one foot in conformance with run-of-river operations and so no adverse effects on littoral habitat within the impoundment are expected; if this is not the case and water levels in the lower impoundment also fluctuate more than one foot, an Impoundment Aquatic Habitat Study will also be necessary in the lower impoundment.

**Temperature and Dissolved Oxygen Monitoring** – The PAD indicates that dissolved oxygen (DO) measured in 1991 met Class C water quality standards. The PAD does not propose DO monitoring, but indicates that Rumford Falls Hydro, LLC will coordinate with the Department to collect water quality data to support water quality certification, which the Department finds must include DO monitoring. DO data must be collected in accordance with the Department’s “Temperature and Dissolved Oxygen Study” under “Rivers and Streams” in the *Sampling Protocol for Hydropower Studies* (September 2019), which is attached to this letter. Temperature and DO monitoring must be conducted in the bypass reach below the middle dam, and in the free-flowing tailwater reach below the confluence of the bypass reach and the lower powerhouse discharge.

**Benthic Macroinvertebrate Studies** – Assessment of the macroinvertebrate community is critical to determine whether current in-stream flow releases are affecting attainment of classification standards for habitat and aquatic life in the river below the dams. Rumford Falls Hydro, LLC did not propose to study benthic macroinvertebrates, but indicated it would coordinate with the Department to collect water quality data in support of water quality certification, which the Department finds must include benthic macroinvertebrate studies. To ensure data meets WQC compliance objectives, the study plan must be developed in accordance with the Department’s *Methods for Biological sampling and Analysis of Maine’s Rivers and Streams* (revised April 2014), which is attached to this letter. Benthic Macroinvertebrate monitoring must be conducted in the bypass reach below middle dam, and in the free-flowing tailwater reach downstream of the confluence of the bypass reach and the lower powerhouse discharge.



**Outlet Stream Aquatic Habitat Study** – This study evaluates whether current in-stream flow releases are affecting attainment of habitat standards for fish and other aquatic life in the river downstream of the dams. It is the Department’s position that there must be both sufficient quality and quantity of habitat for aquatic organisms to meet the aquatic life and habitat standards. The Department has found that, generally, flows providing wetted conditions in a weighted average of 3/4<sup>th</sup> of the cross-sectional area of the affected river or stream, as measured from bankfull conditions, are sufficient to meet aquatic life and habitat standards. Rumford Falls Hydro, LLC indicated it would coordinate with the Department to collect water quality data in support of water quality certification, which the Department finds must include an outlet stream habitat study, in the form of a cross-section flow study as described in the “Habitat and Aquatic Life Studies” section under “Rivers and Streams” in the *Sampling Protocol for Hydropower Studies* (September 2019), which is attached to this letter. The outlet stream aquatic habitat study must be conducted in the bypass reach below middle dam to demonstrate that minimum flows to the bypass reach are adequate to provide habitat for fish and other aquatic species. An outlet stream habitat study is not required downstream of the upper dam because the bypass reach primarily consist of ledge and habitat in that reach is limited, with no free-flowing reach between the ledge and impoundment.

In addition to meeting requirements of the water quality certification, the Department supports study requests prepared by other natural resource agencies including, but not limited to, US Fish and Wildlife Service (USFWS), Maine Department of Inland Fish and Wildlife (MDIFW), and Maine Department of Marine Resources (MDMR).

Thank you for the opportunity to comment on the Pre-Application Document and Scoping Document for the Rumford Falls Project. Please direct any questions regarding these comments and study requests to my attention at [Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov) or 207-446-2642.

Sincerely,



Kathy Davis Howatt  
Hydropower Coordinator

cc: Randy Dorman, Brookfield Renewable (email)  
Kelly Maloney, Brookfield Renewable (email)

Maine Department of Environmental Protection  
Study Request  
Rumford Falls Hydroelectric Project (FERC No. 2333)

**Impoundment Trophic State Study**

**1. Describe the goals and objectives of each study proposal and the information to be obtained.**

Trophic state is an important indicator of water quality within the impoundment. Assessment of this criteria provides information to evaluate the health of the Rumford Falls impoundment and the impact of the dam structure and operation on the Androscoggin River. The objective of this study is to determine if the project impoundment meets Maine Water Quality Standards, including dissolved oxygen and the designated use of recreation in and on the water. As noted below and in the Department's PAD comments, the trophic state study is required because the project impounds the Androscoggin River over a surface area of approximately 419 acres with a reported storage capacity of 2,900 acre-feet. This study will assess whether the trophic state of the impoundment is stable improving.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The resource management goal is to evaluate attainment of Maine Water Quality Standards pursuant to the provisions of the *Water Classification Program*, 38 M.R.S. Sections 464-468 and to certify attainment of such, with any necessary conditions, under Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act).

**3. If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.**

Requestor is a resource agency.

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information.**

Agency file review indicates there is insufficient data in support of these criteria for impounded waters upstream of the Rumford Falls dam. Rumford Falls Hydro proposes to conduct water quality studies in compliance with the MDEP standards. As described in the Department's PAD comment letter, the applicant will need to demonstrate that the project operations meet dissolved oxygen and other water quality standards in the impoundment. A trophic state study must be conducted to demonstrate attainment of Maine Water Quality Standards under the proposed operations.

**5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Data collected will be used to identify the trophic state of impounded waters and may identify stratification effects on the dissolved oxygen within the impoundment. Information will be used to evaluate whether the project meets Maine water quality parameters, which will inform the water quality certification process.

- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

The DEP Sampling Protocol for Hydropower Studies (most recently revised in September 2019) was established by Department staff and has been used successfully throughout the State by the DEP and others. A copy of the Department protocol is attached to the PAD comment letter.

- 7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**  
Trophic state samples are collected twice each month for five consecutive months during open water season. Costs are considered reasonable given that this study is required for Maine water quality certification and is routinely completed at hydropower projects being relicensed in the State. No alternatives to this study are proposed.

Maine Department of Environmental Protection  
Study Request  
Rumford Falls Hydropower Project (FERC No. 2333)

**Impoundment Aquatic Habitat Study**

**1. Describe the goals and objectives of each study proposal and the information to be obtained.**

The objective of this study proposal is to determine if the project impoundment meets Maine Water Quality Standards for habitat and aquatic life criteria. Measurements of Secchi disk transparency are applied to determine the extent of the littoral zone of the impoundment and an assessment of the volume and surface area dewatered under normal operating conditions, including operations of the rubber dam, to determine if at least 75% of the littoral zone remains watered at all times. If the project operates as a run-of-river facility, the impoundment aquatic habitat study will not be required if the applicant submits at least three years of impoundment elevation and inflow/outflow data for the Rumford Falls Project.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The resource management goal is to ensure attainment of Maine Water Quality Standards pursuant to the provisions of the *Water Classification Program*, 38 M.R.S.A. Sections 464-468 and to certify attainment of such, with any necessary conditions, under Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act).

**3. If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.**

Requestor is a resource agency.

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information.**

Existing data indicates that the Rumford Falls Hydroelectric Project operates in run-of-river mode. The applicant does not propose to conduct any water quality studies in the PAD. As described in the Department's PAD comment letter, the applicant will need to submit a minimum of three years of impoundment water level and flow data to demonstrate run-of-river operations or must conduct an impoundment aquatic habitat study.

**5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Data collected will identify drawdown effects on the littoral zone habitat. Information will be used to evaluate whether the project meets Maine's habitat and aquatic life criteria and designated use, which will inform the water quality certification process.

- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

The DEP Sampling Protocol for Hydropower Studies (September 2019) was established by Department staff and has been used successfully throughout the State by the DEP and others. A copy of the Department protocol is attached to the PAD comment letter.

- 7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

The Impoundment Aquatic Habitat Study is a desktop study using data collected in the Trophic State Study. If required, an impoundment aquatic habitat study can be completed in one field season. Costs are considered reasonable given that this study is required for Maine water quality certification and is routinely completed at hydropower projects being relicensed in the State. No alternatives to this study are proposed.

Maine Department of Environmental Protection  
Study Request  
Rumford Falls Hydropower Project (FERC No. 2333)

**Downstream Temperature and Dissolved Oxygen Study**

**1. Describe the goals and objectives of each study proposal and the information to be obtained.**

Temperature and dissolved oxygen (DO) are important indicators of water quality to ensure that discharges from the hydropower project are sufficient to maintain the resident biologic community downstream of the Rumford Falls dams. Assessment of temperature and DO data in the downstream reaches will be used to determine if the hydropower project meets Maine Water Quality Standards including Class C DO criteria.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The resource management goal is to ensure attainment of Maine Water Quality Standards pursuant to the provisions of the *Water Classification Program*, 38 M.R.S.A. Sections 464-468 and certify attainment of such, with any necessary conditions, under Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act)

**3. If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.**

Requestor is a resource agency.

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information.**

Dissolved oxygen concentrations downstream of the Rumford Falls dams must meet Maine water quality criteria for Class C waters. Agency file review indicates temperature and dissolved oxygen data is insufficient to assess attainment of these criteria. The PAD does not indicate that a study of this nature is planned for the project.

**5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Data collected will be used to evaluate project effects on water temperature and DO concentrations in the Androscoggin River downstream of the Rumford Falls dams. Information will be used to evaluate whether the project meets Maine DO criteria for Class C waters and will inform the water quality certification process.

**6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

The DEP Sampling Protocol for Hydropower Studies (September 2019) was established by Department staff and has been used successfully throughout the State by the DEP and others. A copy of the Department protocol is attached to the PAD comment letter.

**7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

The DEP Sampling Protocol for Hydropower Studies (September 2019) offers two options for the temperature and DO study that can be completed in one field season. Temperature and DO samples can be collected one day per week for at least 10 weeks or measured hourly using data sondes placed at designated locations during summer low flow, high water temperature conditions (e.g. July and August). The Department prefers the second method. Costs are considered reasonable given that this study is required for Maine water quality certification and is routinely completed at hydropower projects being relicensed in the State. No alternatives to this study are proposed.

Maine Department of Environmental Protection  
Study Request  
Rumford Falls Hydropower Project (FERC No. 2333)

**Benthic Macroinvertebrate Study**

**1. Describe the goals and objectives of each study proposal and the information to be obtained.**

Assessment of the benthic macroinvertebrate community is critical to determine whether current in-stream flow releases affect attainment of Maine habitat and aquatic life criteria for Class C waters in the Androscoggin River below the Rumford Falls dams. The assessment provides biological data to evaluate potential impacts caused by project operations.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The resource management goal is to ensure attainment of Maine Water Quality Standards pursuant to the provisions of the *Water Classification Program*, 38 M.R.S.A. Sections 464-468 and certify attainment of such, with any necessary conditions, under Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act)

**3. If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.**

Requestor is a resource agency.

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information.**

The Androscoggin River must meet Maine aquatic life criteria in the vicinity of the Rumford Falls Project. Agency file review indicates data is insufficient to evaluate the current aquatic community in the bypass and tailrace reaches downstream of the Rumford Falls dams. However, as noted in Department PAD Comment 1, the Department will only require benthic macroinvertebrate sampling in the tailrace reach given the dominance of bedrock in the bypass reach. The PAD does not indicate that a study of this nature is planned for the project.

**5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Data collected will be used to evaluate the benthic macroinvertebrate community in the tailrace reach downstream of the Rumford Falls dams. Information will be used to evaluate whether the project meets Maine aquatic life criteria and will inform the water quality certification process.



- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

The DEP Methods for Biological Sampling and Analysis of Maine's Rivers and Streams (August 2002, revised April 2014) was established by Department staff and has been used successfully throughout the state by DEP and others since 1983. A copy of the Department manual is attached to the PAD comment letter.

- 7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

Replicate benthic macroinvertebrate sample collectors (rock baskets or cones) are deployed for a 28-day study period in the tailrace reach of the hydropower project during low flow, high temperature conditions. Samples must be collected by a professional aquatic biologist and evaluated by a professional freshwater macroinvertebrate taxonomist. Methods are documented in the DEP manual Methods for Biological Sampling and Analysis of Maine's River and Streams (August 2002, revised April 2014). Costs are considered reasonable given that this study is required for Maine water quality certification and is routinely completed at hydropower projects being relicensed in the State. No alternatives to this study are proposed.

Maine Department of Environmental Protection  
Study Request  
Rumford Falls Hydropower Project (FERC No. 2333)

**Aquatic Habitat Cross-Section Flow Study**

**1. Describe the goals and objectives of each study proposal and the information to be obtained.**

Assessment of aquatic habitat downstream of the Rumford Falls dams is required to determine whether current in-stream flow releases meet Maine habitat and aquatic life criteria. An aquatic habitat cross-section flow study measures depth, velocity, and wetted width along established transects at various discharges to determine flows where at least 75% of the stream cross-sectional area has enough water to provide sufficient habitat for fish and other aquatic organisms. Data will be evaluated to determine if the downstream waters provide sufficient quantity of water to maintain riverine aquatic habitat in the bypass and tailrace reaches.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The resource management goal is to ensure attainment of Maine Water Quality Standards pursuant to the provisions of the *Water Classification Program*, 38 M.R.S.A. Sections 464-468 and to certify attainment of such, with any necessary conditions, under Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act).

**3. If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.**

Requestor is a resource agency.

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information.**

The Androscoggin River downstream of the Rumford Falls dams must meet Maine habitat and aquatic life criteria. Agency file review indicates data is insufficient in the bypass and tailrace reaches of the Rumford Falls Project to assess attainment of these criteria. The PAD does not indicate that a study of this nature is planned for the project.

**5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Data collected will be used to evaluate aquatic habitat in the Androscoggin River downstream of the Rumford Falls dams. Information will be used to evaluate whether the project meets Maine habitat and aquatic life criteria and will inform the water quality certification process.

- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

The DEP Sampling Protocol for Hydropower Studies (September 2019) was established by Department staff and has been used successfully throughout the State by the DEP and others. A copy of the Department protocol is attached to the PAD comment letter.

- 7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

A cross-section flow study measures depth, velocity, and wetted width along established transects in the bypass and tailrace reaches at various discharges to determine flows where at least 75% of the stream cross-sectional area has enough water to provide sufficient habitat for fish and other aquatic organisms. This type of study can typically be accomplished in one or two days. The Department may exclude the bypass reach from the study after reviewing run-of-river operations data requested in the PAD comment letter. Costs are considered reasonable given that this study is required for Maine water quality certification and is routinely completed at hydropower projects being relicensed in the State. No alternatives to this study are proposed.

## DEP SAMPLING PROTOCOL FOR HYDROPOWER STUDIES September 2019

## LAKES, PONDS, AND IMPOUNDMENTS

Trophic State Study

Sampling personnel must be certified annually for this sampling protocol by DEP's Division of Environmental Assessment Lakes Section.

Each basin shall be sampled at the deepest location twice each month for at least five consecutive months during one open water season as follows.

<u>Parameter</u>	<u>Sampling method</u>	<u>Detection limits</u>
Secchi disk transparency	water scope	0.1 meter
Temperature	profile <sup>1</sup>	0.1 C
Dissolved oxygen	profile <sup>1</sup>	0.1 mg/l
Total phosphorus	integrated core <sup>2</sup>	0.001 mg/L
Chlorophyll a	integrated core <sup>2</sup>	0.001 mg/L (trichromatic)
Color	integrated core <sup>2</sup>	1.0 SPU
pH	integrated core <sup>2</sup>	0.1 SU
Total alkalinity	integrated core <sup>2</sup>	1.0 mg/l

<sup>1</sup>Profiles shall consist of temperature and dissolved oxygen measurements taken every meter up to 15 meters, every other meter to 25 meters, then every 5 meters thereafter.

<sup>2</sup>Integrated core samples should be obtained 1) in thermally stratified ( $\Delta T \geq 1^\circ\text{C}/\text{m}$  at any depth below the top 3 m depth) waters from an epilimnetic core, unless there is a spike in dissolved oxygen concentration deeper, in which case the core depth should be extended to capture the dissolved oxygen spike, or 2) in non-thermally stratified waters, to twice the Secchi disk depth, 1 m from the bottom, or 10 m, whichever is less.

In addition, during late summer (mid to late August depending on latitude and weather conditions), water samples shall be collected and analyzed from up to three depths in the water column for the parameters below except Chlorophyll *a*. If the waterbody is thermally stratified samples will be collected from an epilimnetic core, at the top of the hypolimnion, and at one meter above the sediment. If the waterbody is not thermally stratified, only one integrated core sample is needed from the surface to two times the Secchi disk depth, to 1 m from the bottom, or 10 m, whichever is less.

<u>Parameter</u>	<u>Detection limit</u>
Total phosphorus	0.001 mg/l
Nitrate	0.01 mg/l
Chlorophyll a (uncorrected)	0.001 mg/l (trichromatic determination)
Color	1.0 SPU
DOC	0.25 mg/l
pH	0.1 SU
Total alkalinity	1.0 mg/l
Total iron	0.005 mg/l
Total & dissolved aluminum	0.010 mg/l
Total calcium	1.0 mg/l
Total magnesium	0.1 mg/l

Total sodium	0.05 mg/l
Total potassium	0.05 mg/l
Total silica	0.05 mg/l
Specific conductance	1 ms/cm
Chloride	1.0 mg/l
Sulfate	0.5 mg/l

Additional sampling may be required due to the hydraulic or physical characteristics of a given waterbody or to the presence of significant water quality problems.

#### Habitat Study

For lakes, ponds, and riverine impoundments, determination of attainment of the designated use 'habitat for fish and other aquatic life' will be determined as follows. Using a depth of twice the mean summer Secchi disk transparency, determined from the Trophic State Study or historic DEP data, as the bottom of the littoral zone, the volume and surface area dewatered by the drawdown will be calculated to determine if at least 75% of the littoral zone remains watered at all times. Alternatively, studies of fish and other aquatic life communities, including freshwater mussels, may be conducted to demonstrate that the project maintains 'structure and function of the resident biological community' despite a drawdown that results in less than 75% of the littoral zone remaining watered at all times.

#### Fishing (Mercury Contamination) Study

To ensure that the project does not contribute to the Statewide Fish Consumption Advisory due to mercury, projects with excessive drawdowns (generally >10 feet) may be required to analyze sport fish from the project waterbody and one or more reference waters for mercury. Contact DEP for specific requirements for each project.

## RIVERS AND STREAMS

### Temperature and Dissolved Oxygen Study

#### *Applicability*

This rivers and streams sampling protocol shall apply to tailwater areas that are not impoundments where existing data are insufficient to determine existing and future water quality.

#### *Sampling Stations*

Sampling shall occur in the tailwater downstream from the turbine/gate outlet or dam at a location representative of downstream flow as agreed by DEP on a case by case basis. Initially, measurements of temperature and dissolved oxygen should be made along a transect across the stream at the first, second and third quarter points across the width. If there is no violation of dissolved oxygen criteria and no significant (<0.4 mg/l) difference in concentrations among the quarter points, subsequent measurements may be made at the location shown to be representative of the main flow. Otherwise, measurements should be made at the location of the lowest concentration and the location of the main flow. Sampling should also occur in any bypassed segment of the river created by the project. Additional sampling stations may be required in the upstream or downstream areas where significant point or nonpoint sources exist or where slow moving or deep water occurs. The number and spacing of any additional stations will be determined by DEP on a case-by-case basis.

#### *Parameters*

Temperature and dissolved oxygen shall be sampled at mid-depth in rivers less than 2 m deep or in a profile of 1 meter increments of depth in rivers greater than 2 m deep. In rivers where it is already known that attainment of required statutory dissolved oxygen criteria is questionable, sampling for additional parameters (e.g. BOD, nitrogen, phosphorus) may be necessary.

#### *Frequency and Timing*

Sampling should be conducted during the summer low flow high temperature period, with the ideal conditions being the 7Q10 flow (the 7 day average low flow with a 10 year recurrence interval) combined with daily average water temperatures exceeding 24 °C. Measurements of temperature and dissolved oxygen shall be made every hour with a datasonde in remote unattended mode continuously during July and August, unless high flows well above seasonal median flows occur.

Alternatively, with concurrence by DEP, sampling could be undertaken one day per week for a minimum of ten weeks throughout the summer low flow, high temperature period. Each discrete grab sampling event for temperature and dissolved oxygen would consist of a minimum of two daily runs, the first of which should occur before 7 AM and the second of which should occur after 2 PM. Sampling results will not be considered complete unless a minimum of 5 sampling days meets the following conditions: The product of the water temperature (°C) and the flow duration (the percentage of the time a given flow is statistically exceeded) at the time of sampling exceeds 1500. For cycling hydropower projects, in addition to twice daily monitoring, continuous monitoring may be required at some locations for a duration equivalent to the period of one cycle of the storage and the release of flow.

For either method, a summer in which low flows and high temperatures are not experienced may result in additional sampling requirements for the next summer. Low flow conditions may occur naturally, as an unregulated river or may be artificially induced, as in the case of upstream flow regulation or flows downstream from a cycling or peaking power project or in the case of a bypassed segment which receives flow only by spillage, leakage or specific releases.

#### *Available Data*

The use of data already available is encouraged provided that adequate QA/QC procedures have been followed. Old data may not be acceptable for considerations of meeting minimum sampling requirements, but could still provide useful information. Acceptance/rejection of data will be determined on a case by case basis, but generally data more than 10 years old may be rejected.

#### Habitat and Aquatic Life Studies

For rivers and streams, determination of attainment of the designated use ‘habitat for fish and other aquatic life’ and “structure and function of the resident biological community” will be determined as follows. A Cross-Section Flow Study is required that measures width and depth at various flows to determine the flow at which at least 75% of the bank full cross-sectional area of the river or stream is continuously watered. At least three cross-sections representative of the river or stream must be measured. Alternately, a combination of ambient measurements in one cross-section, flow data from existing flow gages, and/or modelling may be approved by DEP.

In addition, to determine if the project ‘attains the aquatic life criteria, i.e. ‘maintains the structure and function of the resident biological community’, biological monitoring of the benthic macroinvertebrate community must be conducted following DEP’s standard protocol in Methods for Biological Sampling and Analysis of Maine’s Rivers and Streams, DEP LW0387-B2002.

A copy can be found at [www.maine.gov/dep/water/monitoring/biomonitoring/material.html](http://www.maine.gov/dep/water/monitoring/biomonitoring/material.html)





# Methods for Biological Sampling and Analysis of Maine's Rivers and Streams

Susan P. Davies  
Leonidas Tsomides



DEP LW0387-C2014  
Revised April, 2014



**MAINE DEPARTMENT OF ENVIRONMENTAL  
PROTECTION**

**METHODS**

**FOR**

**BIOLOGICAL SAMPLING AND ANALYSIS OF**

**MAINE'S RIVERS AND STREAMS**

**Susan P. Davies**

**Leonidas Tsomides**

Maine Department of Environmental Protection  
Bureau of Land and Water Quality  
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Augusta, Maine 04333  
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## FOREWORD

This manual describes the field, laboratory and data preparation methods required by the Maine Department of Environmental Protection to collect and analyze benthic macroinvertebrate samples for the River and Stream Biological Monitoring Program. The biological classification of Maine's inland waters was authorized by the Maine State Legislature with the passage of Public Law 1985 Chapter 698 - The Classification System for Maine Waters. This law states that it is the State's objective "to restore and maintain the chemical, physical and biological integrity" of its waters, and establishes a water quality classification system to enable the State to manage its waters so as to protect their quality. The classification system further establishes minimum standards for each class, which are based on designated uses, and related characteristics of those uses, for each class of water.

Each water quality class contains standards that, among other things, describe the minimum condition of the aquatic life necessary to attain that class. The Maine Department of Environmental Protection (the Department) has developed numeric criteria in support of the narrative aquatic life standards in the Water Quality Classification Law. The Department has collected a large, standardized database consisting of benthic macroinvertebrate samples from above and below all significant licensed discharges in the State, from areas impacted by non-point sources, as well as from relatively unperturbed areas. These sampling locations were chosen to represent the range of water quality conditions in the State. This information has been used to develop numeric criteria which are specific to the natural biotic community potential of the State of Maine (see Davies et al., 1995 and 1999 for a description of the development and application of numeric criteria) and is established in DEP regulation Chapter 579 : Classification Attainment Evaluation Using Biological Criteria for Rivers and Streams.

Standardization of data collection and analytical methods is fundamental to the consistent, unbiased and scientifically sound evaluation of aquatic life impacts. This manual sets forth the standardized practices and procedures used by the Department to acquire or accept benthic macroinvertebrate data for use in regulation, assessment or program development.

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## **I GENERAL METHODS FOR RIVER AND STREAM AQUATIC LIFE CLASSIFICATION ATTAINMENT EVALUATION**

Each water quality class is defined by standards that describe the minimum condition of the aquatic community necessary to attain that class. The benthic macroinvertebrate community is used as an indicator community of the general state of the aquatic life in flowing waters for the purpose of assessment of classification attainment. Standardized sampling techniques and sample analysis are required for assessment of biological attainment of stream water quality classification. This manual presents the standard practices and procedures that have been adopted by the Department to acquire benthic macroinvertebrate data for purposes of aquatic life classification attainment evaluation.

### **Purpose:**

To determine the water quality class attained by a particular river or stream reach in terms of the aquatic life standards set forth in 38 MRSA Sec. 465 (The Classification System for Maine Waters).

### **Requirements:**

All samples of aquatic life that are collected for purposes of classification attainment evaluation, whether collected by the Department or by any party required to make collections by the Department, must be collected, processed and identified in conformance with the standardized methods outlined in this manual. Selection of appropriate sampling sites and micro-habitat to sample, as well as procedures for quantitative analysis of the sample must conform to methods set forth in this manual. Data submitted by any party required to make collections by the Department must be accompanied by a Quality Assurance Plan, approved by the Commissioner.

### **1. Qualifications of Sampling Personnel**

Biological sampling must be performed by a professional aquatic biologist or by qualified personnel under the supervision of a professional aquatic biologist. The professional aquatic biologist must have, as a minimum, a Bachelor of Science degree in biological sciences with aquatic entomology, invertebrate zoology, fisheries or closely related specialization, and greater than 6 months experience working with macroinvertebrate sampling methods and taxonomy. (See also Qualifications of Laboratory Personnel, Sec. II-1.)

2. Apparatus, Equipment, Supplies, Instruments

(1) Sampling devices

a) Rock-filled wire basket introduced substrate

Use: flowing wadeable, eroded, mineral-based bottom rivers and streams.

Description: cylindrical plastic coated or chrome wire, baskets with at least 1.5 cm spaces between wires, a hinged opening, and secure closure (Klemm, D.J. et al, 1990).

Substrate material: clean, washed, bank-run cobble, graded to uniform diameter range of 3.8 to 7.6 cm (1.5 to 3 inches) in size (#2 roofing stone).

Baskets must be filled to 7.25 +/- 0.5 kg (16 lbs +/-1 lb) of substrate material.

b) Rock-filled mesh bag introduced substrate

Use: small flowing streams, too shallow for rock baskets to be fully submerged.

Description: mesh bags of sufficient size to hold 7.25 +/- 0.5 kg of cobble substrate as described above, with at least 2.54 cm aperture mesh, and secure closures.

c) Closing introduced substrate cone

Use: deep, non-wadeable rivers having sufficient flow to have an eroded, mineral based bottom.

Description: cone shaped wire, or plastic coated wire basket filled with substrate material and closed by means of an inverted, weighted funnel (Courtemanch, 1984).

Substrate material: (see above Rock-filled wire basket substrate material).

(2) Sieves, sieve buckets, nets

Samples are concentrated on sieves having a mesh size between 500 - 600 microns (USA Standard Testing Sieve ASTM-E-11 Specification size No. 30 or No. 35).

(3) Optical equipment

- a) Binocular microscope: Magnification range from 10x or less to 30x or greater.
- b) Compound microscope: Magnification range from 10x to at least 400x; 100x with oil immersion lens is advisable.

3. Sampling Season, Sampler Exposure Period, Placement and Retrieval

(1) Sampling season

The standard sampling season upon which all macroinvertebrate classification criteria are based is the late summer, low flow period (July 1 to September 30). All baseline data for the biological classification program has been collected during this time period. This period often presents conditions of maximal stress to the biological community due to decreased dilution of pollutional material and increased stream water temperatures. Furthermore, because the composition of the benthic macroinvertebrate community changes with season, due to natural life history features, this period defines a standardized seasonal community.

As noted, the Department's linear discriminant models define biological classification criteria derived from a macroinvertebrate community defined by the specific sampling methods and index season under which they were collected. Samples collected at other times of year may yield valuable water quality related information, however classification attainment may not be assigned solely on the basis of results of the linear discriminant models for these non-standard samples.

(2) Exposure period

Standard methods require that substrate samplers be exposed in the water body for a period of 28 days +/- four days within the above-specified sampling season. However, extended exposure periods may be necessary to allow for adequate colonization in the case of assessments of low velocity or impounded habitats. If such conditions exist a 56 days +/- four days exposure period may be used.

(3) Sampler placement

*Rock Baskets/Bags*

The actual sampler location should be approached so as to avoid any disturbance in, or upstream of, the sampled site. Position baskets in locations of similar habitat characteristics. Orient baskets with the long axis parallel to stream flow. Provide for relocation of baskets by flagging trees in the vicinity and/or by drawing a diagram with appropriate landmarks indicated.

*Cones*

Cone samplers should be marked with individual marker buoys (milk jugs or other suitable float) leaving about 5 extra feet of line to allow for water level changes and to provide for easy retrieval. They should be placed on the substrate with a minimum of disturbance, in an apex-up position, and located in the approximate middle fifty percent of the channel. (Note however, care should be taken not to create an obstruction to boat traffic.) In areas subject to vandalism, or in rivers having extensive macrophyte beds, it may be necessary to attach the sampler lines to a common anchor and thence to one unobtrusive surface float. Retrieval funnels will not properly close when lines are fouled with drifting macrophytes.

(4) Sampler retrieval

*Rock Baskets/ Bags*

Baskets are approached from downstream. Excessive accumulations of macrophytes, algae or debris clinging to the outside of the basket should be carefully removed, taking care to avoid jarring the basket itself. An aquatic net or drift net (mesh size 500 - 600 microns) is positioned against the substrate immediately downstream of the basket which is then quickly lifted into the net. The contents of the basket and all net washings are emptied into a sieve bucket (500 - 600 microns); the basket wires are carefully cleaned first, then rocks are hand washed and inspected and returned to the basket. All sieve bucket contents are placed in sample jars. A small amount of stream water and 95% ethyl alcohol is added to yield an approximately 70% solution of alcohol. Especially dense samples should be re-preserved in the laboratory, with fresh 70% ethyl alcohol. Rock baskets should be thoroughly cleaned and allowed to desiccate prior to re-use.

*Cones*

Cone samplers should be retrieved with the boat anchored directly upstream of the samplers. Once the float is retrieved and removed, the line should be held as vertically as possible while the weighted funnel is released down the line to enclose the cone. Cone and funnel should be retrieved quickly and smoothly from the bottom, and released directly into a sieve bucket or tub. Field processing should then proceed as described above for rock baskets.



#### 4. Site Selection Criteria

Classification criteria apply to a strictly defined sample of the benthic macroinvertebrate community. Habitat type from which the community is obtained is a significant determinant of the make-up of the target community. Benthic macroinvertebrate communities of flowing streams and rivers having a hard, eroded substrate comprise the majority of samples in the baseline data set. This habitat is characteristic of the majority of the river and stream waters of the State. Exceptions to these conditions may require special consideration and the exercise of professional judgment. (Note: See Section III-2. (3) "Classification attainment evaluation of waters subjected to flow regulation" page 13, for procedures relating to the assessment of regulated flow sites.) While it is useful to obtain both an upstream and downstream sample to evaluate the effect of a pollution source, classification attainment evaluation does not require data from a matched reference site in order to arrive at a determination of aquatic life class. Analytical methods for classification attainment evaluation are described in Section III.

##### (1) Site attributes

- a) The area selected should be generally representative of the habitat of the stream reach as a whole;
- b) Where there is alternating riffle/pool habitat, the riffle/run is the habitat of choice;
- c) A location should be selected where there is a high degree of certainty that the rock basket samples will remain fully submerged even if the water level drops significantly.

##### (2) Precautions

- a) Avoid atypical influences such as bridges, entering culverts, channelized areas such as road crossings, culverts, or obstructions to flow;
- b) Avoid bank effects: samplers should be located in the middle 50% of the bank to bank width, or in an area with a flow regime typical of the overall character of the stream segment;
- c) Avoid slackwater areas and eddies immediately upstream or downstream of large rocks or debris.

(3) Matching reference and effluent impacted sites

If possible both stream reaches should be viewed prior to selection of sampling sites. Efforts should be made to sample habitats which are comparable in the following characteristics:

- a) Water velocity;
- b) Substrate composition (i.e., size ranges and proportions of particles making up the substrate);
- c) Canopy coverage;
- d) Depth;
- e) Other upstream influences except the pollution source in question (for example, use caution when one site is just below a lake outfall and the other is not).

(4) Factors to be considered in site selection below point sources

The area of initial dilution of an effluent should be determined by visual observation of the plume pattern; by observations of biotic effects attributable to the plume, if evident (periphyton growth, die-off patterns); and by transects of specific conductance measurements from the outfall, in a downstream direction. The site selected should be in an area where reasonable opportunity for mixing of the effluent has occurred. If a mixing zone has been defined in a license, sampling should occur immediately downstream of it. In cases where the effluent plume channels down one bank for great distances (>1 km), or where localized effluent impact is expected to be severe for a distance beyond the zone of initial dilution, it is advisable to have a sampling site upstream of the source, one or more in the plume, and at least two farther downstream. One downstream site should be located at the point of presumed bank to bank mixing and subsequent sites should be located to assess the extent of impact downstream.

5. Sample Size

The biological community is evaluated on the basis of benthic macroinvertebrates obtained from at least three samplers which yield an average of at least 50 organisms per sampler. Matched upstream and downstream sites must be sampled using identical methods and level of effort, preferably by the same personnel.

Subsampling may be performed on samples if the mean number of organisms in a sampler exceeds 500 and subsampling will yield at least 100 organisms per rock/cone sampler. All samplers in a site should be treated consistently. Subsampling methods are described in Section II-5. Note: Subsampling will

reduce sample richness by an indeterminate amount. This may affect the outcome of linear discriminant analysis. See Section III-2. (2).

#### 6. Physical Habitat Evaluation

A field data sheet (Appendix A) is to be completed at the time of sampler placement. This form records site specific information concerning natural variables that may affect community structure. Items addressed include exact site location (latitude and longitude, narrative description of the mapped location and/or a topographic map with site indicated); substrate composition; canopy coverage; land use and terrain characteristics; water velocity, temperature, dates of exposure and investigator name. The form is to be completed by observation as well as instrument measurement of water velocity, specific conductance, dissolved oxygen, global positioning device, temperature, etc.

## II **LABORATORY METHODS**

#### 1. Qualifications of Laboratory Personnel

Sample processing and taxonomy in the laboratory must be performed or supervised by a professional freshwater macroinvertebrate taxonomist who is certified by the Society of Freshwater Science in the identification of eastern US taxa. Certification must include Genus level categories, such as Ephemeroptera, Plecoptera and Trichoptera (EPT), General Arthropods and Chironomidae taxa. Taxonomic data will not be accepted without verification that the supervising laboratory taxonomist has been certified in relevant categories.

#### 2. Sample Preservation, Sorting

All sample material collected in the field, as described in Section I, is preserved in 70% ethyl alcohol. Samples are stored in airtight containers until sorted. Sorting of macroinvertebrates from detritus and debris should follow methods described in Appendix B. One out of every ten samples is evaluated by a biologist for sorting completeness.

After sorting, recommended storage for macroinvertebrates is in 70% ethyl alcohol with 5% glycerin, in vials sealed with tightly fitting rubber stoppers.

### 3. Sample Labeling

All samples are labeled in the field immediately upon collection. The label must include the following information:

- Date of sample retrieval
- Waterbody
- Town or target discharge
- Whether above or below the discharge (if applicable)
- Replicate number

### 4. Sample Log Book

In the laboratory, the samples from each sampled site are to be assigned a sample log number, written on all items generated by the sample (e.g., sample vials, slides, records, count sheets, etc.). Log numbers are sequentially recorded in a master log book. The log book shall also contain site identification, date of placement and retrieval, investigator name, sampler type and any comments regarding sampler retrieval or data quality.

### 5. Subsampling

#### (1) Methods

If it is determined that a sample should be subsampled (see criteria in Section I-5 Sample Size) methods of Wrona et al, (1982) are followed. These are summarized below:

- a) Fit a plastic or glass Imhoff-type settling cone with an aquarium air stone sealed in the bottom and connected to a compressed air supply.
- b) Place the sorted macroinvertebrate sample in the cone and fill the apparatus with water to a total volume of one liter.
- c) Agitate gently for 2 to 5 minutes with the air stone.
- d) Remove 25% of the sample in 5 aliquots with a wide-mouth 50 ml dipper and combine into one sample vial. The dipper should be submerged and withdrawn over a five second interval.
- e) Ascertain whether or not the required 100 organisms have been obtained in the subsample.
- f) Indicate clearly on the sample label and on the data sheet the fraction of the sample that the subsample represents.

(2) Precautions

- a) Especially large or dense organisms such as crayfish, molluscs or caddisflies with stone cases, which do not suspend randomly in the sample, should not be included in the subsample. They should be counted separately.
- b) When removing aliquots, the subsampler should be careful to avoid biased capture of organisms in the cone. Avoid watching the cone as the dipper is withdrawn.

This method has been tested by the Department and has been found to randomly distribute the sample. The five separate counts conform to a Poisson series and thus can be combined into one sample (Elliott, 1979).

(3) Chironomidae subsampling

A subsampling plan for Chironomidae shall be approved by the Department. A Department recommended subsampling plan follows the following criteria:

- a) For samples having less than 100 midges, all midges will be identified to genus/species level.
- b) For samples having 100 to 199 midges, a subsample of one half (0.5) will be removed by randomly selecting the specimens to be identified and identified to genus/species level. Remaining unsampled midges will be examined for unusual or rare specimens, which will be removed and identified to genus/species level separate from the subsample of the sample.
- c) For samples having 200 to 499 midges, a subsample of one quarter (0.25) will be removed by randomly selecting the specimens to be identified and identified to genus/species level. Remaining unsampled midges will be examined for unusual or rare specimens, which will be removed and identified to genus/species level separate from the subsample of the sample.
- d) For samples having 500 or more midges, midges will be grouped by genus for those for which it is possible to confidently identify them to genus level without mounting. For remaining midges not grouped by genus, a subsample of 100 specimens will be randomly selected and identified to genus/species level. Remaining unsampled midges will be examined for unusual or rare specimens, which will be removed and identified to genus/species level separate from the subsample of the sample.

- e) Reporting of the subsample of the sample will be as follows. Numbers reported on the Excel spreadsheet will be converted to reflect the sample total. Any round-off errors between the subsample total and the sample total will be equalized by adding or deducting the difference from the most numerous taxon. If unusual or rare specimens are removed from the sample following the subsample removal, the conversion of the subsample total to a "partial" sample total will be based on the sample total minus the number of unusual or rare specimens. Following this procedure, the number of unusual or rare specimens will be added to the "partial" sample total to bring it back to the sample total.

## 6. Sample Taxonomy

All taxonomic data submitted to the Department must be accompanied by the name(s) of the individual(s) actually performing the identifications. A list of taxonomic references used, and a reference collection of organisms must also be submitted (see below).

### (1) Taxonomic resolution

Macroinvertebrate organisms are identified to genus in all cases where possible. If generic keys are not available or taxonomic expertise is lacking for a taxon it should be identified to the lowest level possible. Identification of organisms to species is highly recommended whenever possible. Although quantitative analysis of benthic macroinvertebrate samples by the Department is based on counts adjusted to the generic level of resolution, species designations are recorded in the Department database and can contribute to the final stage of data analysis, Professional Judgment Evaluation of the model outcome. This is especially important for Class Insecta. Taxonomists submitting data for use by the Department must use current taxonomic references.

### (2) Identification of Chironomidae

Specimens of chironomid midges are identified from slide mounts of the cleared head capsule and body parts. Euparal or Berlese mounting medium is recommended for preparation of slides. CMCP-9 is recommended for the preparation of permanent slide mounts of reference material, for voucher specimens or for permanent collections. These slides should be prepared under a fume hood. Instructions for preparation and slide mounting may be found in Wiederholm, (1983). In samples in which a given taxon is represented by a large number of individuals, the identification to genus may be made from slide mounts of a sufficient proportion of the individuals to give a high degree of certainty that they are all the same (10-50% depending on

the distinctiveness of the taxon visible under binocular microscope). A subsampling plan for Chironomidae is described in Section II-5. Each permanent slide mount is to be fully labeled or coded in a manner which positively associates the slide with the sample from which it originated.

(3) Quality control

All organisms and records from any sampling event intended to serve regulatory purposes must be preserved for a period of at least ten years. In the course of identifying taxa collected as part of the Department's biological monitoring program, or in other collection activities, a special reference collection of separate taxa is established. This collection allows subsequent identifications of the same taxon to be confirmed and thus serves to standardize taxonomy for the program.

Each contracted taxonomist, working for the Department or working for anyone submitting data to the Department, will be required to submit a reference collection of taxa identified, as well as a list of the taxonomic references used in the identifications. Organism identifications will be checked against the Department's collection by a Department taxonomist.

### III ANALYTICAL METHODS

In general, it is the responsibility of the Department, or its agents, to conduct sampling for the purpose of making decisions on the attainment of water quality classification. Under certain conditions, sampling may be required of applicants for waste discharge licenses, or applicants requiring Section 401 Water Quality Certification. Sampling may be performed by corporations, businesses, organizations or individuals who can demonstrate their qualifications and ability to carry out the Department's sampling and analytical protocol, described in this manual. Such monitoring will be conducted according to a quality assurance plan provided to the Department and approved by the Commissioner.

Classification attainment evaluation is established in DEP regulation Chapter 579: Classification Attainment Evaluation Using Biological Criteria for Rivers and Streams. Davies et al, 1995 details the conceptual and technical basis for the State's application of linear discriminant analysis to assess attainment of aquatic life standards. A synopsis of Chapter 579 follows in this section.

## 1. Minimum Provisions

Properly collected and analyzed samples that fail to achieve the following criteria are unsuitable for further analysis through the numeric criteria statistical models:

- Total Mean Abundance must be at least 50 individuals (average per basket/bag/cone);
- Generic Richness for three replicate basket/bag/cone samplers must be at least 15.

Samples not attaining these criteria shall be evaluated by Professional Judgment. A determination will be made whether the affected community requires re-sampling or whether the community demonstrates non-attainment of minimum provisions of the aquatic life standards.

## 2. Aquatic Life Statistical Decision Models

The four statistical decision models consist of linear discriminant functions developed to use quantitative ecological attributes of the macroinvertebrate community (Appendix C-1) to determine the strength of the association of a test community to any of the water quality classes (Appendix D). The coefficients or weights are calculated using a linear optimization algorithm to minimize the distance, in multivariate space, between sites within a class, and to maximize the distance between sites between classes.

### (1) Linear discriminant models

The discriminant function has the form:

$$Z = C + W_1X_1 + W_2X_2 + \dots + W_nX_n$$

Where: Z = discriminant score  
 C = constant  
 $W_i$  = the coefficients or weights  
 $X_i$  = the predictor variable values

Association values are computed, using variable values from a test sample, for each classification using one four-way model and three two-way models. The four-way model uses nine variables pertinent to the evaluation of all classes and provides four initial probabilities that a given site attains one of three classes (A, B, or C), or is in non-attainment (NA) of the minimum criteria for any class. These probabilities have a possible range from 0.0 to 1.0, and are used, after transformation, as variables in each of the three subsequent final decision models. The final decision models (the three, two-way models)



are designed to distinguish between a given class and any higher classes as one group and any lower classes as the other group (i.e., Classes A+B+C vs. NA; Classes A+B vs. Class C+NA; Class A vs. Classes B+C+NA). The equations for the final decision models use the predictor variables relevant to the class being tested (Appendix E). The process of determining attainment class using association values is outlined in Appendix F.

(2) Application of professional judgment

Where there is documented evidence of conditions which could result in uncharacteristic findings, allowances may be made to account for those situations by adjusting the classification attainment decision through use of professional judgment as provided in DEP regulation Chapter 579: Classification Attainment Evaluation Using Biological Criteria for Rivers and Streams. The Department may make adjustments to the classification attainment decision based on analytical, biological, and habitat information or may require that additional monitoring of affected waters be conducted prior to issuing a classification attainment decision.

Professional Judgment may be utilized when conditions are found that are atypical to the derivation of the linear discriminant model. Factors that may allow adjustments to the model outcome include but are not limited to:

- a) Habitat factors
  - Lake outlets
  - Impounded waters
  - Substrate characteristics
  - Tidal waters
- b) Sampling factors
  - Disturbed samples
  - Unusual taxa assemblages
  - Human error in sampling
- c) Analytical factors
  - Subsample vs. whole sample analysis
  - Human error in processing

(3) Classification attainment evaluation of waters subjected to flow regulation

The Maine State Legislature, in 38 MRSA Article 4-A Sec. 464 (9)-(10), *The Water Classification Program*, acknowledges that changes to aquatic life and habitat occur as the result of the impoundment of riverine waters and has modified the standards of waters so affected. The habitat and aquatic life criteria of riverine impounded waters of Class A, Class B or Class C are

deemed to be met if the impoundment attains the standards of Class C (e.g., maintenance of structure and function of the resident biological community). Impoundments managed as Great Ponds must also attain Class C aquatic life standards. If the actual water quality attains any more stringent characteristic or criterion than the Class C standards dictate, then the waterbody must be managed so as to protect those higher characteristics. Class C standards also apply to the *downstream* waters below certain specified riverine impoundments on the Kennebec River and the Saco River (Wyman Dam, Moosehead East Outlet Dam, West Buxton Dam and Skelton Dam) that are classified as A or B. All other waters subjected to flow regulation are managed according to standards of the water quality classification assigned by the Legislature.

(4) Adjustments of a decision

It is the responsibility of the Department to decide if adjustments of a decision should occur. The following adjustments may be made to correct for these conditions:

a) Resample

The Department may require that additional monitoring of the test community be done before a determination of class attainment can be made, based on documented evidence of specific sampling factors that may have influenced the results.

b) Raise the finding

i. The Department may raise the classification attainment outcome predicted by the model from non-attainment of any class to indeterminate or to attainment of Class C, based on documented evidence of specific conditions, as defined above.

ii. The Department may raise the classification attainment outcome predicted by the model from attainment in one class to attainment in the next higher class, based on documented evidence of specific conditions, as defined above.

c) Lower the finding

The Department may decide to lower the classification attainment finding, on the basis of documented, substantive evidence that the narrative aquatic life criteria for the assigned class are not met.

- d) Determination of non-attainment: minimum provisions not met  
Samples having any of the ecological attributes not attaining the minimum provisions, and where there is no evidence of conditions which could result in uncharacteristic findings, as defined above, must be determined to be in non-attainment of the minimum provisions of the aquatic life criteria for any class.
- e) Determination of attainment: minimum provisions not met  
Where there is evidence of factors that could result in minimum provisions not being met, professional judgment may be used to make a professional finding of attainment of the aquatic life criteria for any class. Such decisions will be provisional until appropriate resampling is carried out.

(5) Sampling procedures do not conform

For classification attainment evaluation of test communities that do not conform to criteria provided in Section I General Methods, or Section III-1, Minimum Provisions, of this manual, and are therefore not suitable to be run through the linear discriminant models, the Department may make an assessment of classification attainment or aquatic life impact in accordance with the following procedures:

- a) Approved assessment plan  
A quantitative sampling and data analysis plan must be developed in accordance with methods established in the scientific literature on water pollution biology, and shall be approved by the department.
- b) Determination of sampling methods  
Sampling methods are determined on a site-specific basis, based on habitat conditions of the sampling site, and the season sampled:
  - i. Soft-bottomed substrates shall, whenever ecologically appropriate and practical, be sampled by core or dredge of known dimension or volume.
  - ii. The preferred method for sampling hard-bottomed substrates shall be the rock basket/cone/bag as described in Section I-2.
  - iii. Other methods may be used where ecologically appropriate and practical.

- c) **Classification attainment decisions**  
Classification attainment decisions may be based on a determination of the degree to which the sampled site conforms to the narrative aquatic life classification criteria provided in 38 MRSA Section 465 and found in Appendix D. The decision is based on established principles of water pollution biology and must be fully documented.
- d) **Site-specific impact decisions**  
Site-specific impact decisions may rely on established methods of analysis of comparative data between a test community and an approved reference community.
- e) **Determination of detrimental impact**  
A determination of detrimental impact to aquatic life of a test community without an approved reference community may be made if it can be documented, based on established methods of the interpretation of macroinvertebrate data, and based on established principles of water pollution biology, that the community fails to demonstrate the ecological attributes of its designated class as defined by the narrative aquatic life standards in the water quality classification law.

**Appendix A**



**Maine DEP Biological Monitoring Unit  
Stream Macroinvertebrate Field Data Sheet**



Log Number _____	Directions _____	Type of Sample _____
Station Number _____	_____	Date Deployed _____
Waterbody _____	_____	Number Deployed _____
River Basin _____	Lat-Long Coordinates (WGS84, meters) _____	Date Retrieved _____
Municipality _____	Latitude _____	Number Retrieved _____
Stream Order _____	Longitude _____	Agency/Collector(s) _____

<b>1. Land Use</b> (500 m radius upstream) <input type="checkbox"/> Urban <input type="checkbox"/> Upland conifer <input type="checkbox"/> Cultivated <input type="checkbox"/> Swamp hardwood <input type="checkbox"/> Pasture <input type="checkbox"/> Swamp conifer <input type="checkbox"/> Upland hardwood <input type="checkbox"/> Marsh	<b>2. Terrain</b> (500 m radius upstream) <input type="checkbox"/> Flat <input type="checkbox"/> Rolling <input type="checkbox"/> Hilly <input type="checkbox"/> Mountains	<b>3. Canopy Cover</b> (upstream view) <input type="checkbox"/> Dense (75-100% shaded) <input type="checkbox"/> Partly open (25-75% shaded) <input type="checkbox"/> Open (0-25% shaded) (% daily direct sun) _____
---	--	---

<b>4. Physical Characteristics of Bottom</b> (estimate % of each component over 12 m stretch of site; total = 100%)			
Bedrock	Rubble (3" – 10")	Sand (<1/8")	
Boulders (<10")	Gravel (1/8" – 3")	Silt-clay-muck	Detritus

<b>5. Habitat Characteristics</b> (immediate area)	
Time _____ AM PM	Time _____ AM PM
Width (m) _____	Width (m) _____
Depth (cm) _____	Depth (cm) _____
Flow (cm/s) _____	Flow (cm/s) _____
Diss. O <sub>2</sub> (ppm) _____	Diss. O <sub>2</sub> (ppm) _____
Temp (°C) _____	Temp (°C) _____
pH _____	pH _____
SPC (µS/cm) _____	SPC (µS/cm) _____
TDS (ppm) _____	TDS (ppm) _____

Temperature Probe # _____
<input type="checkbox"/> deployed <input type="checkbox"/> retrieved
<b>6. Observations</b> (describe)
Fish _____
Algae _____
Macrophytes _____
Habitat quality _____
Dams/impoundments _____
Discharges _____
Nonpoint stressors _____

<b>7. Water Samples</b>
<input type="checkbox"/> Standard
<input type="checkbox"/> Metals
<input type="checkbox"/> Pesticides
Lab Number _____
<b>8. Photographs</b>

**9. Landmarks of Sampler Placement** (illustrate or describe landmarks to be used for relocation)

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**Appendix C-1**

**Methods for the Calculation of Indices and Measures of  
Community Structure Used in the Linear  
Discriminant Models**

**Variable  
Number**

**1 Total Mean Abundance**

Count all individuals in all replicate samples from one site and divide by the number of replicates to yield mean number of individuals per sample.

**2 Generic Richness**

Count the number of different genera found in all replicates from one site.

Counting rules for Generic Richness:

- a) All population counts at the species level will be aggregated to the generic level.
- b) A family level identification which includes no more than one taxon identified to the generic level is counted as a separate taxon in generic richness counts.
- c) A family level identification with more than one taxon identified to generic level is not counted towards generic richness. Counts are to be divided proportionately among the genera that are present.
- d) Higher level taxonomic identifications (Phylum, Class, Order) are not counted toward generic richness unless they are the only representative.
- e) Pupae are ignored in all calculations.

**3 Plecoptera Mean Abundance**

Count all individuals from the order Plecoptera in all replicate samplers from one site and divide by the number of replicates to yield mean number of Plecopteran individuals per sampler.

4 **Ephemeroptera Mean Abundance**

Count all individuals from the order Ephemeroptera in all replicate samplers from one site and divide by the number of replicates to yield mean number of Ephemeropteran individuals per sampler.

5 **Shannon-Wiener Generic Diversity (Shannon and Weaver, 1963)**

After adjusting all counts to genus following counting rules in Variable 2:

$$\bar{d} = \frac{c}{N} \left( N \log_{10} N - \sum n_i \log_{10} n_i \right)$$

where:  $\bar{d}$  = Shannon-Wiener Diversity  
 $c = 3.321928$  (converts base 10 log to base 2)  
 $N$  = Total abundance of individuals  
 $n_i$  = Total abundance of individuals in the  $i^{\text{th}}$  taxon

6 **Hilsenhoff Biotic Index (Hilsenhoff, 1987)**

$$HBI = \sum \frac{n_i a_i}{N}$$

where: HBI = Hilsenhoff Biotic Index  
 $n_i$  = number of individuals in the  $i^{\text{th}}$  taxon  
 $a_i$  = tolerance value assigned to that taxon  
 $N$  = total number of individuals in sample with tolerance values.

7 **Relative Chironomidae Abundance**

Calculate the mean number of individuals of the family Chironomidae, following counting rules in Variable 4, and divide by total mean abundance (Variable 1).

8 **Relative Diptera Richness**

Count the number of different genera from the Order Diptera, following counting rules in Variable 2, and divide by generic richness (Variable 2).

9 **Hydropsyche Mean Abundance**

Count all individuals from the genus *Hydropsyche* in all replicate samplers from one site, and divide by the number of replicates to yield mean number of *Hydropsyche* individuals per sampler.



10 **Probability (A + B + C) from First Stage Model**

Sum of probabilities for Classes A, B, and C from First Stage Model.

11 ***Cheumatopsyche* Mean Abundance**

Count all individuals from the genus *Cheumatopsyche* in all replicate samplers from one site and divide by the number of replicates to yield mean number of *Cheumatopsyche* individuals per sampler.

12 **EPT - Diptera Richness Ratio**

EPT Generic Richness (Variable 19) divided by the number of genera from the order Diptera, following counting rules in Variable 2. If the number of genera of Diptera in the sample is 0, a value of 1 is assigned to the denominator.

13 **Relative Oligochaeta Abundance**

Calculate the mean number of individuals from the Order Oligochaeta, following counting rules in Variable 4, and divide by total mean abundance (Variable 1).

14 **Probability (A + B) from First Stage Model**

Sum of probabilities for Classes A and B from First Stage Model.

15 **Perlidae Mean Abundance (Family Functional Group)**

Count all individuals from the family Perlidae (Appendix C-3) in all replicate samplers from one site and divide by the number of replicates to yield mean number of Perlidae per sampler.

16 **Tanypodinae Mean Abundance (Family Functional Group)**

Count all individuals from the subfamily Tanypodinae (Appendix C-3) in all replicate samplers from one site and divide by the number of replicates to yield mean number of Tanypodinae per sampler.

17 **Chironomini Mean Abundance (Family Functional Group)**

Count all individuals from the tribe Chironomini (Appendix C-3) in all replicate samplers from one site and divide by the number of replicates to yield mean number of Chironomini per sampler.

- 18      **Relative Ephemeroptera Abundance**  
Variable 4 divided by Variable 1.
- 19      **EPT Generic Richness**  
Count the number of different genera from the Order Ephemeroptera (E), Plecoptera (P), and Trichoptera (T) in all replicate samplers, according to counting rules in Variable 2, generic richness.
- 20      **Variable Reserved**
- 21      **Sum of Mean Abundances of: *Dicrotendipes*, *Micropsectra*, *Parachironomus* and *Helobdella***  
Sum the abundance of the 4 genera and divide by the number of replicates (as performed in Variable 4).
- 22      **Probability of Class A from First Stage Model**  
Probability of Class A from First Stage Model.
- 23      **Relative Plecoptera Richness**  
Count number of genera of Order Plecoptera, following counting rules in Variable 2, and divide by generic richness (Variable 2).
- 24      **Variable Reserved**
- 25      **Sum of Mean Abundances of *Cheumatopsyche*, *Cricotopus*, *Tanytarsus* and *Ablabesmyia***  
Sum the number of individuals in each genus in all replicate samplers and divide by the number of replicates (as performed in Variable 4).
- 26      **Sum of Mean Abundances of *Acroneuria* and *Stenonema***  
Sum the number of individuals in each genus in all replicate samplers and divide by the number of replicates (as performed in Variable 4).
- 27      **Variable Reserved**

28 **Ratio of EP Generic Richness**

Count the number of different genera from the order Ephemeroptera (E), and Plecoptera (P) in all replicate samplers, following counting rules in Variable 2, and divide by 14 (maximum expected for Class A).

29 **Variable Reserved**

30 **Ratio of Class A Indicator Taxa**

Count the number of Class A indicator taxa as listed in Appendix C-2 that are present in the community and divide by 7 (total possible number).

**Appendix C-2**

**Indicator Taxa: Class A**

*Brachycentrus* (Trichoptera: Brachycentridae)  
*Serratella* (Ephemeroptera: Ephemerellidae)  
*Leucrocuta* (Ephemeroptera: Heptageniidae)  
*Glossosoma* (Trichoptera: Glossosomatidae)  
*Paragnetina* (Plecoptera: Perlidae)  
*Eurylophella* (Ephemeroptera: Ephemerellidae)  
*Psilotreta* (Trichoptera: Odontoceridae)

**Appendix C-3**

**Family Functional Groups**

PLECOPTERA

Perlidae  
*Acroneuria*  
*Attaneuria*  
*Beloneuria*  
*Eccoptura*  
*Perlesta*  
*Perlinella*  
*Neoperla*  
*Paragnetina*  
*Aagnetina*

CHIRONOMIDAE

Tanypodinae  
*Ablabesmyia*  
*Clinotanypus*  
*Coelotanypus*  
*Conchapelopia*  
*Djalmabatista*  
*Guttipelopia*  
*Hudsonimyia*  
*Labrundinia*  
*Larsia*  
*Meropelopia*  
*Natarsia*  
*Nilotanypus*  
*Paramerina*  
*Pentaneura*  
*Procladius*  
*Psectrotanypus*  
*Rheopelopia*  
*Tanypus*  
*Telopelopia*  
*Thienemannimyia*  
*Trissopelopia*  
*Zavrelimyia*

**Appendix C-3**

**Family Functional Group  
(continued)**

Chironomini  
*Pseudochironomus*  
*Axarus*  
*Chironomus*  
*Cladopelma*  
*Cryptochironomus*  
*Cryptotendipes*  
*Demicryptochironomus*  
*Dicrotendipes*  
*Einfeldia*  
*Endochironomus*  
*Glyptotendipes*  
*Goeldichironomus*  
*Harnischia*  
*Kiefferulus*  
*Lauterborniella*  
*Microchironomus*  
*Microtendipes*  
*Nilothauma*  
*Pagastiella*  
*Parachironomus*  
*Paracladopelma*  
*Paralauterborniella*  
*Paratendipes*  
*Phaenopsectra*  
*Polypedilum*  
*Robackia*  
*Stelechomyia*  
*Stenochironomus*  
*Stictochironomus*  
*Tribelos*  
*Xenochironomus*

**Appendix D**

**MRSA 38, 4-A Sec 464-465**

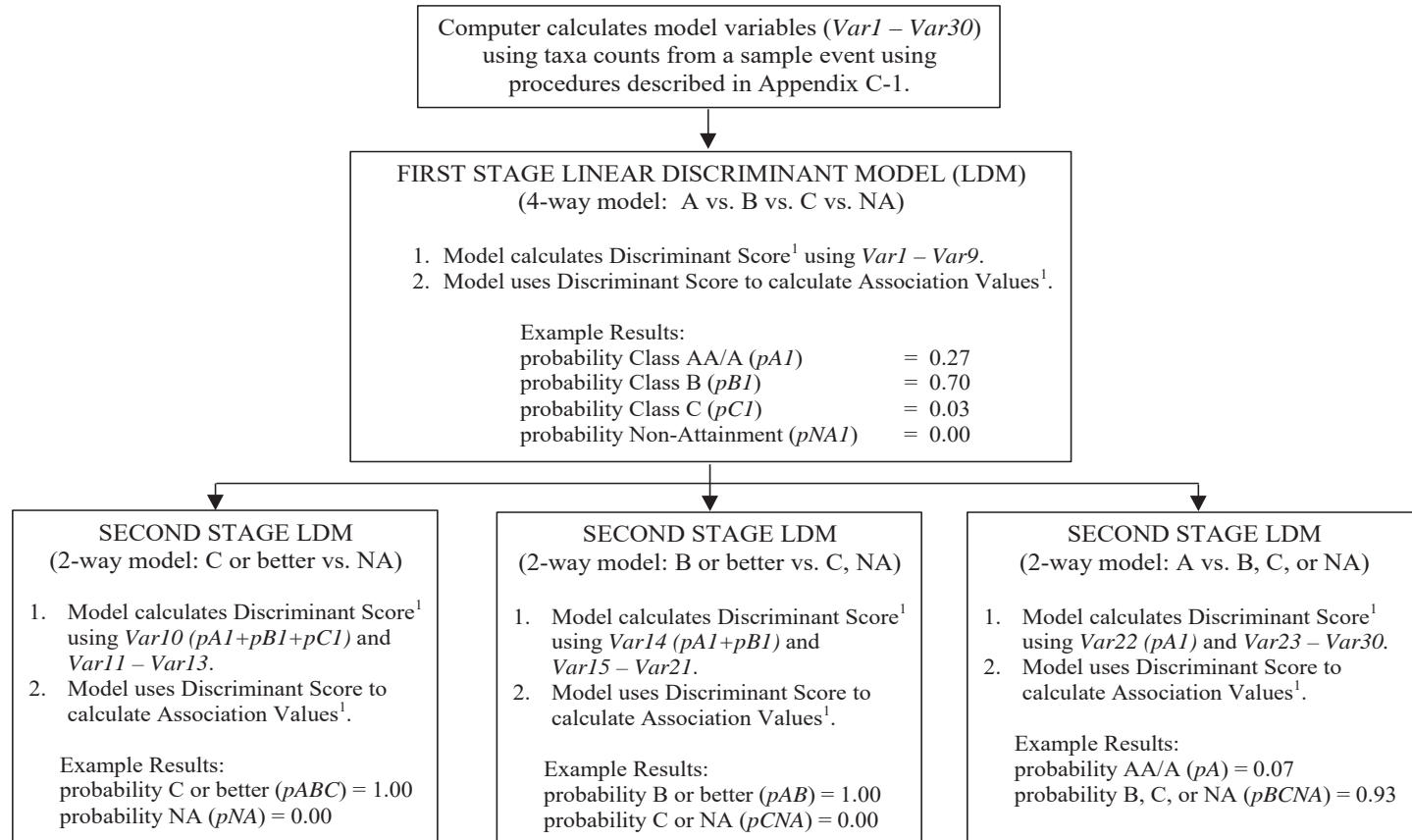
**Aquatic Life Standards for the State of Maine**

<u>Classification</u>	<u>Biological Standards</u>
AA	No direct discharge of pollutants; aquatic life shall be as naturally occurs.
A	Natural habitat for aquatic life; aquatic life shall be as naturally occurs.
B	Unimpaired habitat for aquatic life; discharges shall not cause adverse impact to aquatic life in that the receiving waters shall be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community.
C	Habitat for aquatic life; discharges may cause some changes to aquatic life, provided that the receiving waters shall be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community.

## Appendix E

### Process of Calculating Model Variables and Association Values Using Linear Discriminant Models

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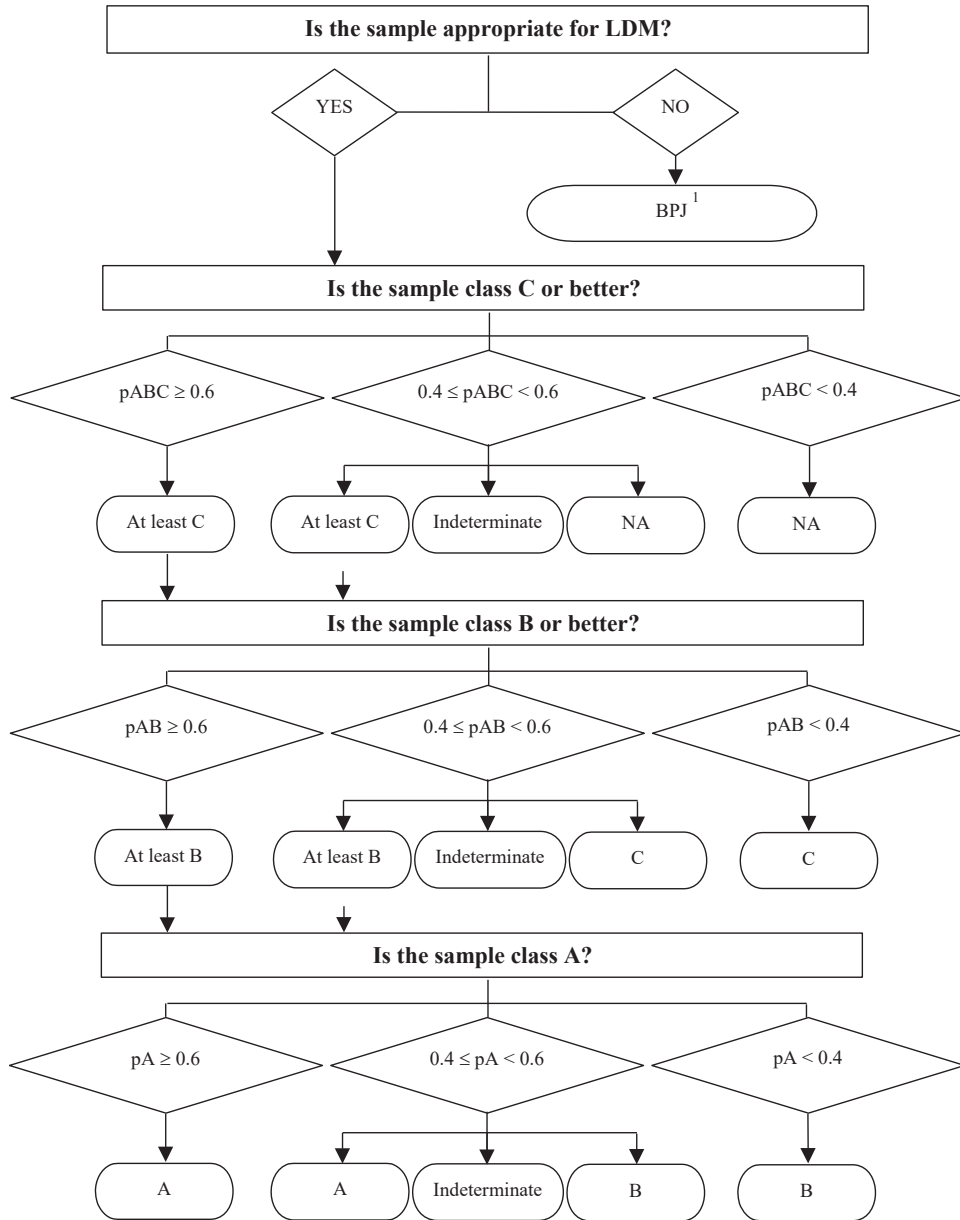
<sup>1</sup> Discriminant Score and Association Values are defined in Section III-2.(1).

Chart by Thomas J. Danielson



**Appendix F**

**Process for Determining Attainment Class Using Association Values**



<sup>1</sup> Best Professional Judgment (BPJ) is defined in Section III-2. (2), (4), and (5)

Chart by Thomas J. Danielson

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# Maine DEP Biological Monitoring Unit Stream Macroinvertebrate Field Data Sheet

**Location:** \_\_\_\_\_

**Potential Stressor:** \_\_\_\_\_

**Log Number** \_\_\_\_\_ **Directions** \_\_\_\_\_ **Type of Sampler** \_\_\_\_\_  
**Station Number** \_\_\_\_\_ **Date Deployed** \_\_\_\_\_  
**Waterbody** \_\_\_\_\_ **Number Deployed** \_\_\_\_\_  
**River Basin** \_\_\_\_\_ **Lat-Long Coordinates (WGS84, meters)** \_\_\_\_\_ **Date Retrieved** \_\_\_\_\_  
**Town** \_\_\_\_\_ **Latitude** \_\_\_\_\_ **Number Retrieved** \_\_\_\_\_  
**Stream Order** \_\_\_\_\_ **Longitude** \_\_\_\_\_ **Agency/Collector(s) Put-In:** \_\_\_\_\_  
Take-Out: \_\_\_\_\_

<b>1. Land Use</b> (surrounding watershed) <input type="checkbox"/> Urban <input type="checkbox"/> Cultivated <input type="checkbox"/> Pasture <input type="checkbox"/> Upland hardwood	<input type="checkbox"/> Upland conifer <input type="checkbox"/> Swamp hardwood <input type="checkbox"/> Swamp conifer <input type="checkbox"/> Marsh	<b>2. Terrain</b> (surrounding watershed) <input type="checkbox"/> Flat <input type="checkbox"/> Rolling <input type="checkbox"/> Hilly <input type="checkbox"/> Mountains	<b>3. Canopy Cover</b> (surrounding view) <input type="checkbox"/> Dense (75-100% shaded) <input type="checkbox"/> Partly open (25-75% shaded) <input type="checkbox"/> Open (0-25% shaded) (% daily direct sun) _____
---	--	--	--

**4. Physical Characteristics of Bottom** (estimate % of each component over 12 m stretch of site; total = 100%)

[ ] Bedrock	[ ] Cobble (2.5" – 10")	[ ] Sand (<1/8")	[ ] Clay
[ ] Boulders (>10")	[ ] Gravel (1/8" – 2.5")	[ ] Silt	[ ] Muck
[ ] Detritus			

Flag location where measured

<b>5. Habitat Characteristics</b> (immediate area)	
Time _____ AM PM Wetted Width (m) _____ Bank Full Width (m) _____ Depth (cm) _____ Velocity (cm/s) _____ Diss. O <sub>2</sub> ___ (ppm) ___ (%) Temp (°C) _____ SPC (µS/cm) _____ pH _____ DO Meter # _____ Cal? Y / N SPC Meter # _____ Cal? Y / N	Time _____ AM PM Wetted Width (m) _____ Bank Full Width (m) _____ Depth (cm) _____ Velocity (cm/s) _____ Diss. O <sub>2</sub> ___ (ppm) ___ (%) Temp (°C) _____ SPC (µS/cm) _____ pH _____ DO Meter # _____ Cal? Y / N SPC Meter # _____ Cal? Y / N

Temperature Probe # _____ <input type="checkbox"/> deployed <input type="checkbox"/> retrieved <b>6. Observations</b> (describe, note date)    
---

<b>7. Water Samples</b> <input type="checkbox"/> Standard <input type="checkbox"/> Other Lab Number: _____
<b>8. Photograph #</b> <u>Put-In</u> Up Down <u>Take-Out</u> Up Down

**9. Landmarks of Sampler Placement** (illustrate or describe landmarks to be used for relocation)

**Options for Potential Stressor:**

Agricultural Runoff  
Altered Habitat  
Altered Hydrology  
BOD (Low DO)  
Bog Headwaters  
Chlorine  
Gravel Pit  
Impounded  
Inorganic Solids  
Lake Outlet  
Logging  
Low Gradient  
Low pH  
Metals  
NPS Pollution  
Nutrients  
Organic Solids  
Pesticides  
Regulated Flows  
Sedimentation  
Superfund Site  
Thermal  
Tidal/Estuary  
Toxic Organics  
Urban Runoff

**Options for 6. Observations:**

Fish  
Algae  
Macrophytes  
Habitat quality  
Dams/impoundments  
Discharges  
Nonpoint stressors

**Options for Location:**

Above Road Crossing  
Below Road Crossing  
Above Town  
Below Town  
Above Fish Hatchery  
Below Fish Hatchery  
Above POTW  
Below POTW  
Above Landfill  
Below Landfill  
Below Airport  
Below In-Place Contamination  
Above In-Place Contamination  
Above Point Source  
Below Point Source  
Above Urban NPS  
Below Urban NPS  
Above Agriculture NPS  
Below Agriculture NPS  
Above Forestry NPS  
Below Forestry NPS  
Above Dam  
Below Dam  
Impoundment  
Lake Outlet  
Main Stem (only for larger systems)  
Above Confluence  
Below Confluence  
Below Falls  
Pristine Landscape  
Designated Ecoreserve  
Minimally Disturbed



STATE OF MAINE  
DEPARTMENT OF  
INLAND FISHERIES & WILDLIFE  
284 STATE STREET  
41 STATE HOUSE STATION  
AUGUSTA ME 04333-0041



January 28, 2020

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Division  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: MDIFW Study Requests for the Rumford Falls Hydroelectric Project  
(FERC No. 2333)**

Dear Secretary Bose:

On September 27, 2019, Rumford Falls Hydro LLC (RFH), a subsidiary of Brookfield Renewable (Brookfield), submitted Notice of Intent (NOI) to file an application for a new license and a Pre-Application Document (PAD) for the Rumford Falls Hydroelectric Project (Project) (FERC No. 2333). Subsequently, FERC issued its Notice of Intent to File License Application, Filing of Pre-Application Document, Commencement of Pre-Filing Process, and Scoping; Request for Comments on the PAD and Scoping Document, And Identification of Issues and Associated Study Requests for the Project on November 19, 2019. The Project is located on the Androscoggin River in the Town of Rumford, Oxford County, Maine. The Maine Department of Inland Fisheries and Wildlife (MDIFW) is a cabinet level agency of the State of Maine, and under Maine State Law (12 MRSA, §10051) MDIFW's mandate is "...to preserve, protect, and enhance the inland fisheries and wildlife resources of the State; to encourage the wise use of these resources; to ensure coordinated planning for the future use and preservation of these resources; and to provide for effective management of these resources." Based on our statutory responsibility we have prepared the following comments on the PAD and Study Requests:

**PAD Section 4: Project Location, Facilities, and Operations**

**Impoundment Drawdowns**

The document states on page 4-11, "*Article 401 requires the Licensee to operate the Project in a run-of-river mode within 1 foot of full pond elevation (601.24 feet U.S. Geological Survey [USGS] at the Upper Dam impoundment and 502.74 feet USGS at the Middle Dam impoundment) and shall at all times act to minimize the fluctuations of the reservoir surface elevation (i.e., maintain a discharge from the Project so that, at any point in time, flows immediately downstream from the Project tailraces approximate the sum of the inflows to the Project reservoirs, minus withdrawals).*"

**MDIFW Comments:** Stable impoundment levels are important to many aquatic species, and in previous correspondence MDIFW indicated we might request some impoundment water level data. We request a five-year history of any drawdown events that exceeded the 1-foot maximum

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[www.maine.gov/ifw](http://www.maine.gov/ifw)

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Letter to Ms. Bose, FERC Secretary  
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including the date(s) of occurrence, duration, and extent of the drawdown. We do not feel this rises to the level of a formal study request.

**PAD Section 4: Project Location, Facilities, and Operations and Section 5: Description of Existing Environment and Resource Impacts**

Bypass reach minimum flows

The document states on page 4-6, “*The upper bypass reach is 650 feet long and is steep with exposed bedrock. Leakage from the dam provides a minimum flow of approximately 1 cfs.*”

On page 4-9, “*The Middle Dam bypassed reach is 2,865 feet long and consists of bedrock outcroppings and steep cascades. Leakage from the dam provides a minimum flow of approximately 21 cfs.*”

On page 4-11, “*During low flows, the Licensee releases a minimum flow of 1 cfs from the Upper Dam and 21 cfs from the Middle Dam into the bypassed reaches per Article 402.*”

*No changes to the Project’s current operations are being proposed at this time.*”

On page 5-18, “*During the previous relicensing, and in coordination with the USFWS and MDIFW, a study was conducted to assess flows within the bypassed reaches of the Project (Rumford Falls Power Co. 1991). Habitat within the bypass reaches is poor to non-existent. The upper bypassed reach is steep and consists predominantly of bedrock substrate. Habitat within the lower bypassed reach is also steep with cascades over bedrock and boulders. Based on the affected habitat and assessment of flows, the study found that modifying the flow regime within the bypassed reaches would not enhance instream habitat. The USFWS concurred with these findings and agreed to limit recommendations regarding minimum flows to the Project’s tailrace areas, which are primarily driven by inflow to the Project given that the Project is operated as a run-of-river facility. The MDIFW also concurred that altering the existing flow regime was not warranted (Rumford Falls Power Co. 1991). The MDIFW also concluded “...little benefit to fisheries resources or their utilization would be gained by additional releases into the bypassed reaches...”*”

MDIFW Comments: These comments are largely intended to address the underlined sections noted above. The river has become substantially cleaner and more aesthetically pleasing since the 1991 assessment. Recreational and angler use of the river has increased dramatically, and MDIFW has initiated a regular stocking program for rainbow and brown trout immediately below the Project. In addition, MDIFW has reviewed the earlier bypass study conducted in 1989 and the methodologies employed did not quantitatively evaluate the potential benefit of various minimum flows. Consequently, minimum flows in the bypass reaches, particularly the bypass below Middle Dam, should be revisited. MDIFW has proposed a bypass flow study later in this document.

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### Public Access

The document states on page 4-10, “A carry-in canoe facility was implemented per Article 407 of the current license, which is located at the Carlton Bridge site and includes a parking area and a launching ramp with Americans with Disabilities Act (ADA) access. It is owned and operated by RFH. RFH also owns the Veteran’s Park in the Town of Rumford...”

On page 5-44 and 5-45, “Boating and fishing are the primary recreational activities that occur in the Project Boundary; however, recreational use in the Project vicinity is limited and typically comprised of local residents. Due to the size of the Middle Dam impoundment, most of the recreational use occurs on the Upper Dam impoundment (FERC 1993).

Under the current license, RFH developed a carry-in canoe facility at the Carlton Bridge site, located on the eastern edge of the Swift River just upstream of its confluence with the Androscoggin River, which includes a parking area and a launching ramp with ADA access (RFH 2007). RFH currently operates and maintains the facility.

The previous licensee, Rumford Falls Power Company, also installed a boat launch facility in Hanover, Maine, the town just to the east of the Town of Rumford. The Project was a cooperative venture between the MDIFW, Town of Hanover, and the original licensee. Rumford Falls Power Company purchased the land on January 27, 1999, but conveyed half of the site to the MDIFW on December 15, 1999 and the other half of the site to the Town of Hanover on February 2, 2000. The facility was designed by MDIFW and is operated and maintained by the Town of Hanover (Rumford Falls Power Company 2000).

There is also a trailer-accessible public boat ramp, which is not owned by RFH, located approximately 2 miles south of the Project on the Androscoggin River along Route 2. It has a concrete ramp and parking (Bureau of Parks and Lands 2019).

Fishing access to the Middle Dam impoundment is obtained via informal access at J. Eugene Boivin Park. Due to the relatively small size of the Middle Dam impoundment and the close proximity to the Lower Station Development, the Licensee discourages in-water recreational activities in this area due to access and safety concerns. Access to the tailrace areas and bypassed reaches is limited to shoreline fishing along the western shoreline at the Lower Station tailrace (FERC 1993).

The previous licensee investigated the need for additional public access for fishing in the tailrace area, but due to safety concerns related to the steep and rocky slopes along both banks and the poor fishing opportunities resulting from the discontinuation of trout stocking it was not recommended (FERC 1993).”

MDIFW Comments: The Licensee made some significant improvements to public access during the previous re-licensing and has proposed a study to evaluate recreational access facilities in the Project vicinity. MDIFW would have requested a similar study, but the one proposed should suffice. In addition, the underlined statement above is dated and should be revisited, particularly for the bypass area below Middle Dam. As much of the river is floated by paddled craft, it will be important for the Licensee to consider various put-in and take-out relationships among the



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access sites above and below the dam areas, including necessary portage trail(s). Based on findings from the Licensee's proposed study, MDIFW may seek additional access improvements.

## **PAD Section 5: Project Location, Facilities, and Operations.**

### Aquatic Resources

The document states on page 5-18, "*Historically, Rumford Falls is believed to be the upstream limit for American eel (MDMR and MDEP 2008; as cited in Moore and Reblin 2010). In 2019, the MDIFW indicated that there are no confirmed occurrences of this species on the mainstem of the Androscoggin River or tributaries to the river upstream of the city of Auburn (MDIFW 2019a), which is well downstream of the Project. However, the MDIFW also noted that there was one confirmed occurrence of American eel in 2001 in Joe's Pond, which is located upstream of the Project dams on an unnamed tributary to the Androscoggin River in the town of Rumford. However, additional consultation with the regional office regarding this occurrence was associated with a pond that is not tributary to the Androscoggin River (MDIFW 2019a).*

MDIFW Comments: Although relatively rare, a review of our regional records indicate that American eel have been documented above the Town of Auburn in several waters including: East Branch of the Nezinscot River, South Pond in Buckfield, Bunganut Pond in Hartford, and Canton Lake in Canton. This data certainly suggest American eel can reach the base of Rumford Falls. More interestingly, our records suggest Gerald Cooper reported the presence of American eel in South, Round, and North Ponds in Greenwood in the 1940's. If true, this would place them above Rumford Falls.

The Yoder data on the upper Androscoggin River provides a good sense of species presence but lacks the more recent presence of the very invasive Rock Bass. MDIFW has observed or received reports of this species from Gilead to Brunswick.

### Study Request 1: Minimum Flow Analysis

This study request relates to the evaluation of the existing minimum flows, specifically in the reach from Middle Dam downstream to the confluence with the Lower Station tailrace.

1. The goal of this study is to inform the decision process for determining the best timing and extent of minimum flow releases required to maximize fishery resources in terms of both aquatic habitat and fishing opportunities. The objectives of this study are to (a) generate a comparative analysis of the various scenarios for minimum flow levels that best addresses and/or maximizes the needs of inland fishery resources; and (b) evaluate how various minimum flows influence the fishable aquatic habitat in the various lotic and lentic reaches of the Androscoggin River in the identified reach.
2. The study is requested to ensure that any agreed upon minimum flow releases occur at levels that meet inland fisheries needs. The amount of minimum flow releases is required to maximize aquatic freshwater fisheries habitat as well as fishable habitat.

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3. MDIFW is a cabinet level agency of the State of Maine. Under Maine State Law (12 MRSA, §10051), MDIFW's mandate is "...to preserve, protect, and enhance the inland fisheries and wildlife resources of the State; to encourage the wise use of these resources; to ensure coordinated planning for the future use and preservation of these resources; and to provide for effective management of these resources."

4. Given changing Agency management objectives since the original license was issued, MDIFW requests that minimum flows be re-evaluated.

5. Minimum flow provisions are commonly required for hydropower operations in relation to how they impact the quality and quantity of aquatic habitat, fish passage, and/or recreational use of the site (e.g. fishability). An evaluation of minimum flow provisions is necessary to determine how best to meet the various resource needs including those of the Licensee, which may not be consistent among the various agencies and other interested parties.

6. Minimum flow evaluations are commonly requested for hydropower project relicensing. This study request may parallel other agency flow study requests and should be a collaborative effort between MDIFW, other interested agencies, and the Licensee. Therefore, the study details, including the actual methodology, should be developed after a review of all study requests to minimize redundancy and meet the collective need for flow analyses. However, for the purpose of more clearly addressing expectations, MDIFW proposes an Instream Flow Incremental Methodology employing a Physical Habitat Simulation Model to quantify flow and habitat relationships, and the development of Weighted Usable Area outputs to characterize habitat suitability for target species (adult rainbow trout, brown trout, and smallmouth bass). Additionally, MDIFW and interested resource agency staff, along with the Licensee, could visually rate various flow(s) with the intent of identifying a minimum flow that will enhance aquatic habitat and recreational angling opportunities below the dam. The actual test flows would be selected through a collaborative process involving MDIFW, other interested agencies, and the Licensee.

7. The level of effort and cost is commensurate with a project the size of the Rumford Falls Project and the likely license term. Several days of field work and subsequent analyses may be needed to assess pre-determined locations of the river under various minimum flows. Only an evaluation of various minimum flow scenarios, whether modeled or conducted in situ can effectively determine the best approach for addressing flow releases for the Project.

#### **Study Request 2: Brown Trout and Rainbow Trout Telemetry Study**

1. Through annual stockings, the Androscoggin River in the Rumford area supports seasonal brown and rainbow trout with some holdover fish. These fisheries have not been thoroughly evaluated, and movement is likely important for trout survival in this more temperature-limited reach. Historically, the brown and rainbow trout fisheries were more robust in the upper Androscoggin River. However, around 2005 these fisheries collapsed, and it has been unable to rebound despite annual MDIFW stocking. It was believed that many of the brown trout stocked in the impoundment migrated to the upper river reaches, and perhaps they are no longer surviving or exhibiting that behavior. Our Agency's concern is twofold: first, what are the movements of both brown and rainbow trout above and below the dams, and how are these

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movements influenced by Project operations? Secondly, have there been changes in Project discharges over time that could be contributing to displacement of these species at present time over historical levels? It is our Agency's position that a telemetry study is important in determining the movements of stocked brown and rainbow trout to ascertain what effects, if any, Project discharges are having on these species.

The objectives of this study will document the seasonal movements of stocked trout in the river sections immediately above and below the Project site. MDIFW has documented that brown and rainbow trout stocked in this section of the river create a desirable recreational fishery in the Androscoggin River. Specific goals and objectives include:

- Collection of biometric data to characterize brown and rainbow trout population dynamics.
- Movements and behaviors of newly stocked brown and rainbow trout.
- Movements and behaviors of older-age brown and rainbow trout.
- Effects of Project operations on the movement and behaviors of stocked brown and rainbow trout.
- Aid fishery managers in determining the cause of the decline in brown and rainbow trout fisheries above and below the Project.

2. MDIFW is responsible for managing the inland fishery resources in the Androscoggin River. To date, we have little information on the status of the trout fisheries in the Rumford Project area, and to what extent fish stocked in the river still contribute to the upstream/downstream fishery. In addition to the data gap for the Rumford brown trout and rainbow trout fisheries, MDIFW is attempting to determine the cause of the severe decline in the upper river fishery. A severe decline in trout survival began around 2005, to the extent that only one age class of fish was supporting a very limited fishery. This decline negatively impacted the local fishing economy by suppressing angler interest and effort. The formerly robust trout fisheries attracted anglers from substantial distances, and the stocking program below the dam attracted anglers from nearby areas. If we are to ever regain a higher quality recreational fishery in the Rumford area, we must understand how brown and rainbow trout move within this system and how operation of the Project may impact this effort.

3. The Maine Department of Inland Fisheries and Wildlife is a cabinet level agency of the State of Maine. Under Maine State Law (12 MRSA, §10051), MDIFW's mandate is "...to preserve, protect, and enhance the inland fisheries and wildlife resources of the State; to encourage the wise use of these resources; to ensure coordinated planning for the future use and preservation of these resources; and to provide for effective management of these resources." MDIFW is the natural resource agency responsible for managing inland fisheries resources in the Androscoggin River.

4. MDIFW is requesting this study because the data do not currently exist. We need to determine how these trout fisheries function, their seasonal movements, and what impacts Project operations may have on each species.

5. Operation of the Rumford Falls Project has a direct impact on the brown and rainbow trout fisheries in the Androscoggin River. Major perceived impacts include flow, water levels,

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temperature, and mortality. A study of this nature is necessary for MDIFW to better understand why both brown and rainbow trout fisheries in the upper river declined and how best to manage the newer fishery below the Project, whether by determining it is a function of brown trout life history, or if Project operations are influencing the fisheries in ways we have yet to determine.

6. Radiotelemetry studies are routinely requested and utilized during the hydrolicensing process in Maine and elsewhere. The proposed study is essentially a replication of recent salmonine telemetry studies, many of which have occurred at other hydroelectric projects within the Kennebec River drainage (most recently at the Shawmut Project). Radio telemetry is a highly effective means of determining salmonine movement and habits and determining potential Project-related impacts to their populations.

7. This study is commensurate with the scale of the Project and the importance of the resource. MDIFW needs a better understanding of the status of the brown and rainbow trout fisheries below Middle Dam to the Swift River confluence area, how the Project may or may not be impacting these fisheries, and how we may be able to recover these to historic levels.

MDIFW is willing to collaborate with the Licensee on this study. MDIFW would assist in various phases of the study including study design and scoping, tagging and stocking of study fish, collection of fish “at large”, and mobile tracking. A portion of this study would entail surgically implanting radio tags into hatchery-reared trout. This will require use of MDIFW hatchery facilities and associated staff. MDIFW is willing to assist in the tagging efforts to offset some of the associated time and labor. MDIFW is also willing to provide at least some of the labor and equipment (electrofishing boat) necessary in collecting brown and rainbow trout from the Androscoggin River to be included in this study.

### **Study Request 3: Comprehensive Angler Creel Survey**

1. This study will provide information regarding the status of the recreational fishery both above and below the Rumford Falls Project. Specific study goals and objectives include:

- Deriving an overall estimate of angler use.
- Deriving estimates of angler success (harvest, catch rates, etc.)
- Collection of biometric data on harvested fish.
- Determine overall status of the fishery. Findings will dovetail with above studies to give a comprehensive understanding of the fishery and potential Project impacts.

2. MDIFW uses angler creel surveys to assess the overall success of our inland fisheries management programs. This type of study provides a comprehensive view of angler use and the success of stocking programs or wild fisheries as well as providing MDIFW with critical information related to the status of the fishery and an estimate of angler use. Data obtained from this effort will allow MDIFW to make informed management decisions to improve the fisheries in the Project area.

3. The Maine Department of Inland Fisheries and Wildlife is a cabinet level agency of the State of Maine. Under Maine State Law (12 MRSA, §10051), MDIFW’s mandate is “...to preserve, protect, and enhance the inland fisheries and wildlife resources of the State; to encourage the

Letter to Ms. Bose, FERC Secretary  
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wise use of these resources; to ensure coordinated planning for the future use and preservation of these resources; and to provide for effective management of these resources.” MDIFW is the natural resource agency responsible for managing inland fisheries resources in the Androscoggin River.

4. To date, MDIFW has very limited data regarding the status of the recreational fishery in the Project area, and its proximity to the regional boundary make it difficult for local regional staff to assess. The reach downstream of Middle Dam is a relatively new stocking program and there is a lack of good angling data for the reach. The upper Androscoggin River once supported robust brown and rainbow trout fisheries which experienced a severe decline around 2005. It was believed most of the brown trout in the upper river were fish from the impoundment that migrated upstream. In order to better understand the status of this fishery and to recover this valuable fishery resource, MDIFW needs a better understanding of its current status. The creel survey information, when combined with information gained from studies mentioned above will provide a clearer picture as to the status of the fishery, and how the Project may impact the success of this public resource.

5. Operation of the Rumford Falls Project has a direct impact on the recreational fishery in the Androscoggin River. Major perceived impacts include flow, water levels, temperature, and mortality. These variables affect the success of inland fish management above and below the Project.

6. MDIFW uses randomly stratified angler creel surveys to assess many of its stocked and wild fisheries resources. Angler creel surveys are widely accepted as a standard method of assessing public use of the recreational fishery. MDIFW requests a roving clerk survey of both the area above the Project (impoundment and flowing water reach in Rumford area), and the entirety of the Project tailwater (extending downstream to the Webb River confluence).

7. This study is commensurate with the scale of the Project and the importance of the resource. Neither the Telemetry Study nor the Minimum Flow Study proposed above will provide the information detailed in this study request. MDIFW needs a better understanding of the status of the recreational fishery above and below the Project, how the Project may impact the fishery, and in particular how we may be able to recover the brown and rainbow fisheries.

MDIFW is willing to collaborate with the Licensee on this study. This type of study is quite economical, generally requiring funding for 1-2 seasonal staff and their associated transportation. Although the Rumford area sections of the Androscoggin River are open to year-round fishing, MDIFW seeks to survey the fishery from April – November.

Letter to Ms. Bose, FERC Secretary  
RE: MDIFW Study Requests for the Rumford Falls Hydroelectric Project (FERC No. 2333)  
January 28, 2020

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in blue ink, appearing to read 'JPerry', is centered on the page.

John Perry  
Environmental Review Coordinator

Cc: Francis Brautigam, Joe Overlock--MDIFW Fisheries Division, Augusta Headquarters  
James Pellerin, Nicholas Kalejs--MDIFW Fisheries Division, Region A  
Kathy Howatt, Christopher Sferra--MDEP  
Antonio Bentivoglio--USFWS

January 28, 2020

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



Via online submission to: <http://www.ferc.gov>

**Subject: Comments of Maine Council of Trout Unlimited on the Pre-application Document for the Rumford Falls Hydroelectric Project (FERC No. 2333)**

Dear Secretary Bose:

On behalf of its chapters and their nearly 2,000 members, Maine Council of Trout Unlimited (TU) submits these comments on the Rumford Falls Hydro LLC (RFH) Notice of Intent to File Application for a New License and Pre-Application Document for the Rumford Falls Project (P-2333-0091) on the Androscoggin River in Rumford Maine.

The project contains the third largest generation capacity of any single generation facility in Maine. Located on the site of one of Maine's largest waterfalls, the two dams the project contains marginalize views of the falls, and under low flow conditions, currently authorized minimum flows dewater the falls and the bypass.

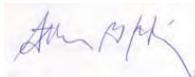
Maine TU Council strongly supports the study requests submitted by Maine Department of Inland Fisheries and Wildlife:

- Minimum Flow Analysis
- Brown Trout and Rainbow Trout Telemetry Study
- Comprehensive Angler Creel Survey

We think that it is especially important that the Minimum Flow Analysis and the Telemetry Study be conducted together to adequately assess the impact of the low flows on trout and other fish species in the project area, and determine future flow prescriptions to replace those currently in place that are so obviously harmful to aquatic habitat. We also request that telemetry studies be expanded to include both upstream and downstream American eel passage. Eels form a large part of many watershed's biomass, and occur throughout the state, see Attachment A. MDIFW PAD comments include specific documentation of American eels occurring upstream of Rumford Falls Dam. Accordingly, the burden should be on the applicant to demonstrate that they are not present. Failure to conduct appropriate studies to determine this would result in an incomplete environmental assessment.

Maine TU Council appreciates the opportunity to comment on this project and looks forward to proceeding under the ILP process.

Respectfully,



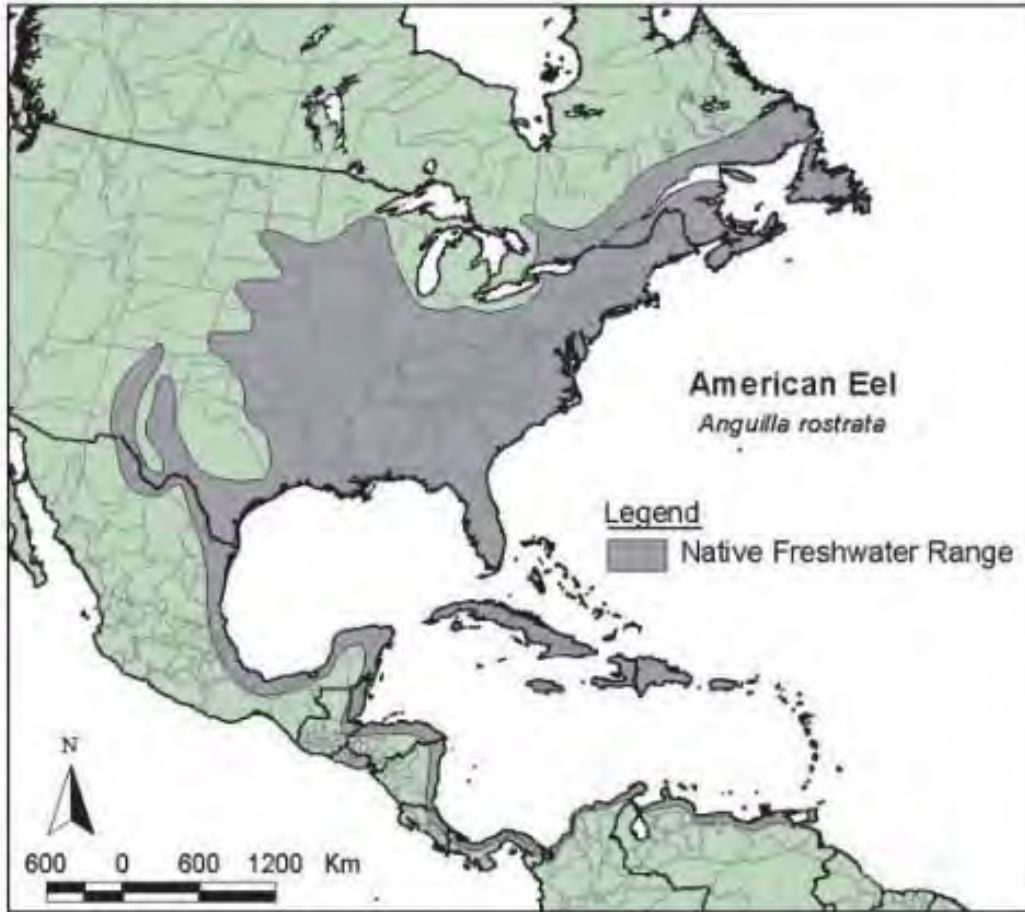
Stephen G. Heinz  
Maine TU Council FERC Coordinator

Attachment: American Eel Native Freshwater Range



**ATTACHMENT A**

Source: American Eel Biological Species Report  
Supplement to: Endangered and Threatened Wildlife and Plants;  
12-Month Petition Finding for the American Eel (*Anguilla rostrata*)  
Docket Number FWS-HQ-ES-2015-0143  
U.S. Fish and Wildlife Service, Region 5  
June 2015



**FIGURE 1**—Native freshwater range of American eel (*Anguilla rostrata*) in the Americas (updated from NatureServe, 2006).



Jenna Ginsberg, Rumford, ME.

Brookfield is shirking their responsibilities to maintain recreational opportunities around their damn in Rumford. They should be required to immediately meet the previous operating lease requirements and only be provided a renewal if penalties are implemented for not maintaining the required recreational opportunities including the walking trail and picnic area.

Karen Wilson, Rumford, ME.

As many of you know, Brookfield closed the walking trail on the southern side of the river, when that had been a mainstay in the community for years. Brookfield made the decision to close the trail, saying it was no longer safe, but refused to maintain the trail for safety using their own money. Two local efforts were made to write grants to obtain the money to fix the safety issues on the trail, and both proposals were denied. The grants were not successful because Brookfield only obtained one cost estimate for repairs, and federal grants require several cost estimates.

The opening of this trail is crucial for the citizens of our town for recreation, and the draw of tourists to see Rumford Falls, one of the largest waterfalls in the east. FERC requires hydro projects to create recreational plans around dams so citizens can utilize the property and the public benefits from the commercial hydro operation. Currently Brookfield is not following the past license plan, and there are concerns they do not see the trail as important for the town and their relicensing plan. Brookfield has a history in the United States of severely limiting access to their facilities due to fears of litigation.

In addition to the trail, citizens used to be able to access the property on the north side of the river which has amazing architecture and views of the falls and the reflection pool. This was a picnic area and a place to relax and walk near the river. This access has also been closed by Brookfield, and should be open to the public.

The Androscoggin is not the river it used to be. It is cleaner and very beautiful. It is becoming a place to boat and fish. There is rumor that huge trout live in the reflection pool, and Maine Fish and Wildlife is considering how to improve the fishery. Brookfield is reluctant to do the fishery studies Maine Fish and Wildlife requests, and they need to be required to do so.

John M Preble, Rumford, ME.  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

April 15, 2020

Regarding: Study Plan Commentary  
Docket: P-2333

Fisheries Study Plan

a. Habitat studies are needed for the upper pool, canal, lower pool, upper dam impoundments and middle dam discharge drainage to determine viability for stocking of fish to enhance and provide for reliable fishery within and near the project boundaries. Applicant is reluctant to perform such studies.

Recreation Study Plan:

a. Applicant proposes a usage survey. This is totally inadequate as nearly all recreational usage areas have been closed and posted for no trespassing. This situation demonstrates the applicants lack of attention and disregard of the community that surrounds the project. The applicant has repeatedly been requested to open the trail on the eastern shoreline and refuses to do so. Applicant has hidden behind stated safety, liability and maintenance concerns and is unwilling to make any expenditure to remediate.

b. An independently run citizens focal group study should be undertaken at the expense of the applicant to determine appropriate access, usage, locations, and operational maintenance requirements. The focus group should consist of community leaders, recreational managers & organizations, civic organizations, and individual citizens users. The application should be mandated to comply with reasonable request from the focal group or license denied.

Water Flow Study

a. Applicant has suggested that no study is necessary and that historical license approvals should be renewed. Current license allows for minimum flow over the upper dam to be 1CFS and middle dam to be 20 CFS. Again this proposal from the applicant demonstrates a total disregard of impact to the community and the public at large. There is no fish way on the applicants dam and during long periods each year there is little or no water flow over the upper dam and limited flow below middle dam.

b. Fish migrating from above the upper Dam during summer month have no means in which to gain access to a natural flowage channel. Fish subsequently migrate downstream are forced thru the turbines (they are pulverized)- no further explanation needed. Flows below middle dam could be reduced to levels that would be inadequate to maintain fishery sustainable habitat and water quality.

c. Minimum flow levels should be accessed and approved that will provide natural flow migrate from above the upper dam to the lower pool and at the same time provide for sustainable habitat below middle dam.

Further the flow below middle dam should be great enough so there is no odor emitted from the exposed river bed.

Respectfully submitted

John M. Preble  
Resident Town of Rumford

Linda Pepin, Rumford, ME.

Thank you for the opportunity to comment on Brookfield's licensing application. I would like to add my voice to those of other area citizens who would like Brookfield to open the trails around the Rumford Falls to local citizens and visitors for recreation. There are prime walking trails/sidewalks in the vicinity with unique vistas of the falls, but these are currently closed to the public—apparently a Brookfield decision.

When I moved here five years ago, I was out picking up trash along area roadways, and in doing so, was following the path of litter and unknowingly ended up on the Brookfield access road on the north side of the falls (which leads to their building that abuts the dam). The view from that road was beautiful, and the viewing area with historic lamp posts was like stepping into the town's history. Imagine my disappointment when I discovered that I had actually strayed onto their private property, and this vantage point is not one where I or other townspeople or visitors are welcome.

There is also a trail on the south side of the falls, although it is blocked off and not open to the public, so I have not been on it, though I drive past that trailhead on my way to work every day. Opening that trail would make it possible for people to walk a complete circuit around the falls. As the country emerges from the pandemic and is looking to heal economically, it would speak very well for Brookfield to open access to this trail, which would put people on a path through woods, alongside the falls, and past Rumford's downtown. With a new hotel opening near the bottom of the falls, Brookfield would have a golden opportunity to be part of making this a pleasant tourist stop...and has the opportunity to enhance its community relations with informational signage along the trails that could inform passers-by of their mission and their contributions to the local area.

I understand Brookfield has made the decision to deny access to the recreational trails because they want to limit their risk. However, the company risks its reputation in the community by continuing to resist reopening access to trails historically accessible to citizens. As Lincoln is purported to have said, "In this age, in this country, public sentiment is everything. With it, nothing can fail; against it, nothing can succeed. Whoever molds public sentiment goes deeper than he who enacts statutes, or pronounces judicial decisions." Thank you for the opportunity to comment, and thank you to Brookfield for considering the desires of the citizens in its host community.



145 Congress Street  
Rumford, Maine 04276  
(207) 364-4576 Ext. 212  
(207) 364-5642 Fax  
town@rumfordme.org

Mr. Ryan Hansen  
Federal Energy Regulatory Commission  
888 First Street NE  
Washington, DC 20426  
Docket Number: P-2333-091

April 21, 2020

Dear Mr. Hansen,

The following written comment is submitted for record by the Town of Rumford, Maine with regards to the relicensing process of the Rumford Falls Hydro Project (FERC No. 2333).

The Town notes our continued interest in the creation of a formal recreational plan for the Rumford Falls Hydro Project. We especially note the greatly improved air and water environmental conditions on the Androscoggin River since the project was last relicensed circa 1994. These improved air and water environmental conditions strongly support the use of the Androscoggin River as a recreational asset.

The Town also notes that this licensure will be the first time that the Project will be licensed while owned and operated by an entity not under the control of the Rumford Mill. The Town believes that this change in ownership structure has significance to the differing approaches to operation which include closure of recreational facilities and is a supporting factor in justification for the requirement of a formal recreation plan.

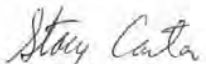
The Town notes based on the historic record in our possession and elsewhere that recreation on the Androscoggin River was a significant part of our economy until pollution of the River made it unsuitable for recreational use. At the time of the construction of the Project circa 1916 there was still substantial recreational activity on the River as noted in available historical records and artifacts.

The Town memorializes for the record our observation made during the most recent hearing that in any upcoming study census counts for use of the recreational facilities currently closed in whole or in part are likely to be "0" due to the inability of users to access these facilities.

The Town repeats and reinforces our interest in the reopening of the Falls Hill Trail, the restoration of the West Viewing Area, built as an integral community feature of the Project, and the aesthetic restoration of Veterans Park which was also built as an integral community feature of the Project.

The Town notes that other issues may arise over the course of the relicensing process. We appreciate your consideration and concern for the needs of our community.

Sincerely,

  
Stacy Carter  
Town Manager  
Town of Rumford  
Maine

John M Preble, Rumford, ME.  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

April 26, 2020

Regarding: Recreation Study Plan Citizen Focus Workshop Request  
Docket: P-2333

Based on lack of substance of the Recreational Study Plan proposed by applicant I formally request that FERC formally conduct an Independent Recreational Study that in addition to a physical site usage survey that a Citizens Focus Workshop be conducted by FERC or an Independent Facilitator to be chosen by either FERC or Mahoosuc Pathways in conjunction with the Town of Rumford be contracted to conduct said workshop and report recommendations directly to FERC.

The Focus group workshop is necessary as the applicant closed and posted no trespassing signs on a large areas of previously existing public recreational trails and access points.

Further more FERC is to require the applicant to pay for any and all reasonable expenses to pay the typical and reasonable fees of the independent facilitator and reasonable out of pocket expenses necessary to the conducting of such a citizen's workshop.

Respectfully submitted

John M. Preble  
Resident Town of Rumford  
Director Mahoosuc Pathways





JANET T. MILLS  
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION  
55 CAPITOL STREET  
65 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333

ORIGINAL

2020 MAY 27 P 2:29

KIRK F. MOHNEY  
DIRECTOR

RECEIVED  
May 7, 2020

Secretary Kimberly D. Bose  
Federal Energy Regulatory Commission  
888 First Street NE, Room 1A  
Washington DC 20426

p-2333

Project: MHPC# 0100-19 FERC 2333; Rumford Falls Hydroelectric Project  
Proposed Study Plan  
Town: Rumford, ME

Dear Secretary Bose:

I am writing in response to Brookfield's Proposed Study Plan for Rumford Falls FERC 2333. Our office was not included on the mailing list for the pre-application document and the proposed study plan. Our office was not made aware of the Proposed Study Plan for Rumford Falls until April 1, 2020.

With regard to archaeological resources, There are a number of errors related to archaeological sites in the Pre-Application Document and the Proposed Study Plan that need correction, the most important being the absence of archaeological studies in the Proposed Study Plan. (One archaeological study report needs to be completed.)

The Pre-Application document (Volume I) of September 2019 on page 5-54 mistakenly states that eight archaeological sites were judged "National Register-eligible." In fact, five of these sites were listed in the National Register on 14 November 1992.

The discussion of the APE (area of potential effect) for the Rumford Falls project on page 5-53 of the Pre-Application document is inconsistent with FERC practice and policy. After quoting the FERC definition of APE as "... all lands within the Project Boundary ... (including) any lands outside the Project Boundary where cultural resources may be affected by Project-related activities" (section 5.10.1, paragraph 1) the second paragraph proposed definition of the APE fails to take into account the issue of archaeological site erosion where the archaeological sites may be located on the river bank above the elevation defined as the Project Boundary. Paragraph 2 of 5.10.1 states in error that "The proposed APE, therefore, is the Project Boundary." Upstream from Wheeler Island the Project Boundary is defined as an elevation that runs along the immediate edge of the impoundment. There is at least one National Register listed site (Town of Rumford site 49:20) and several sites that are judged eligible for listing that are located on the river bank above the elevation defined as the Project Boundary that are located upstream from Wheeler Island. The Pre-Application Document acknowledges the successful Cultural Resources Contingency Plan program for periodic monitoring of these sites for erosion (p 5-54), a program that must continue. Therefore, the APE can not be the same as the Project Boundary.

The Pre-Application document states (5-54) that Phase III (archaeological mitigation) for the Rumford Project included data recovery excavation of six sites. The Pre-Application document fails to state that the report on that data recovery work was submitted to the SHPO office as a text-only draft (Hamilton and

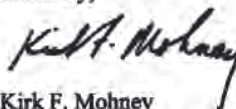
May 7, 2020

Mosher 2000). It was never completed and never accepted as a final report. There is extensive correspondence with Robert Stickney (environmental manager, Mead Paper Corp, then owner of the dam, for example Spiess to Stickney 12\_11\_2000) in an effort to get this report completed. Mead Paper Co. applied pressure to the University of Southern Maine, also without success. The problem is that the archaeological report, and thus the archaeological data recovery project, was never completed. (Both SHPO and Mead Paper gave up attempting to get the report completed after a couple of years.) *Therefore, the current Study Plan for relicensing must include a provision for another effort to complete the archaeological data recovery report study.* This is an unfinished relicensing archaeological issue where the majority of the public benefit of the archaeological study for the project resides.

With regard to above ground resources, the scope and methodology for undertaking an architectural survey meet our requirements. However, no consultation regarding APE has been initiated with our office. The Project APE is defined as the lands enclosed by the Project's boundary and the lands or properties outside of the Project's boundary where project construction and operation or project-related recreational development or other enhancements may cause changes in the character or use of historic properties, if any historic properties exist. Please submit a draft APE for our office to concur with for architectural properties prior to commencing the study.

We look forward to continuing consultation with you. Please contact Megan M. Rideout and Dr. Arthur Spiess of our office if we can be of further assistance in this matter.

Sincerely,



Kirk F. Mohnney  
State Historic Preservation Officer

Cc: Luke Anderson, Brookfield Renewable

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, DC 20426  
May 8, 2020

OFFICE OF ENERGY PROJECTS

Project No. 2333-091 – New Hampshire  
Rumford Falls Hydroelectric Project  
Rumford Falls Hydro, LLC

Luke Anderson  
Brookfield Renewable  
150 Main Street  
Lewiston, ME 04240

**VIA FERC Service**

**Reference: Comments on Proposed Studies**

Dear Mr. Anderson:

After reviewing the proposed study plan for the Rumford Falls (P- 2333-091) Hydroelectric Project, and participating in the April 7, 2020, study plan meeting, Commission staff has comments on the proposed Angler Creel Survey and Recreation Study Plan. The comments on the proposed studies are included in the enclosed Schedule A.

If you have any questions, please contact Ryan Hansen at (202) 502-8074, or via e-mail at [ryan.hansen@ferc.gov](mailto:ryan.hansen@ferc.gov).

Sincerely,

David Turner, Chief  
Northwest Branch  
Division of Hydropower Licensing

Enclosure: Schedule A

## **ADDITIONAL INFORMATION AND COMMENTS ON PROPOSED STUDIES**

### **Angler Creel Survey Study**

The proposed angler creel survey lacks certain details that would help us evaluate and you to implement the proposed study. For example, the proposed study plan indicates that a predetermined list of index sites will be determined for use during the study in consultation with Maine Department of Inland Fisheries and Wildlife prior to the first sampling date. Please include the list of index sites that will be surveyed in your revised study plan.

Also, please include the times of day surveyors will visit sites; how many times surveyors would visit each site (e.g., once a day, multiple times a day), and how long surveyors will spend at each site. Please explain the basis of the proposed study effort.

You stated during the proposed study plan meeting of April 7, 2020, that this study would be postponed until 2021 due to the COVID-19 pandemic. Please revise the study plan to reflect this change.

### **Recreation Study Plan**

#### *Comments for Task 2 –Condition Assessment*

##### *Assessment Methods*

The proposed recreation study plan lacks enough detail to be able to evaluate whether the study would achieve the study objectives. The objective of Task 2 is to assess the condition of the FERC-approved recreation facility (i.e., Carry-In Launch) and four other RFH-owned/operated recreation facilities and identify potential improvements to enhance recreation at the project. However, the proposed study plan does not describe how this assessment would be conducted. For example, the criteria or methodology that would be used to identify needed recreation improvements are not identified in the study proposal. We recommend conducting an onsite condition assessment, which can be combined with Task 1. The objective of Task 1 is to conduct an inventory of recreational facilities to summarize existing recreation opportunities. In addition to what is included in the facilities inventory form, the condition assessment should include detailed observations about the condition, site use, and accessibility of the site and facilities. We suggest using a condition rating scale to support your observations and show consistency with the ratings throughout the various recreation sites. Erosion and vegetation condition should be noted, including impacts of recreation use on vegetation.

An estimate of parking capacity that can be accommodated at each facility should also be included in the information collected for the condition assessment.

#### *Focus Groups/Interviews*

While an onsite condition assessment would help describe the physical conditions of project recreation sites that contribute to the recreational experience, it would not gather information on the desires of the public on recreational needs. This is particularly true where, as here, some recreation facilities are inaccessible to users. Gathering information (through interviews, focus groups, meetings, intercept surveys, etc.) from users and other stakeholders such as municipalities, federal/state agencies, and non-profit organizations would help characterize current recreational use and expected future demand of recreational facilities. Such discussions should elicit participation from the public as well as stakeholder groups in order to obtain their perspectives on existing and expected future use and access needs. If you do not believe such efforts are warranted here, please explain why.

#### *Sites to be Surveyed*

As proposed, site conditions and usage would only be assessed at the FERC-approved recreation facility (i.e., Carry-In Launch) and four other RFH-owned/operated recreation facilities. Collecting condition information through assessments at all recreation sites, including J. Eugene Boivin Park, Hastings Boat Launch, the entire Rumford Falls trail (including the closed portion) and the viewing area at the Upper Development of Rumford Falls would provide a more informed indication of need at the project.

#### *Task 3 – Recreation observations*

##### *Sampling Effort*

Under the proposed study, you would conduct spot counts, or recreational observations to collect information on recreational use and future demand of site facilities. Spot counts only provide a snapshot of the number of people at a site recreating. Recreational user intercept surveys would help gather user information and perspectives on existing and expected future use, access, and facility needs. Combining spot counts with recreational user intercept surveys and meetings, as you propose for your New Hampshire Androscoggin River projects would provide more useful information on existing and future recreation needs at the project. Such survey efforts should be conducted at the following recreation sites: ATV Trail, Carry-in Launch at Carlton Bridge Site, Veteran's Park, Wheeler Island, J. Eugene Boivin Park, Rumford Falls Trail, and Hastings Boat Launch.

Task 3 is intended to characterize current recreational use and future demand of the FERC-approved recreational site, and other RHF-owned/operated recreation facilities. To accomplish this, you propose to obtain recreational use data from late May through early

September, the primary recreation season. Recreational use observations would be conducted at the FERC-approved recreation facility, and other RFH-owned/operated recreation facilities, during other relicensing field studies (e.g., Water Quality Study and Angler Creel Survey) as well as during the daily activities of RFH operators. Use data would be obtained on a minimum of two randomized weekdays, two randomized weekend days per month, and major holidays.

However, it is unclear how much sampling effort would be conducted at each recreation site and whether the proposed sampling would adequately inventory existing uses or determine future demand. For example, the proposed study plan indicates that the surveyor's efforts would be divided among other tasks, including other field studies and normal daily hydro facility operations. This suggests that the survey may not be implemented consistently. We recommend the study be implemented by a dedicated person(s) focused on the recreation study. Incidental observations of recreation use by other staff conducting other studies and RFH operators would be useful. However, such efforts should not supplant the requirements for the dedicated recreation study. Please make clear who will be conducting the dedicated recreation surveys and if any incidental observations will be made in addition to the official, dedicated surveys.

The proposed study states that two weekend days and two weekdays will be surveyed per month, in addition to major holidays. Please define which major holidays will be surveyed throughout the study period and if surveyors will visit the sites on the actual holiday or throughout the holiday weekend.

The proposed survey effort does not speak to how the survey would be partitioned throughout the recreation day to cover the hours of the week that recreationists are expected to use the site. Also, please include the times of day surveyors will visit sites; how many times surveyors would visit each site (e.g., once a day, multiple times a day), and how long surveyors will spend at each site. Please include this information in your revised study plan.

The Proposed Study Plan states that 'the number of people or cars observed' will be part of the information collected during the recreational observations. FERC suggests collecting information on both the number of cars and people at each recreation site so the capacity of the parking lot can be assessed along with usage data and capacity of the recreation facilities. It is also important to collect usage data with the number of people so that consideration can be taken for those who have arrived at the site from other modes of transportation, such as walking or biking.

John Bernard, Rumford, ME.

I am writing as a citizen of Rumford, Maine who is concerned about having recreational activities curtailed along the Androscoggin River, in particular the area near the Rumford Falls. This area is one of the most beautiful areas in the River Valley Area, if not the entire state of Maine.

Brookfield owns and operates Rumford Falls Hydro, generating power from the tremendous power of the river at the Falls. My concern is that the local citizens and visitors will loose access to hiking and fishing opportunities in the area due to restrictions put in place and proposed by Brookfield.

There is a walking trail along the river that offers a beautiful view of the Falls and surrounding area. Brookfield has closed this off to visitors. Below the Falls is what is known as Reflection Pool, a favorite area for fishing from Boivin Park, which is adjacent to the river. This park has been developed by the town and is near the local information booth. This park offers great tremendous views of the Falls and has a memorial to the late Ed Muskie, a Rumford native and sponsor of the 1972 Clean Water Act. I fear that Brookfield will close access to this Park as well.

As an avid fly fisherman and lifetime area resident, I am troubled by Brookfield's history of limiting fishing access around prime areas as witnessed with their reconstruction of Upper Dam at the outlet of Mooselookmeguntic Lake. Prime fishing areas below Upper Dam have now been fenced off, preventing access to areas that Brookfield promised to protect. The Androscoggin River, once disgustingly polluted, is not the river of my youth. The town of Rumford, trying to redefine itself to take advantage of the tremendous recreation opportunities available in this area, would benefit greatly by being guaranteed access to these areas around its majestic Falls.

I would welcome Brookfield a commitment to work with the Town of Rumford and the Maine Fish and Wildlife Department to ensure that recreational access will be given to citizens before any relicense is granted.

I thank you for taking the time to read this.



Glenn R Gordon, Rumford, ME.  
Sunday, May 10, 2020

To Whom It May Concern:

I am writing to you as a resident and small business owner from Rumford, Maine.

My wife and I are small business owners in downtown Rumford. We are located on Congress Street, a short distance to the Rumford Falls on the Androscoggin River. We are located in the western mountains of Maine, an area that is heavily reliant on tourism.

The Rumford Falls is one of the most beautiful natural resources we have in our region. There was a time when residents of the area had access to walking trails on both sides of the river. Access has been limited over the past several years and that has discouraged people from coming to the downtown area for recreation purposes. This affects businesses like mine which rely partially on attracting pedestrian traffic.

Rumford Falls has tremendous scenic value which can contribute to the downtown economy if enough flow is maintained throughout the year. The falls are easily accessible as they are located running parallel to Route 2, which is the major route of east-west travel from the coast of Maine to the northern parts of Vermont and New Hampshire. Canadian tourists also come through the area. But tourists must have access for parking, walking trails and clear views of the Falls.

At this time, a 60 room hotel is under construction near the base of the Falls. Access to the Falls would make the local hotel an attractive place for a stay-over when traveling west-east across northern New England.

Tourism related to sport-fishing, hiking, skiing, mountain biking, 4 wheeling and snowmobiling would all benefit from access to the Rumford Falls area.

I am asking the Federal Energy Regulatory Commission to require that Brookfield Renewable Partners open access to the areas surrounding the Rumford Falls for recreation purposes that we have traditionally enjoyed in the area and to also give our area an necessary economic boost to support the tourist economy.

Sincerely,

Glenn and Sandee Gordon  
72 Congress St.  
Rumford, ME 04276



Robert Stickney, Rumford, ME.

There is a public boat launch facility on the Androscoggin River in Rumford, Maine. It is located two miles upstream of Rumford Falls Hydro's hydroelectric plant, FERC project no. P-2333, on the north bank of the project's impoundment. Rumford Falls Hydro, LLC considers the boat launch to be part of its recreational plan even though the facility is owned and maintained by the Town of Rumford.

The site is many years old. It is small and the boat ramp was poorly engineered when it was built. The ramp is oriented so that boats are unloaded in an upstream direction and are fighting the current. This makes for an unsafe and unsatisfactory boat launching situation. In addition, the parking lot is much too small to accommodate the number of boaters and anglers who would like to access the river on any given day.

A group of energetic citizens are working with the Town to rebuild the facility to better serve the public's needs. Engineering plans have been drafted. Archaeology assessment has been performed. The major hurdle for the project going forward is funding. This is only going to get worse as State and local revenue streams are strained due to the coronavirus pandemic.

Rumford Falls Hydro, LLC is currently in the process of seeking a new FERC license to operate its project, docket no. P-2333-091. I urge the FERC to consider requiring Rumford Falls Hydro to provide leadership and funding to make the boat launch a more accessible and safer site. This will allow the public to make better use of the resources of the Androscoggin River located in the project boundary.

Vicki, Rumford, ME.

I am writing to ask that you consider opening the park near the top of Falls Hill to the public. It would be a wonderful way to share the beauty of the Rumford Falls with the Residents of Rumford as well as the wider River Valley Community. A walking trail could be developed so visitors could walk from the Information Booth and/or our soon to be built Best Western to enjoy a wonderful view of the falls. The Falls are part of our town history and is beloved by those of us who live here as well as by visitors to the area. It would also be nice if the Falls were lit up at night as they look so beautiful when you do that occasionally.

Thank you for considering this request.

Sincerely,

Vicki Broomhall Amoroso  
Lifelong Resident of Rumford, ME

Vickie Kuhl, Rumford, ME.

You probably don't want to read a long discourse, so, please keep walking trails around to Falls for the public to use.

Sharon Wilbraham, Carrabassett Valley, ME.  
Take down the fences and give the community their park back.

Kristine Keeney, Greenwood, ME.

I live in Western Maine, only a few towns from Rumford where we do some shopping and my fiancé works. I am submitting this to urge FERC to require Brookfield/Rumford Falls Hydro LLC to open up access around the hydro project that existed for years before they bought the property that allow resident and visitors to use a trail adjacent to the hydro dam to be able to enjoy the falls and the surrounding area. People in Rumford are very poor and have had access to good food and exercise opportunities. If this trail access is restored, it would be connected to the downtown "Island" area and would be more accessible to people who live, work, and visit Rumford. This is critical to the citizens and economy of our area. This access use to exist, so there must be a way to restore the access in a safe way for everyone to enjoy and the company to be able to manage the operation of the dam. Thank you.

Kristen Giberson, Dixfield, ME.

For many, many years the people of the River Valley and the many tourists who visited the little town of Rumford, Maine enjoyed the falls at the hydro dam from several locations. The falls are downright impressive and a glimpse of them often causes people that are just passing through to stop in town, often providing valuable income to the businesses near the falls. The view from the information booth area is excellent, but there used to be other ways to take in the views of the falls. When Brookfield took possession of the hydro dam they shut down much of the access to the river in the area. There is a beautiful overlook on the side of Falls Hill that is closed. There are hiking trails on the opposite side of the river that are closed. Brookfield is preventing residents and tourists alike from enjoying the river, the falls and all it has to offer. Brookfield should GIVE BACK access to these areas. Brookfield should also maintain an adequate flow over the falls, especially during peak tourist months in Maine. Rumford and the surrounding communities depend on the income that tourists generate in our area. The people who live in the area should be able to enjoy the river and the falls the way we had for so many years before Brookfield took ownership and closed it all down.

Beverly Ann Soucy, Rumford, ME.

I am writing today as a private citizen born and raised in Rumford, Maine to implore you to reconsider your stance on our walking trail up over Rumford Falls to South Rumford and in reopening the scenic picnic area on the Route Two side of the Falls.

There is no valid reason for this trail not to be reopened as this community has a long history of access to this particular trail system dating back for over a century, in being opened to the general public. It is a crucial scenic trail that winds up over the Falls and connects an entire trail system from the downtown area, and onto additional trails for four season recreation! It would be a very valuable resource for many future generations to come as it has always been for the preceding generations.

I also feel that our community deserves to have our scenic view back on the Route Two side of Rumford Falls, as this too has always been a part of our community in the past. I truly believe that in keeping this area closed to the public that you are hindering the growth of a community that has a very bright future with pending economic growth! Especially with the fact that at the base of the Falls a brand new hotel is being built and will be the future model to which all other Best Western Hotels will follow. It would not only make an entire area more viable as a wonderful resource for a destination spot with lodging, but would put Brookfield in a unique position to be widely recognized for their participation in helping to develop recognition for this module in supporting a scenic overlook along with a walking trail within distance.

Simply put, this would be great PR for Brookfield to partner with our community. Having these two choices for recreation is not only vital for future growth but it would show our community and the entire Western Maine area that Brookfield really wants to grow with a community in partnership and it wants to have a greater impact for future generations in bringing tourist to our area as a destination place. This will in turn support our rebirth within the community with small business growth. It is a win win for everyone involved.

Our founding fathers had great vision for the beauty that surrounds us here in the River Valley and in the natural resources here. As a hard hit blue collar community we have been working very hard to bring that vision back around in the form of economic growth, and four season recreation along the Androscoggin River. Not to mention that we are home to the largest waterfalls second only to Niagra Falls in this part of the country!

It is my hope that you will reconsider your place in our community and will willingly partner with us to rebuild and maintain two of our incredible natural resources.

Thank you for your time and for your serious consideration in both matters.

I speak for all of our community members in saying that we encourage your vision for the future for us all in supporting and partnering in our growth!

Best Regards,  
Beverly Ann Soucy

James Radmore, Littleton, NH.

In considering the application for Renewel please include language to open up the land on the east side of the falls for public use. I lived in that area for 38 years and always loved to use that trail to walk with my dogs. It was a shame when public access was denied. There really is no reason that the public should be denied use of that path and restricted from enjoying the beauty of the falls.

Thank you  
James Radmore



Dr. Richard Kent, Rumford, ME.

Please re-open the Rumford Falls walking and fitness trail by the waterfall dam across from the power station. Brookfield Power put a fence up to block the walking trail in violation of the community recreation clause in their license. Such a change would be beneficial to our community and, perhaps, offer yet another attraction for visitors. Thank you for your thoughtful consideration.

Sincerely,

Dr. Richard Kent

Seth Carey, Rumford, ME.  
FERC app

I would like to inform FERC that Brookfield does not deserve to have its license in Rumford, Maine renewed at this time under these disrespectful treatments of its citizens and our recreation. They have made every effort to thwart our recreation. The trail on the east side of the project that connects the South Rumford Rd to 108 by the canal was been illegally been closed. The gates were added by Brookfield to keep public out. This trail was open to the public until around 2015.

The viewing area on the west side of the falls off of Falls Hill that has been closed to public access since Brookfield purchased the project within the past 10 years. This was a spot you could view the falls and have picnics. This is one of the most beautiful trails in all of America and it was closed by this company in violation of their license. I have fished in the reflection pool across from the information booth and caught wild trout. This has been restricted now.

I am also concerned about Brookfield fighting the citizens about a proposed zip line that will travel over the river (not over the waterfall) that Brookfield somehow has dominion over according to their license. This is an overreach and FERC should clawback them controlling downriver a mile away from their power dam. To their credit, after fighting them for many years on this topic, they did relent a few years ago and said they wouldn't oppose the project. However, we are concerned they will revoke this permission once they get their license or if new executives change their mind. I would like this addressed during their licensing process and get assurance that they will not ruin yet another recreational activity.

Also, above the falls there is a swimming area above the bridge of the south rumford rd. There's a parking area and people can walk down to the river and swim. I am concerned about Brookfield limiting this area once they get their license.

Lastly, I live in the neighborhood across from Brookfield. There are times in the summer and fall when their sirens go on incessantly for several minutes in the middle of the night every 15 minutes. I have had to call the police to make a noise complaint. They need to be more mindful of their neighbors. No one is swimming near the falls in the middle of the night in November. It's common sense.

Craig Zurhorst, Rumford, ME.

I am writing to request that FERC and Brookfield Renewable Partners / Rumford Falls Hydro LLC, for the purposes of non-motorized recreational travel, grant open public access to the land east of, and adjacent to, the Androscoggin River, canal and basin and along the trail/access roadway/easement known locally and variously as the Rumford Falls Access Road, the Power Company Easement, the Rumford Falls Trail, and other names, which runs between Maine Route 108, east of the Rumford Canal, generally southward, and uphill, to its conclusion at South Rumford Road.

I am also requesting that FERC and Brookfield Renewable Partners / Rumford Falls Hydro LLC, grant open public access to the area on the west of the falls and basin, adjacent to US Route 2, for use as a park, a scenic overlook and for non-motorized recreation.

These are both absolutely beautiful areas that once were accessible to the public. It is tragic that they are not able to be used and are currently wasted valuable resources.

The ability to include the Rumford Falls Trail in the area's growing recreational trail system, especially with its ideal 2/3-mile length and gradual climb, would be ideal for many walkers, runners and bikers, whether local or visiting.

The upper Rumford falls and the basin, because of their setting, at the junction of Maine Route 108 and US Route 2, are the centerpieces of the town and, after Niagara Falls, Rumford Falls is the second highest falls east of the Mississippi River.

One of the most beautiful vantage points from which to see the basin, the upper falls, the town of Rumford, a portion of the middle falls and the Swift River Valley is the viewing platform on the west side of the basin and falls.

Locals and tourists alike have been frustrated at the lack of access to this beautiful overlook. I was lucky enough to be able to take in this view on a number of occasions when I worked for the Rumford Mill and when the dam and generating facility were still owned by the mill, but I have often wanted to share this wonderful place with family and friends and have been unable to do so. I know I am not alone in this sentiment. This area was designed to be a public park and it would be the natural "crown" for the western shore of the Androscoggin River that already includes Rumford Public Library, Chisholm Park with its short River Walk Trail and Boivin Park with the Edmund Muskie memorial, the information booth and access to the basin.

If these two distinct but related areas of the Rumford Falls Trail and the overlook and park were open to the public, they would each contribute significantly to the recreational assets and resources the town possesses and is actively developing. In turn, they would assist Rumford in attracting visitors and, perhaps, recruiting individuals, families and businesses to settle in our town and help bolster its economic

revitalization. The potential value of these two areas to both recreational and economic development of Rumford truly can't be overstated.

To facilitate and validate these requests, I recommend commissioning a more thorough and expanded recreational study than the one currently proposed, which I am concerned may not reveal and reflect the needs of the community and the opportunities available to the Town of Rumford.

Thank you for your consideration of these requests and please contact me with any questions you may.

Sincerely

Craig G. Zurhorst

757 Hancock St.  
Rumford, ME 04276  
207-357-9102  
craig.zurhorst@gmail.com

May 18, 2020

Pennacook Falls Investments, Ltd.  
PO Box 35  
Rumford ME 04276



Mr. Ryan Hansen  
Federal Energy Regulatory Commission  
888 First Street NE  
Washington DC 20426

**Re: Project P-2333-091 (Brookfield Renewable Energy Group)**

Dear Mr. Hansen,

Thank you for the opportunity to comment on Brookfield's relicensing.

Pennacook Falls Investments, Ltd, was formed in December 2015 to help jumpstart the local economy by building a brand-name hotel in Rumford. The desire to create a positive domino effect to benefit the entire region unites the group's 29 investors, all of whom live, recreate, and make a living locally or have local ties.

Construction is underway for the 63-room Best Western Plus – Rumford Falls hotel at the bottom of Falls Hill, across the road from the tourist information booth at the base of Rumford Falls. The facility, projected to open in late 2020, is expected to serve business travelers as well as tourists visiting to take advantage of the area's diverse and growing outdoor recreation opportunities including canoeing/kayaking, hiking, fishing, biking, 4-wheeling, snowmobiling, and skiing.

The areas owned or managed by Brookfield include the trails and vantage points around the falls, the Veterans Park downtown, and the downtown area along the canal. The falls, which are visible from the property, are central to attracting leisure travelers.

Our request is two-fold:

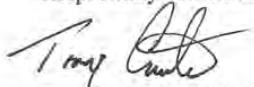
1. Open access to hikers/bikers on existing trails and lookout vantage points on both sides of the Rumford Falls—access that was historically available to the public.
2. Allow for water to flow over the falls year-round; currently zero summer flow over the falls seriously detracts from this landmark's appeal.

The above will improve the town aesthetically, economically, and recreationally. The river, the falls, and everything associated with them are inextricably intertwined with Rumford's future.

As we look to partner with the River Valley community to increase the area's profile as a recreational destination, we respectfully request Brookfield do the same: make accessible to the public the areas surrounding the Rumford Falls, and restore flow to the falls during summer and fall months. Doing so not only makes the area a better place to live for the residents but improves the region's collective lot by setting positive conditions for economic growth as well.

Brookfield has the opportunity to be a constructive part of the local effort to make the region a recreational and leisure destination for visitors; we look forward to their partnership on this.

Respectfully submitted,

  
Tony Carter, President

Peter Wright, Rumford, ME.

While this project is critical to the local economy on many different levels, I feel compelled to state that I believe it is the obligation of Rumford Falls Hydro to reopen the recreation trails in and around the falls and its adjacent property. Allowing Rumford Falls Hydro to profit from the use of a natural resource is acceptable so long as the organization invests back in the community in a manner that will support the growth, vitality and over health of the citizens in the region. This responsibility and obligation has been overlooked for a number of years and it is time to change.

There are countless clinical studies that undisputedly support access to outdoor recreation such as recreation trails improves the overall health of the surround community that has access to those areas. Rumford Falls Hydro has numerous recreation trails in and around the falls project that are extremely valuable to the advancement of health in the region. The 2018 Community Health Needs assessment (CHNA) has identified the needs for access to recreations trails. The Rumford region has spoken loudly and clearly that it has a desire to increase its activity and movement to improve health. Opening the trails would be of minimal investment and risk to Rumford Falls Hydro and yet would have an exponential positive health impacts. It is with these facts in mind that I as President of Rumford Hospital, Rumford Community Home and senior executive of Central Maine Healthcare respectfully request that this commission make the relicensing of Rumford Falls Hydro contingent of the reopening and unlimited access to these trails.

I would be happy to speak with you in more detail should that be beneficial for your evaluation. Thank you for taking the time to read my comments.

Mia Purcell, S. Paris, ME.

I am writing to express support for opening the trail on the south side of the Pennacook Falls in Rumford, known as the Falls Hill Trail, and making it safe for the public to enjoy it. This trail offers the best views of the falls, the Androscoggin River and Rumford's historic downtown. Opening the Falls Hill Trail to the public would create a loop for visitors and residents that would take them over two bridges, past the visitor center and veteran's park, and across the street from the entrance to Rumford's historic downtown and a new 60-room Best Western hotel, under construction across from the visitor center. It would also support improved health and wellness for walking, running and biking.

The Falls are a unique feature and natural attraction in Rumford and western Maine as the highest falls east of Niagra Falls. And, they figure prominently in Rumford's history as the inspiration for Hugh Chisholm to build a paper mill in Rumford which led to his founding the world's largest paper company, International Paper. I urge Brookfield to open the Falls Hill Trail to the public and include it in a recreational plan as part of relicensing the Rumford Falls Hydro Project so that area residents and visitors can enjoy viewing and recreating near the Androscoggin River and the Falls.

Curtis Rice, Rumford, ME.

I write to beg that FERC require Brookfield to stop blocking access to the trails around the Rumford Falls. For at least 10 years prior to the fencing, I had enjoyed almost daily walks through this trail. When visitors came to visit us in Rumford, I would encourage them to join me on walks around this hidden gem. People who were sometimes dismissive of the Rumford area left with a different impression of the livability and beauty which surrounds us.

I well remember the distress and disappointment I experienced when it was first blocked off. Then, it was posted as a temporary measure due to a rock fall. Later, it would become apparent that this had been a disingenuous first step to cutting off all access and privatizing what had been a well-used and public right of way.

Prior to the cut-off, I would often take my two oldest children on walks behind the falls. This amazing trail started no less than 5 minutes by foot from our home and was a great source of daily physical exercise and mental health maintenance. It was great for bonding and sharing nature. My last two children have never been able to take these walks with me. This is a very real tragedy, I believe, and I can only guess how many others have missed out on this valuable family time.

The amazing experience of being able to be up right next to the falls, especially during the dramatic spring melt, should continue to be available to everyone in the area. The same experience at a distance of several hundred yards is truly a pathetically poor substitute.

Although Brookfield may have some financial or other benefit that would come from denying the citizens recreational access, the benefit lost to the people and economy of the area would be far greater. The thought of it should be disturbing. If the current situation is allowed to continue, it would stand as a symbol of government power being used to protect corporate interests over the long term rights of local citizens. If you rule in favor of community access, it would reinforce the idea that government works for the good of the people of this area and is not just a rubber stamp for bottom-line corporate greed.

Please help us and the future of our community by keeping this access open.

Curtis Rice  
Rumford, Maine



Shane Smith, Mexico, ME.

How can we simply lease away all rights to the crown jewel of Rumford, the Falls, without assuring our community has access to it? The next generation deserves to access the Falls as a resource for recreation--picnics, fishing, walking, and biking. As we look to the future, and strive to create a positive environment to raise families in--while considering our economic reality--it's imperative that we utilize our natural resources to the best of our ability, as oppose to gating and blocking them off.

Anthony mazza, Rumford, ME.

I really enjoyed walking the trail on the backside of the falls in the past. It is a shame that it is all gated. It's a great mountain biking trail as well. Who likes biking down falls hill, no one!

Sarah Marshall, Rumford, ME.

I feel very strongly that this land should be left to the public for access. If the land is leased to a company that will close access, the River Valley area will suffer a great loss of public access. As a taxpayer and resident of Rumford, I believe this land should remain as an area for all to enjoy.

Dennis BLANCHARD, CANDIA, NH.

The Rumford area needs all it's got going for it. Having no access to the falls area does not contribute to that.

Laurie Soucy, Rumford, ME.

I have been a Rumford Resident for nearly 50 years, and my husband and family have been business owners for more than 50 years. I remember when I moved to Maine and Rumford years ago the river was so polluted no one wanted to spend time near the river. The Androscoggin River has now been cleaned up and people fish, boat and kayak along the river in various places. It is a river people want to enjoy and recreate on.

As you know, Rumford used to solely rely on paper making for its economy, but that has also changed. Now the mill is just one part of Rumford, and the economy of the area has declined. However, there is hope that the renewed beauty of the river and the recreational possibilities of the area will help the town prosper again. We need to leverage our natural assets to bring people here who want to recreate, but also want to live.

One recreational asset was a walking trail I enjoyed using frequently in my youth, which Brookfield closed on the southern side of the river. This trail has been used in the community for years. People of all ages walked it to see the falls, kids from the high school biked it for fun, the high school physical education program used it for their bike safety unit, area citizens used it as a way to get to the commercial part of town while avoiding busy Route 2, fisherman used it to walk the river. Suddenly, a decision was made to close the trail, saying it was no longer safe. There was some indication of erosion, and also a large rock above the trail they were worried about. Understanding the concern, there were two local efforts made by Rumford Citizens to write grants to obtain the money to fix the safety issues on the trail, both proposals were denied. The grants were not successful because Brookfield had only obtained one cost estimate for repairs, and federal grants require several cost estimates.

The opening of this trail is crucial for the citizens of our town for recreation, and the draw of tourists to see Rumford Falls, one of the largest waterfalls in the east. I understand, FERC requires hydro projects to create recreational plans around dams so citizens can utilize the property and the public benefits from the commercial hydro operation. Currently Brookfield is not following the past license plan, and there are many concerned citizens, myself included, that worry Brookfield does not see the trail as important for the town and their relicensing plan. As a citizen, I would like to see Brookfield put out a digital survey to town residents. The survey can be distributed through social media, and should include questions about the trail and how it was used before it was closed. There should also be survey questions about how the trail could be used in the future to benefit the town.

In addition to the trail, citizens used to be able to access the property on the north side of the river which has amazing architecture and views of the falls and the reflection pool. This was a picnic area and a place to relax and walk near the river. This access has also been closed by Brookfield, and should be open to the public. I have been there many times as a young girl, when the falls were raging. Everyone who visits should have the opportunity to feel the vibrations from the power of the

falls, and the thunderous sound and awe inspiring perspective of Rumford's amazing waterfall.

The Androscoggin is not the river it used to be. It is cleaner and very beautiful. It is becoming a popular place to boat and fish. There is rumor that huge trout live in the reflection pool, and Maine Fish and Wildlife is considering how to improve the fishery. Maine residents, and those visiting love to fish, and fishing would help boost the economy of the area and improve life for people who live here. This should always be part of the recreation plan for the dam.

Finally, as the Androscoggin becomes more popular for boating, canoeing, kayaking and paddle boarding, these uses should be part of any recreational study. This should be part of the electronic survey put out to local residents. Brookfield should be looking at how to improve boating access, how to improve portaging around the dam, and how to provide access for whitewater kayakers below the bypass. Whitewater kayaking was not part of the recreational plan the last time the license was renewed, but has become a new use of the river and should be included. Recreational river releases may even need to be considered, and would be a summer draw for folks to come to Rumford as a recreational destination.

Rumford is a town defined by the river and the falls, therefore it only makes sense that the business making money from the falls has the best interest of the residents in mind. As a citizen, I hope Brookfield can do the most comprehensive study possible, and the dam relicensing plan can include the most positive recreational plan for the citizens. We all need to work together to make Rumford and the River Valley the best it can be.

Sincerely,  
John and Laurie Soucy  
Rumford Resident

To: Federal Energy Regulatory Commission  
Fr: Kirk Siegel, Executive Director, Mahoosuc Land Trust  
Re: Brookfield 30-year Hydropower License Rumford, ME (Docket P-2333-091)  
Da: May 28, 2020

I am writing to support expanded recreation around the Hydropower Station in Rumford. I understand that Brookfield's 30-year Hydropower License is up for renewal, and part of this process requires Brookfield to do recreational studies to see what residents want for recreation around the property. Results of these studies help FERC draft a license agreement that requires recreational access to suit the needs of the study findings, so residents can enjoy the property around the project for the next 30 years.

Mahoosuc Land Trust has dedicated very significant energy and cost over the last 30 years to acquire and make accessible multiple recreational access points between Shelburne, NH and Rumford. We request that Brookfield do a thorough recreational study with respect to the Rumford facility. Rumford residents have told us that they are specifically interested in:

1. The walking trail on the southern side of the river, which had been a mainstay in the community for years, and which has been closed.
2. Access to the property on the north side of the river with views of important architectural features, the falls, and the reflection pool. This was a picnic area and a place to relax and walk near the river and has also been closed.
3. As mentioned above, a thorough recreational study with respect to the Rumford facility.
4. A study by Brookfield of the Androscoggin River fishery, which Maine Fish and Wildlife apparently believes to be an important public resource, to understand the resource and the potential effect of reducing or "dewatering" the falls as part of the hydropower operation.

Thank you for the opportunity to comment, and please do not hesitate to contact me should you wish me to expand on any of the above topics.

Philip Blampied, Rumford, ME.

I am concerned about some of the impacts the company managing the hydro plant has had on the community. Two are particularly a nuisance. The company consistently runs a loud siren every time a certain amount of water is released from the dam. This is supposedly to warn anyone who might be at the water's edge just below the dam. The sirens run day and night, often for 10 minutes at a time. For instance, it is not uncommon for a siren to run at 100 decibels plus for 10 minutes at 3 am in the morning. People rarely if ever stand at the water's edge just below the dam and certainly not at 3 am. However, there is an extensive residential area just up the hill from the dam in which the full volume of the siren is audible. This is an unnecessary and disruptive practice and must stop. Another bad impact on the community was the company's closing of a well used and popular walking trail alongside the river on the undeveloped side of the Falls. It seems as if the slightest risk of liability is a greater concern to the company than disrupting and disadvantaging the community.



June 1, 2020

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



Via online submission to: <http://www.ferc.gov>

**Subject: Comments of Maine Council of Trout Unlimited on the Proposed Study Plan (PSP) for the Rumford Falls Hydroelectric Project (FERC No. 2333)**

Dear Secretary Bose:

On behalf of its chapters and their over 2,000 members, Maine Council of Trout Unlimited (TU) submits these comments on Brookfield's Rumford Falls Hydro LLC Proposed Study Plan (PSP) for the Rumford Falls Project (P-2333-0091) on the Androscoggin River in Rumford Maine.

The project contains the third largest generation capacity of any single generation facility in Maine. Located on the site of Maine's largest waterfall --the largest falls in the United States east of Niagara Falls -- the two dams the project includes marginalize views of the falls, and under low flow conditions, currently authorized minimum flows dewater the falls and the bypass.

The response by the people of Rumford and the surrounding area to Brookfield's fencing off of walking paths that have provided views of the falls for many years has been overwhelming. The people of Rumford see the falls as the heart of their community and resent being denied the views that they formerly enjoyed. Many of them have posted comments to that effect to the FERC Rumford Falls Project docket.

This is the first relicensing of the Rumford Falls Project to occur after the pollution that formerly characterized the Androscoggin River as it flowed through Rumford was cleaned up and the recreational and aesthetic potential of the area began to become recognized. For that reason, the Rumford Falls Project is likely the most poorly mitigated project in Maine. Brookfield's Proposed Study Plan would not even have considered the most basic studies: Renewed recreational use of the closed paths and flow studies for the two dams that dewater the falls with minimum flows of 0 CFS and 21 CFS. Additionally, the recent filing by the Maine Historical Preservation Commission (MHPC)<sup>1</sup> confirmed (as TU stated during the Proposed Study Plan Teleconference) that the archaeology studies Brookfield had submitted were incomplete:

*"With regard to archaeological resources, there are a number of errors related archaeological sites in the Pre Application Document and the Proposed Study Plan that need correction, the most important being the absence of archaeological studies in the Proposed Study Plan. (One archaeology report needs to be completed.)"*

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<sup>1</sup> Maine Historical Preservation Commission letter Subject: FERC 2333; Rumford Falls Hydroelectric Project Proposed Study Plan dated May 7, 2020

The filing goes on to say:

*“... the current Study Plan for relicensing must include a provision for another effort to complete the archaeological data recovery report study. This is an unfinished relicensing archaeological issue where the majority of the public benefit of the archaeological study for the project resides.”*

The incomplete study includes reference to fish bones identified as to anatomical feature but not as to species that TU believes could bear on potential fish passage requirements for the project.

We feel compelled to note that while Brookfield was economizing on relicensing studies in Maine, the information from which would allow them to appropriately mitigate the effects of the project on the Town of Rumford and the surrounding area, Brookfield Renewable was filing documents with the Securities and Exchange Commission indicating they are planning a public offering of new Limited Partnership Units that could generate approximately \$575 million in additional capital.<sup>2</sup> Brookfield Renewable Energy appears to be valued in excess of \$30.6 billion, based on the stated capitalization of its holding company. Compare Brookfield’s resources with the Town of Rumford’s, 2018 population 5,687 - there is no comparison.

The Town of Rumford is asking for a comprehensive recreational plan to be part of the conditions of relicensing. This would include the paths, viewing opportunities and aesthetics, whitewater opportunities, fishing, parks and other potential recreational uses of the Rumford Falls vicinity. TU strongly supports this.

TU also supports Brookfield’s preparation of a draft Area of Potential Effect (APE) per the previously referenced MHPS filing.

We reiterate our support previously stated in our comments on the PAD<sup>3</sup> for the following studies:

- Minimum Flow Analysis
- Brown Trout and Rainbow Trout Telemetry Study
- Comprehensive Angler Creel Survey

As previously stated, we think that it is especially important that the Minimum Flow Analysis and the Telemetry Study be conducted together to adequately assess the impact of the low flows on trout and other fish species in the project area, and determine future flow prescriptions to replace those currently in place that are harmful to aquatic habitat.

The Brown Trout and Rainbow Trout Telemetry Study is appropriate. PAD describes brown trout habitat: *“Brown Trout prefer medium-to-large streams with swift riffles and large, deep pools”*<sup>4</sup> and the project floods over 400 acres of this type of habitat. The effects of project operation are unknown and need to be determined. Telemetry is the best science available to make that determination.

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<sup>2</sup> Brookfield Renewable Partners L.P. Prospectus Supplement to Prospectus dated February 19, 2020 posted at <https://www.sec.gov/Archives/edgar/data/1533232/000119312520154170/d916732d424b7.htm>

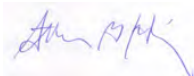
<sup>3</sup> Comments of Maine Council of Trout Unlimited on the Pre-application Document for the Rumford Falls Hydroelectric Project (FERC No. 2333) dated January 28, 2020.

<sup>4</sup> Brookfield Renewable Rumford Falls Hydroelectric Project (FERC No. 2333) Notice of Intent to File Application for a New License and Pre-Application Document, page 5-24

Lastly, Maine Department of Marine Resources will be submitting a request for studies pertaining to American eel passage. TU had previously requested that American eels be included with the Brown Trout and Rainbow Trout Telemetry Study,<sup>5</sup> but this request was ignored in the PSP. Currently, the lowest dam in the Androscoggin Watershed, Brookfield's Brunswick Project, provides no eel passage. Up for relicensing in 2029, eel passage at Brunswick will allow more American eels to access the watershed.

Maine TU Council appreciates the opportunity to comment on this project and looks forward to proceeding under the ILP process.

Respectfully,

A handwritten signature in blue ink, appearing to read "Stephen G. Heinz".

Stephen G. Heinz  
Maine TU Council FERC Coordinator

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<sup>5</sup> Comments of Maine Council of Trout Unlimited on the Pre-application Document for the Rumford Falls Hydroelectric Project (FERC No. 2333) dated January 28, 2020.

Allie Burke, Rumford, ME.

On the behalf of River Valley Healthy Communities Coalition, located in Rumford, it would be a huge benefit to the community to have trail access once again around the falls. It would be great for citizens to be able to access the property on the north side of the river which has amazing views of the falls and reflection pool.

In a time of uncertainty it would be wonderful for Brookfield to offer the community a place to relax and walk near the river. This would help decrease anxiety, boost mental health and many other health factors that so many people are dealing with right now.

The opening of this trail is crucial for the citizens of our town for recreation, and an economic boost to the town as it would help draw tourists to see Rumford Falls, one of the largest waterfalls in the east.

Thank you for taking the time to read our comments and concerns.  
Allie Burke, Executive Director to River Valley Healthy Communities Coalition

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426  
June 2, 2020

OFFICE OF ENERGY PROJECTS

Project No. 2333-091—Maine  
Rumford Falls Hydroelectric Project  
Rumford Falls Hydro, LLC

Mr. Luke Anderson  
Brookfield Renewable  
150 Main Street  
Lewiston, ME 04240

**VIA FERC Service**

**Reference: Staff Study Request**

Dear Mr. Anderson:

On January 21, 2020, Commission staff requested studies for water quality and cultural resources to support the relicensing for the Rumford Falls Hydroelectric Project. On May 11, 2020, Commission staff submitted comments on the proposed Angler Creel Survey and Recreation Plan. However, since our last letter, several comments have been filed suggesting the potential need for flow releases to enhance the aesthetics of Rumford Falls. There is insufficient information in the record to evaluate the need and benefit and cost of such releases. Therefore, we are now requesting that you conduct an aesthetic flow study described in the attached schedule A.

If you have any questions, please contact Ryan Hansen at (202) 502-8074 or [ryan.hansen@ferc.gov](mailto:ryan.hansen@ferc.gov).

Sincerely,



David Turner, Chief  
Northwest Branch

Enclosures: Schedule A

Project No. P-2333-091

## Schedule A

### Study Request

#### Aesthetic Flow Study

*Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to describe and evaluate the effects of project operations on aesthetic flows over Rumford Falls and to evaluate potential measures to alleviate those effects. This would be accomplished by evaluating the aesthetic benefit of various flows released from the upper dam over Rumford Falls. The objectives of this study are to:

- (1) Document the existing aesthetic character and conditions over Rumford Falls;
- (2) Identify key observation points;
- (3) Collect photo and video documentation under various existing and controlled flow conditions over the falls;
- (4) Conduct a focus group assessment of controlled flow conditions at key observation points;
- (5) Determine the operational feasibility, effects on generation, and cost of providing aesthetic flow releases;
- (6) Evaluate the potential effects of aesthetic flow releases on other resources including recreational uses, aquatic resources, water quality, and project generation.

*Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study.*

Section 4(e) and 10(a) of the Federal Power Act require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental,

Project No. P-2333-091

recreational, fish and wildlife, and other non-developmental values of the project, as well as power generation and other developmental values.

Members of the public and the business community provided comments during scoping and in response to Rumford Falls Hydro's proposed study plan that indicate a desire to improve the aesthetic flow over Rumford Falls. Aesthetic changes can affect public use and enjoyment of the project area. Rumford Falls are visible from downtown and several recreation sites around the project area and several commenters have suggested that the falls are the main attraction for the Town of Rumford. Thus, to fully evaluate the project's effect on aesthetic flows over the falls and to balance potential enhancement opportunities with their costs, a controlled-flow aesthetic study is relevant to the Commission's public interest determination.

*Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD generally describes the visual characteristics of project facilities and surrounding project lands. The PAD mentions a 1989 field investigation of the bypassed reach that was conducted to evaluate the appropriate flow requirements needed to protect the quality of aquatic habitat of the bypassed reaches. The PAD states that this study showed that increased flows would not result in an appreciable aesthetic benefit, however it did not provide the data collected from this study nor explain the basis for this conclusion.

As noted above, members of the public and business community have indicated the need for more flow over the falls. There is no information in the record to evaluate the need, availability, or aesthetic benefits of various flows over the falls.

Information on the aesthetic conditions collected during this study would inform a decision on whether additional releases from the upper dam to the upper bypassed reach would be warranted to improve aesthetic flows over the falls.

*Criterion (5) - Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Project operation affects available flows over Rumford Falls by diverting flows through the upper development for power generation. The maximum hydraulic capacity of the upper development is 4,550 cfs. Based on monthly average flows, all flow, except for leakage, is diverted from the falls and through the powerhouse every month except March through June, when average monthly flows range from 4,617 cfs in March to 9,273 cfs in June. During these months flow over the falls would on average range from 67 cfs to 4,723 cfs. High flows during all months can exceed the maximum hydraulic

Project No. P-2333-091

capacity resulting in significantly higher flows over the falls; however, these events are rare (10 percent exceedance), particularly during the low flow periods of winter and summer.

There is no information in the record to gauge the aesthetic quality of available flows over the falls. An analysis of project operations relative to a range of flows over the falls would help form the basis for determining the project's ability to enhance the aesthetic quality of the falls.

*Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

The aesthetic flow study should follow the methods outlined in *Flows and Aesthetics: A Guideline to Concepts and Methods* (Whittaker and Shelby 2017). These guidelines recommend a progressive approach with phased efforts of increasing resolution.

Phase 1 (desktop analysis and reconnaissance assessment) includes the characterization and documentation of key viewing locations and key viewing characteristics (i.e., waterfalls, vegetation, distance, etc.) during both a leaf-on and a leaf-off period. Potential use and access to these key viewing locations would be studied. From the information gathered during Phase 1, a controlled flow evaluation form would be created. In Phase 2 (documentation and assessment of controlled flow releases), Rumford Falls Hydro would release target flows selected in consultation with a focus group that would evaluate the flows.

The 2017 guidelines provide considerations and recommendations on how to best identify key observation points, collaborate with the public, and conduct surveys, among other study components.

### **Characterization of Aesthetic Features and Conditions (Phase 1)**

#### *Focus Group*

A focus group composed of interested stakeholders (a minimum of 10) should be assembled to provide assistance and input. These stakeholders should include, to the extent that they are willing and able to participate, members from the public, Town of Rumford, Pencacook Falls Investment, Mahoosuc Pathways, and Maine Bureau of Parks and Lands, among others. The focus group members should allow for collaboration and agreement on multiple decision points regarding the development of the study.



Project No. P-2333-091

### *Key Observation Points*

In consultation with the focus group, identify key observation points to represent important landscape perspectives and viewing opportunities of Rumford Falls. Key observation points should include at least the following sites: Veteran's Park, Rumford Falls Trail, the viewing area of Rumford Falls at the upper development, and J. Eugene Boivin Park. Characterize and document (photograph) key observation points during both a leaf-on period and leaf-off period. The assessment should include identification of key viewing characteristics (e.g., key features/structures, waterfalls, vegetation, in-channel geologic features) and characterization of potential use and access of these areas (e.g., special event activities) based on existing available information and information obtained as part of the Recreation Study.

### *Historic Data Gathering*

Assess and characterize the timing and flow ranges of historic flow exceedance events to characterize existing flow conditions as they relate to the aesthetic character of Rumford Falls.

## **Documentation and Assessment of Controlled Flow Release (Phase 2)**

### *Controlled Flow Conditions and Evaluation Form*

With the assistance of the focus group, determine the number of releases and appropriate aesthetic flow levels for conducting a review/evaluation of identified flows from the key observation points. An explanation of the targeted aesthetic flows should be included in a study progress report provided to the Commission and interested stakeholders. A broad range of flows would allow evaluators to conduct a meaningful evaluation and identify a minimum acceptable flow and an optimal aesthetic flow. At least four flows should be evaluated as part of the flow study: a leakage flow, and a low, moderate, and high flow.

A numeric rating (e.g., Likert scale) evaluation form of the overall view and specific elements (e.g., sound level, amount of turbulence) should be developed. The form should include questions pertaining to the evaluation of the aesthetic conditions for each key observation point location under the targeted flow ranges.

### *Controlled Flow Assessment*

The focus group should review the flows on-site at the key observation points, complete the evaluation form, and participate in a focus group discussion (off-site). Photo and video (with sound), documentation of the observed flows reviewed by the

Project No. P-2333-091

focus group should be documented.

### **Data Analysis and Report Preparation**

Rumford Falls Hydro should prepare a report that includes discussion of the study methodology, study area, analysis and results of the Aesthetic Flow Study. The report should document the information compiled from the above efforts, including analysis and summary of the focus group evaluation form responses and discussions. The report should also include an assessment of potential effects of providing aesthetic flows on other resources, such as recreation opportunities, aquatic resources and project power generation.

The proposed aesthetic study follows methods outlined in *Flows and Aesthetics: A Guideline to Concepts and Methods* (Whittaker and Shelby 2017). Therefore, these methods are consistent with generally accepted methods for conducting an aesthetic flow study.

*Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The anticipated cost for the aesthetic flow study request is estimated to be approximately within the range of \$30,000 to \$40,000.

Project No. P-2333-091

**Literature Cited**

Whittaker, D. and B. Shelby. 2017. Flows and Aesthetics: A Guide to Concepts and Methods. Accessible at: [https://www.hydroreform.org/sites/default/files/Flows%20and%20aesthetics--%20A%20guide%20to%20concepts%20and%20methods%202017\\_Final\\_web.pdf](https://www.hydroreform.org/sites/default/files/Flows%20and%20aesthetics--%20A%20guide%20to%20concepts%20and%20methods%202017_Final_web.pdf)

Lisa Arsenault, Mexico, ME.

As an active outdoors 'man' (woman) in the River Valley Community, I am appealing to you to require Brookfield to open up access around the hydro project. The trail on the backside of the falls existed for years before they bought the property.

We live in such a beautiful area and the Rumford Falls brings tourists to the area for recreation of all kinds. How cool is it that we have the beauty of the falls right in our downtown!?! Please give some thoughts to having the trail opened again for all to enjoy.

Also, as a lifelong resident, I've always admired the viewing area in the driveway to Brookfield. Any chance that could be opened for walkers to enjoy too?

Thank-you for considering my thoughts, Lisa



To Whom It May Concern,

As the Maine State Senator for District 18, I have the distinct honor of representing the people of Rumford, Maine. It has come to my attention that Brookfield Energy is seeking a renewal of their Federal Energy Regulatory Commission (FERC) license on the Middle Dam. It is my hope that as part of the license renewal, public access to the site will be considered.

The dam was originally built in 1916 alongside the Falls Hill Trail. Rumford Falls Power Company, which owned and operated the dam as a subsidiary of Oxford Paper Company, allowed public access to the trail and the picturesque 'West Viewing Area'. In 1994, when the dam was last relicensed, it was still under the ownership of the Rumford Falls Power Company. Public access on the property existed until 2014 when Brookfield closed access with very little explanation.

Despite this long history of public access and use, the Falls Hill Trail and 'West Viewing Area' has never been included in the FERC licensing as a recreational asset of the project. In the past, this may have been less vexing due to the river's pollution, however, after years of expansive cleanup effort, this deterrent is thankfully no longer an issue. Public interest in the trail and viewing area has greatly increased. The people of Rumford, and the surrounding River Valley Area live in Western Maine, in part, because of their love of the outdoors. The recreational areas situated at Brookfield dam could be a real asset to the River Valley area, positively impacting the area's attractiveness, and the community's health and wellbeing.

It is in the public interest of the citizens of the greater River Valley area that a formal recreation plan be created by Brookfield, and attached to the license in perpetuity to ensure that access to these resources is not compromised in the future.

I support the study requests of the Town of Rumford and those of the Maine Department of Inland Fisheries and Wildlife with regards to fisheries studies. It is critically important to preserve our existing resources and work together to ensure that access to the Maine outdoors, and its unique settings, is readily available.

Sincerely,

A handwritten signature in blue ink that reads "Lisa M. Keim".

Lisa Keim  
State Senator

Jolan Ippolito, Rumford, ME.

Please include a provision in the permit to reinstate and allow what was once public access to areas around the hydro project. I am not sure when the ownership changed hands that the community realized it would have to request the access it originally had throughout the history of this hydro project. I believe that safe public access is possible. I believe that Brookfield is trying to be a community player and should not object to making public access possible again.

Landis Hudson, Yarmouth, ME.

Thank you for the opportunity to comment on the Proposed Study Plan (PSP) for the Rumford Falls Hydroelectric Project (Docket P- 2333-091) in Rumford, ME. The Project is located on the Androscoggin River in the Town of Rumford, Oxford County, Maine.

We are strongly in favor of requiring the application to complete a full recreational study. We understand that the Town of Rumford is requesting a comprehensive recreational plan to be completed to include trails and pathways, viewing opportunities and aesthetics, whitewater opportunities, fishing, and as well as other possible recreational uses of the Rumford Falls vicinity. We fully support this request. We are aware of reports that travelling by canoe through the area is extremely challenging because of poorly maintained and inadequate trails, and poor signage for portaging around the project area. We believe that these problems need to be addressed.

As noted by Maine State Senator Lisa Keim in a letter posted to the FERC website on June 2, 2020:

Public access on the property existed until 2014 when Brookfield closed access with very little explanation. Despite this long history of public access and use, the Falls Hill Trail and 'West Viewing Area' has never been included in the FERC licensing as a recreational asset of the project. In the past, this may have been less vexing due to the river's pollution, however, after years of expansive cleanup effort, this deterrent is thankfully no longer an issue. Public interest in the trail and viewing area has greatly increased. The people of Rumford, and the surrounding River Valley Area live in Western Maine, in part, because of their love of the outdoors. The recreational areas situated at Brookfield dam could be a real asset to the River Valley area, positively impacting the area's attractiveness, and the community's health and wellbeing.

It is in the public interest of the citizens of the greater River Valley area that a formal recreation plan be created by Brookfield, and attached to the license in perpetuity to ensure that access to these resources is not compromised in the future.

We firmly support the request made by Maine Inland Fisheries and Wildlife for a Minimum Flow Analysis to determine recommended minimum flows, specifically in the reach from Middle Dam downstream to the confluence with the Lower Station tailrace. We see the value in ensuring that any agreed upon minimum flow releases meet inland fisheries needs and assure attainment of water quality standards, to support the future health of this important community resource. We understand that this work will evaluate how various minimum flows influence the fishable aquatic habitat lotic and lentic reaches of the Androscoggin River. This minimum flow analysis should also address recreational interests.

Further, we believe that there is potential for American eel and we would like to see safe, timely and effective passage for American eel at this site.



OFFICE OF THE TOWN MANAGER

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town@rumfordme.org

Mr. Ryan Hansen  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

**VIA FERC SERVICE**

Reference: Docket Number: P-2333-091

June 5, 2020

Dear Mr. Hansen,

The Town of Rumford, a body corporate and politic in the County of Oxford, in the State of Maine hereby submits to the Federal Energy Regulatory Commission (FERC) the following comments and two (2) study requests as part of the Integrated Licensing Process for the Rumford Falls Hydro Project currently owned and operated by Rumford Falls Hydro, LLC a wholly owned subsidiary of Brookfield Renewable Partners LP.

The Town has written these requests in accordance with the information contained in the “Guide to Understanding and Applying the Integrated Licensing Process Study Criteria” published by FERC in March of 2012 along with the FERC “Handbook for Project Licensing and 5 MW Exemptions from Licensing” published in April of 2004. The Town also references and expects application of the principles and methodologies from Manning’s , “Studies in outdoor recreation: Search and research for satisfaction” (2010, Oregon State University Press) and Whittaker et. al., “Flows and Aesthetics: A Guide to Concepts and Methods.” (2017, Oregon State University) as the accepted scientific methodologies for both study requests. Cost estimates were made using best available information, resources and experience.

The Town of Rumford notes its support for the following comments, requests and formal study requests: the letter of State Senator Lisa Keim submitted June 2, 2020; all comments made by citizens and organizations of the Town of Rumford to date; comments made by Pennacook Falls Investments Ltd., dated May 18, 2020; The Maine Department of Environmental Protection, dated January 25, 2020; The Maine Department of Inland Fisheries and Wildlife, dated January 28, 2020; the Mahoosuc Land Trust, dated May 28, 2020; and the Maine Council of Trout Unlimited dated June 1, 2020.



The Town also specifically and specially notes its support for the Staff Study Request made by FERC dated June 2, 2020. The Town of Rumford has recently adopted an Outdoor Recreation Plan and attaches the plan for reference to this transmittal. The Plan considers the creation of additional hiking, walking and biking trails as an immediate need for the Town of Rumford and makes specific reference to the Falls Hill Trail.

The Town of Rumford is requesting two studies. The first study is a comprehensive recreation study that would encompass all potential recreation resources around the Project. It is specifically intended to include all steps necessary to move forward with the restoration, rehabilitation and improvement of the existing recreation resources at the project and any future recreation resources at the project. The Town's most fundamental expectation for this study is that it will assist in the restoration of the Rumford Falls Hydro Project to its historic and originally intended aesthetics and design as an energy producer located within a semi-urban setting next to Rumford Falls. The Upper Development in particular was never intended to be set aside as an isolated cantonment of industry, fenced off from the natural setting and those who seek to enjoy it. Changes made over the years to public access at the project have incrementally pushed citizens away from their enjoyment of the Falls as the single most scenic natural resource of Western Maine.

The Town believes that these actions have been taken without regard to their impact on the local economy, the public interest or the historic recreational uses of the facility. The fundamental rights of the public to access the Falls and the associated recreation resources first established in the original design have eroded to a point of insignificance in comparison to the current management scheme.

The Town recognizes the tremendous economic value of the energy resources harnessed at the Rumford Falls Hydro Project and seeks to ensure its long term viability through the restoration of the recreation assets and resources which have helped generate continued public support for the Project in the past. The Town believes that the current management scheme is not only damaging to the public interest in recreation but also damaging to the public interest in energy production. Specifically, the gradual institution of incrementally restrictive facility access policies have made continued public support for the Project untenable. This is a fundamental management error of the resource both for recreation and energy due to the exceptional levels of conflict created between the public interest and the operator.

The Town believes that the best means to reduce conflict between the operator and the public interest is for the institution of a wide-ranging resource management regime that will ensure the protection of the public interest in both recreation and energy production while also providing long term stability to the operator. The Town specifically seeks the creation of a recreation plan to be included as part of the license in perpetuity. The Town believes that the attachment of a recreation plan to the license presents a minimal burden to the operator while creating very significant benefits to the public interest.

The second study the Town is requesting is for a Whitewater Rafting Study that would also include all other whitewater activities to include but not be limited to rafting, kayaking, canoeing, other small boating and tubing around and through the Lower Falls area between the

Upper Development and the Lower Development. This new recreation activity which has never before been considered for the Lower Falls appears to have tremendous economic potential and minimal attendant requirements for the operator. The Lower Falls would already support significant amounts of whitewater activities now and depending on future operations schemes as part of other studies could support more.

The Town would like to acknowledge its appreciation for the letter received from Brookfield - Rumford Hydro dated May 20, 2020 with regards to a potential evaluation of the Falls Hill Trail and their acknowledgement that "access to walking paths and trails bring many recreation benefits and build a community culture of health". The Town believes that this engineering evaluation should be acknowledged within the Integrated Licensing Process along with any other studies or outcomes of studies to include consideration of the rehabilitation and improvement of other existing recreational resources. Further additional dialogue with Brookfield - Rumford Hydro remains key to the success the relicensing process and the Town welcomes any invitation from Brookfield - Rumford Hydro to dialogue in Rumford.

Finally, the Town notes that aesthetic improvements and considerations are present through various study requests and aspects of the licensing process. With specific regards to improvements in fencing, landscaping, cleaning and painting of buildings or doors and general upkeep the Town would welcome a plan proposal from Rumford Hydro that addresses these issues. The potential construction of a new clinic for the United States Department of Veterans Affairs at 1 Railroad Street has brought additional significance and importance to the aesthetic aspects of the Middle Canal in and around the Canal Bridge at Hartford Street. Replacement of chain link fencing throughout all areas of the entire project is requested along with improved upkeep and appearance of facilities. The Town has not submitted this request as a formal study for two specific reasons, first to lessen the burden on the Commission and the operator and second because these practices are generally accepted and understood as part of everyday operations. It seems both unnecessary and burdensome to study what should be common sense.

With our gratitude for the Commission's regard for our Town,

Sincerely,

  
Stacy Carter

Town Manager  
Rumford, Maine

Enclosures: Schedule A, Study Requests of the Town of Rumford  
Outdoor Recreation Plan of the Town of Rumford

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**Schedule A**

The Town of Rumford hereby submits the following study requests in accordance with the FERC criteria:

**Study Request 1: Recreational Use Study**

1. Goals and Objectives

Goal: To complete an inventory of all recreational resources at the Rumford Falls Hydro Project in particular those associated with the historic original design. To identify any new recreational resources or interests which may be significant to members of the public in the community and/or tourists from outside the Rumford area.

Objective 1: To identify the steps necessary to rehabilitate and reopen recreational resources to the public in particular those which were part of the original historic design and construction.

Objective 2: To identify the steps necessary to offer new recreational opportunities at the Rumford Falls Hydro project to members of the public in the community and/or tourists from outside the Rumford area.

Data to Be Obtained: A complete inventory of existing recreational resources and a task list necessary to reopen and rehabilitate existing recreational resources to the public. A complete inventory and consideration of new recreational opportunities and a list of changes or procedures necessary to support the creation or growth of new recreational resources.

2. Criterion 2 is not applicable.

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3. Relevant Resource Management Goals and Public Interest Considerations

The public interest considerations at the Rumford Falls Hydro Project are substantial. The project is situated within a built up area of the Town and is directly adjacent to the highest density area of population and the highest intensity area of economic activity. The project as originally designed and built consisted of the dam, and generating facilities nestled among multiple parks and the scenic Rumford Falls. It is notable to the Town that the original design and construction deliberately maintained the scenic Rumford Falls with clear acknowledgment of its aesthetic value through the creation and maintenance by the dam operator of numerous vantage points and parks. (See Figure 1<sup>1</sup> and Figure 2<sup>2</sup>)

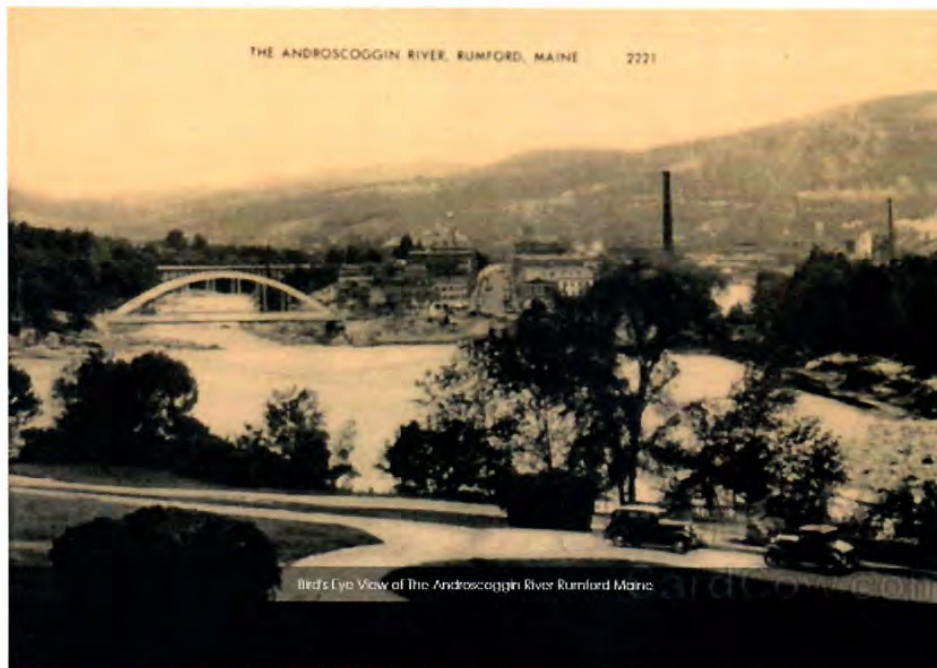


Figure 1: Digital scan of postcard showing West Viewing Area in foreground ca. 1920

<sup>1</sup> Digital scan of postcard showing West Viewing Area in foreground: <https://www.cardcow.com/462759/birds-eye-view-androscoggin-river-rumford-maine/>; Accessed on June 3, 2020.

<sup>2</sup> Digital scan of map Rumford Falls Power Company Map (1894): <https://digitalmaine.com/maps/238/>; Accessed on June 3, 2020.



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Figure 2: Digital scan of Rumford Falls Power Company (previous project owner and operator) Map dated 1894 showing park features at the dam prior to construction of existing Upper Development but after initial construction at Rumford Falls.

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The Town of Rumford Comprehensive Plan as updated in November of 2013 identifies the following significant policies for the Economy which support the public interest considerations of this study request<sup>3</sup>:

- ❖ Maintain and enhance the unique character and business viability of Shopper’s Island.
- ❖ Develop new areas for commercial/business development while maintaining the viability of existing business locations.
- ❖ Support the full use of Black Mt. of Maine and other recreation resources and opportunities to encourage economic diversification and growth.
- ❖ That Rumford is seen [sic] aesthetically pleasing to residents, businesses, business patrons and tourists.

The Town of Rumford Comprehensive Plan also states the following with regards to Outdoor Recreation<sup>4</sup>:

“Outdoor recreation assets and opportunities can play a role in the economic diversification in Rumford and [sic] region.”

The recreation use study will support the ability of the Town of Rumford to enhance economic activity and economic opportunity through the identification of recreation facilities and amenities associated with the Rumford Falls Hydro Project that could be reasonably rehabilitated, reopened or improved. This information is specific to Brookfield’s property and facilities and the Town has no reasonable means to inform the public with regards to the development of recreation assets within the project without complete technical information that can be obtained by this study.

4. Existing Information and Need for Additional Information

There is no comprehensive inventory of recreational resources within the project however numerous recreational resources are known and have been identified. These include the Boivin Park, the Falls Hill Trail, the “West Viewing Area” and Veterans Park. There is no information available on use of these resources or their exact dimensions, locations or other technical characteristics that would allow for the Town to plan for recreation use of the facilities within the context of FERC licensing or general economic development.

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<sup>3</sup> Rumford Comprehensive Plan Update, Adopted November 5, 2013, p. 34-35

<sup>4</sup> Rumford Comprehensive Plan Update, Adopted November 5, 2013, p. 104



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5. Project Nexus

All of the existing facilities described in this study request are within the holdings of Brookfield Renewable. The existence of the project and in particular recent changes to permitted uses of the park features has impacted the ability of the Town to gain economic diversification and economic opportunity from the natural assets of the Rumford Falls. These impacts include a loss of development opportunities gained from recreation interests and a loss of business opportunities gained from tourism.

Development opportunities associated with the project could include but are not limited to the creation of additional lodging and dining, and recreation related businesses. Business opportunities gained from tourism include but are not limited to real estate services, recreation services and goods, travel services and goods and consumer retail.

Information provided by the study will enable FERC, Brookfield Renewable, the Town of Rumford, and other stakeholder agencies to consider the relevant questions of public interest in recreation in and around the Rumford Falls Hydro Project.

6. Proposed Methodology

The FERC Handbook for Project Licensing and 5 MW Exemptions from Licensing (April 2004)<sup>5</sup> provides the following generally accepted practice: “Recreation studies should be designed to identify current and future recreational needs and how those needs can best be met.”

Based on historic use the Town proposes that all of the existing recreational facilities at the Rumford Falls Hydro Project, including those that are closed, altered or in need of rehabilitation, are intended to partially meet current recreational needs.

Phase 1 of the recreation study should include characterization and documentation of key recreation assets and characteristics. Past and current uses of the key recreation assets would be studied including potential future use with needed rehabilitation or improvement. A strong focus would be placed on consideration of historic features, amenities and aesthetics.

Phase 2 of the recreation study would include guided community tours of the facilities to examine suitability for use and to assist in the identification of rehabilitation and improvements necessary to reopen recreation facilities to the public.

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<sup>5</sup> FERC Handbook for Project Licensing and 5 MW Exemptions from Licensing (April 2004): [https://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing\\_handbook.pdf](https://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing_handbook.pdf); Accessed June 3, 2020

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During Phase 1 a focus group composed of interested stakeholders (minimum of 10) should be assembled to provide assistance and input. These stakeholders should include to the extent that they are willing and able to participate members from the public, Town of Rumford, EnvisionRumford, Mahoosuc Pathways, Maine Bureau of Parks and Lands, and the River Valley Chamber of Commerce among others. The focus group members should allow for collaboration and agreement on multiple decision points regarding the development of the study.

In consultation with the focus group, identify key recreation assets including at a minimum the following: Rumford Falls Hill Trail, Veteran’s Park, Boivin Park and the “West Viewing Area”. Characterize and document key recreation assets including consideration of different seasonal uses. The assessment should include identification of key recreation asset characteristics and characterization of potential use, previous use and access to these areas based on existing information and information obtained as part of the study.

During Phase 2 a series of community events shall be planned and executed allowing members of the public to receive access to the existing recreational assets with any safety precautions as needed. Every effort should be made to allow the public to traverse the full length of the Falls Hill Trail using acceptable temporary safety barriers and signage as needed.

Rumford Falls Hydro will then prepare a report that includes discussion of the study methodology, study area, analysis and results of the Recreation Study. The report should document the information compiled from the above efforts, including analysis and summary of the focus group discussions and feedback received during the public access events. The report should also include an assessment of potential effects of reopening or rehabilitating existing recreation facilities on other resources, such as scenic resources, aquatic resources and project power generation.

Consideration of any new recreation opportunities or facilities identified by the focus group and discussed for further study.

7. Level of Effort and Cost

The anticipated cost for the recreation study request is estimated to be approximately within the range of \$30,000 to \$40,000 based on other comparable study requests.



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**Study Request 2:** Whitewater Recreation Use Study

1. Goals and Objectives

Goal: to determine the feasibility of allowing whitewater recreation on the lower falls as a means to assist the economic development of the Rumford area

Objective: to study the operational requirements related to whitewater recreation

Data to be obtained: determine if the Androscoggin river can be safely used by certified whitewater rafting guides and advanced kayakers with guides for whitewater activities between the upper development and the lower development from a point just below the middle dam to the Mexico boat launch. This determination will specifically include evaluation of potential runs on the river with consideration to project operations and safety of participants.

2. Criterion 2 is not applicable.

3. Relevant Resource Management Goals and Public Interest Considerations

The public interest considerations at the Rumford Falls Hydro Project are substantial. The project is situated within a built up area of the Town and is directly adjacent to the highest density area of population and the highest intensity area of economic activity. The project as originally designed and built consisted of the dam, and generating facilities nestled among multiple parks and the scenic Rumford Falls.

Whitewater rafting and kayaking would be a new addition of recreation opportunities to the Rumford area. When the project was last licensed 1994 pollution of the Androscoggin River was still bas enough to act as a deterrent to most historic and emerging recreational uses. Prior to the period of greatest impact by pollution whitewater rafting or kayaking as it is generally known today was not a widely practiced form of recreation. It was therefore highly unlikely or impossible that whitewater rafting or kayaking could have ever been considered as a recreational activity at the Rumford Falls Hydro Project because of pollution and no prior historic use or knowledge.

Based on input from members of the public and the general interest in continued economic diversification of the Town this study request constitutes the first ever attempt to quantify potential economic benefits and operational feasibility of whitewater rafting and kayaking activities within the Rumford Falls. There are extraordinary potential economic development opportunities should this concept be determined to be operationally feasible.

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The Town of Rumford Comprehensive Plan as updated in November of 2013 identifies the following significant policies for the Economy which support the public interest considerations of this study request<sup>6</sup>:

- ❖ Maintain and enhance the unique character and business viability of Shopper’s Island.
- ❖ Develop new areas for commercial/business development while maintaining the viability of existing business locations.
- ❖ Support the full use of Black Mt. of Maine and other recreation resources and opportunities to encourage economic diversification and growth.

The Town of Rumford Comprehensive Plan also states the following with regards to Outdoor Recreation<sup>7</sup>:

“Outdoor recreation assets and opportunities can play a role in the economic diversification in Rumford and [sic] region.”

The whitewater recreation study will support the ability of the Town of Rumford to enhance economic activity and economic opportunity through the identification of whitewater recreation opportunities associated with the Rumford Falls Hydro Project that could be reasonably used within the current operations scheme or a new operations scheme. This information is specific to Brookfield’s property and facilities and the Town has no reasonable means to inform the public with regards to the development of whitewater recreation assets within the project without complete technical information that can be obtained by this study.

4. Existing Information and Need for Additional Information

Beyond the conceptual report provided as Appendix 1 to Study Request 2 (see attached) there is no information available on potential uses of whitewater recreation resources or their exact technical characteristics that would allow for the Town to plan for whitewater recreation use of the Rumford Falls within the context of FERC licensing or general economic development.

5. Project Nexus

The Information Center, Lower Falls and the Mexico Boat Launch are all within the project boundaries. A previous history of pollution and a lack of further study have

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<sup>6</sup> Rumford Comprehensive Plan Update, Adopted November 5, 2013, p. 34-35

<sup>7</sup> Rumford Comprehensive Plan Update, Adopted November 5, 2013, p. 104

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hindered any potential consideration of whitewater recreation uses of the Rumford Falls.

Development opportunities associated with the whitewater recreation opportunities could include but are not limited to the creation of additional lodging and dining, and recreation related businesses. Business opportunities gained from tourism include but are not limited to real estate services, recreation services and goods, travel services and goods and consumer retail.

Information provided by the study will enable FERC, Brookfield Renewable, the Town of Rumford, and other stakeholder agencies to consider the relevant questions of public interest in whitewater recreation in and around the Rumford Falls Hydro Project.

6. Proposed Methodology

The FERC Handbook for Project Licensing and 5 MW Exemptions from Licensing (April 2004)<sup>8</sup> provides the following generally accepted practice: “Recreation studies should be designed to identify current and future recreational needs and how those needs can best be met.”

Rumford Falls Hydro should by mutual agreement with the Town of Rumford, hire a whitewater consultant based in Maine and with experience in and on Maine rivers to examine the feasibility of navigating the segment of the Androscoggin river in question by whitewater raft and kayak. This consultant will produce a report discussing potential feasibility of whitewater recreation with regards to operations and safety of whitewater rafting. The consultant will also identify water level conditions considered satisfactory for safe operations based on flow rates experienced in the current operations scheme or any future operations scheme.

If the consultant finds that there are satisfactory conditions for whitewater rafting the applicant will then develop and provide their own operations criteria for use of the whitewater rafting corridor by certified whitewater rafting guides and kayakers. These criteria will serve as the basis for the addition of a whitewater rafting component of a recreation plan as part of the relicensing of the Rumford falls hydro project. The report will also characterize likely economic benefits to the Town.

The use of the very lowest area of the lower falls, just above the Lower Development will be considered for use by beginning and intermediate level kayakers seeking experience in the lightest whitewater conditions. This potential use will be considered

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<sup>8</sup> FERC Handbook for Project Licensing and 5 MW Exemptions from Licensing (April 2004): [https://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing\\_handbook.pdf](https://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing_handbook.pdf); Accessed June 3, 2020

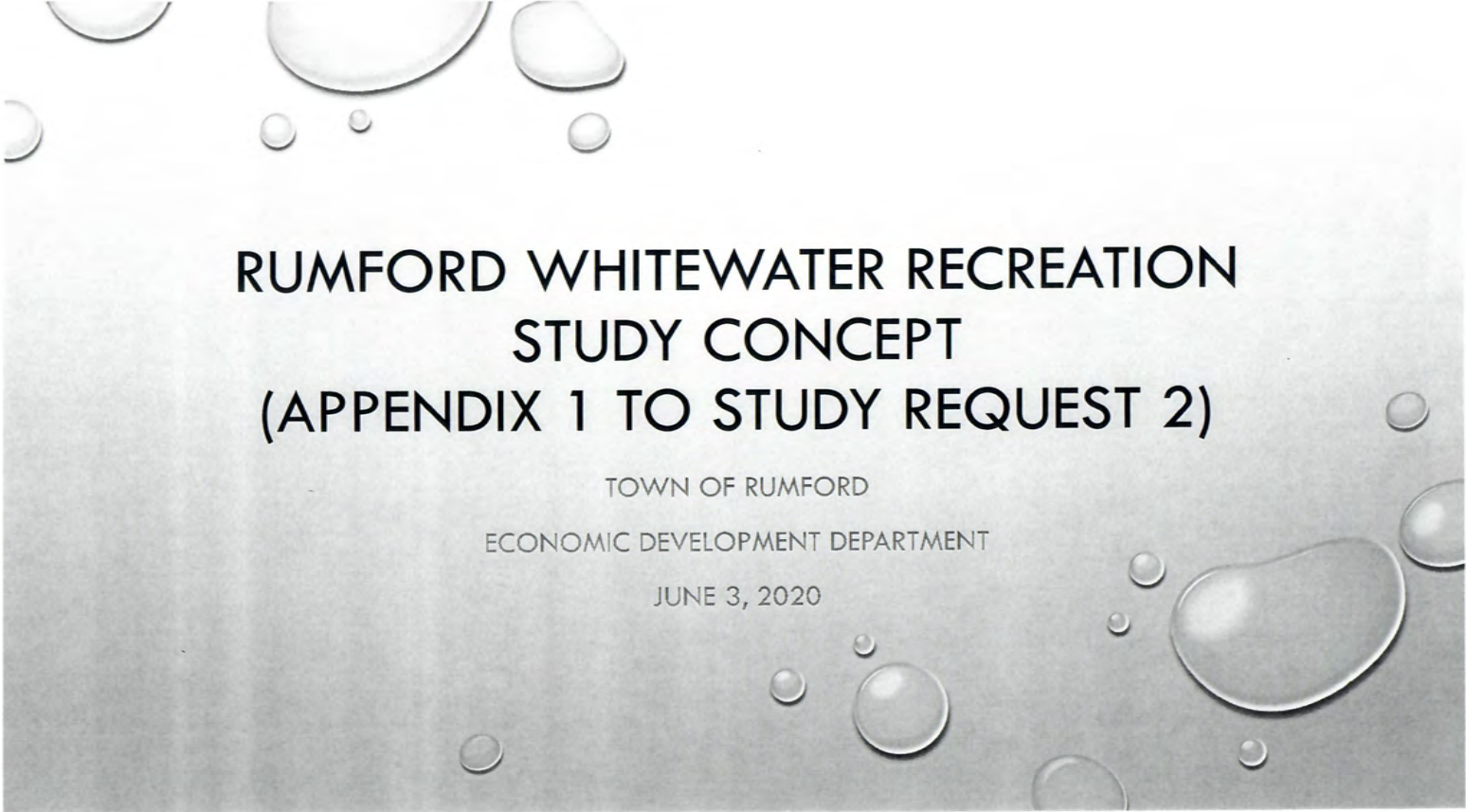
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separately from the feasibility of whitewater rafting and kayaking over the Lower Falls as described.

7. Level of Effort and Cost

The anticipated cost for the whitewater recreation study is estimated to be \$18,000 per the following:

- Whitewater Rafting corridor safety and operations survey: \$10,000
  - Consultant time: \$2,500 @ 25 hours, \$100/hour
  - Equipment and manpower for on water surveys: \$5,000 @ 10 hours, \$500/hour
  - Report production: \$2,500 @ 25 hours, \$100/hour
  - Sub Total 1: \$10,000
  
- Rumford Falls Hydro whitewater rafting recreation operations criteria development
  - Applicant Staff time: \$8,000 @ 80 hours, \$100/hour
  - Sub Total 2: \$8,000
  
- Total proposed cost to Rumford Falls Hydro: \$18,000



**RUMFORD WHITEWATER RECREATION  
STUDY CONCEPT  
(APPENDIX 1 TO STUDY REQUEST 2)**

TOWN OF RUMFORD  
ECONOMIC DEVELOPMENT DEPARTMENT

JUNE 3, 2020





Information Center/Boivin  
Park Launch site as  
photographed on May 27,  
2020



Information Center/Boivin  
Park Launch site as  
photographed on May 27,  
2020

Purple arrow shows carry to  
launch pathway, stairway as  
needed is assumed.





Information Center/Boivin  
Park Launch site as  
photographed on May 27,  
2020

Purple arrow shows carry to  
launch pathway, clearance  
of debris is assumed






Information Center/Boivin  
Park Launch site as  
photographed on May 27,  
2020

Purple arrow shows carry to  
launch pathway, clearance  
of debris is assumed







Information Center/Boivin  
Park Launch site as  
photographed on May 27,  
2020

Purple arrow shows carry to  
launch pathway, clearance  
of debris is assumed





Information Center/Boivin  
Park Launch site as  
photographed on May 27,  
2020

Purple arrow shows carry to  
launch pathway, clearance  
of debris is assumed,  
stairway with floating  
platform in backwater  
anchored to ledge is  
assumed

[Note: Paint on rock is  
previous graffiti]

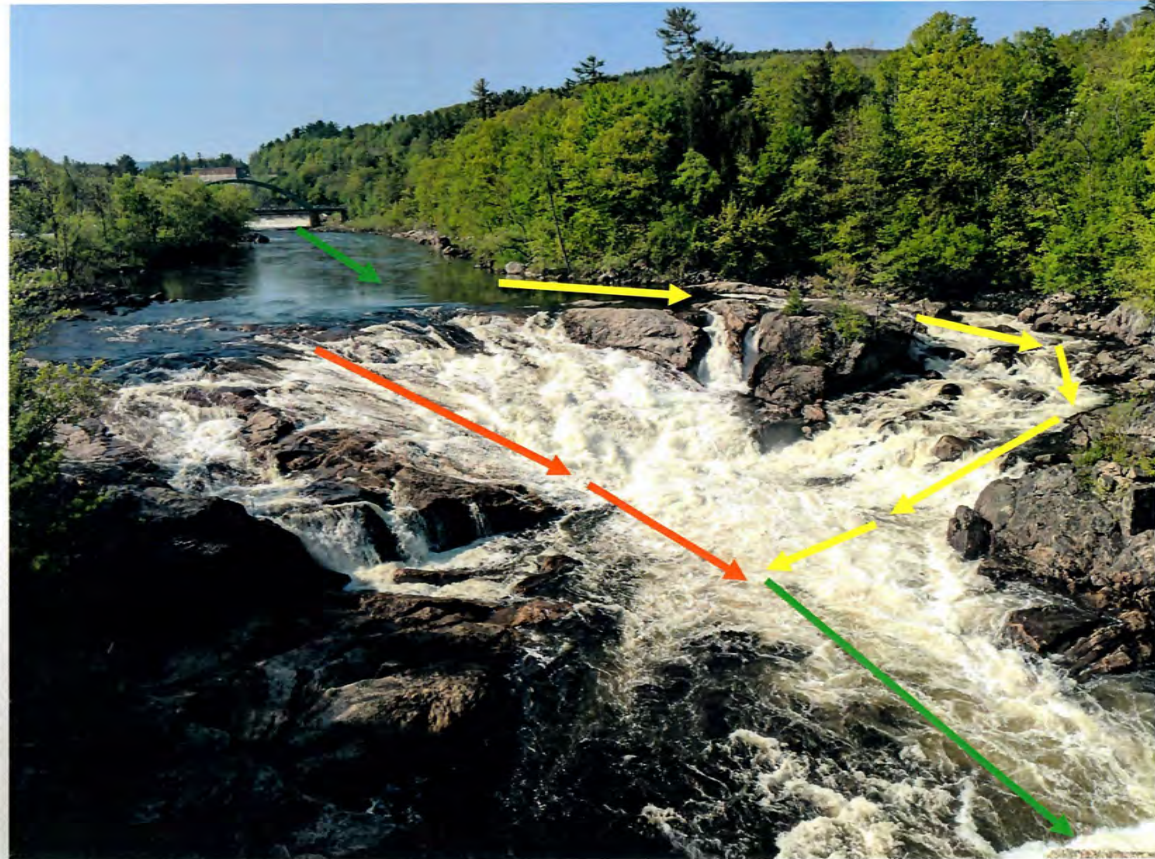


The Lower Falls as  
photographed on May 27,  
2020.

Red arrow illustrates  
possible rafting run.

Yellow arrows illustrate  
possible kayak run

Green arrow illustrates safe  
approach and exit lanes



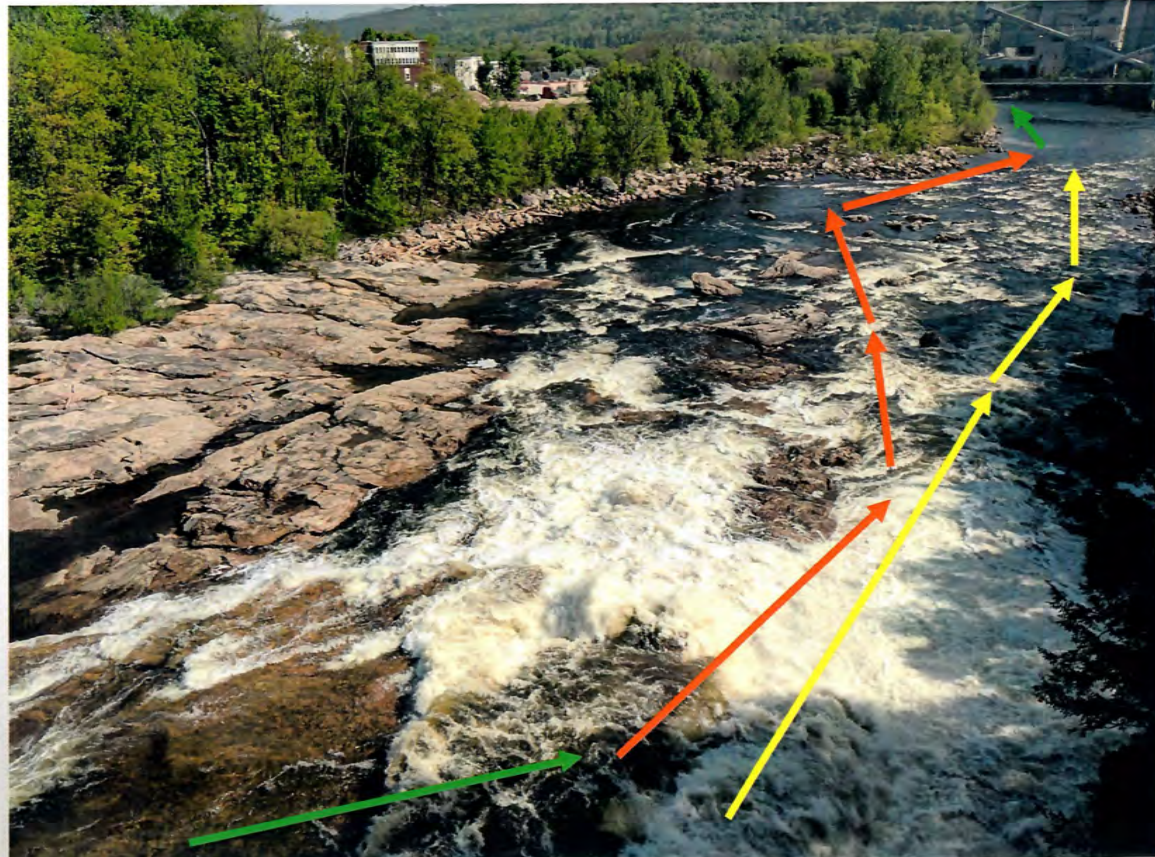


The Lower Falls as  
photographed on May 27,  
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Red arrow illustrates  
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Green arrow illustrates safe  
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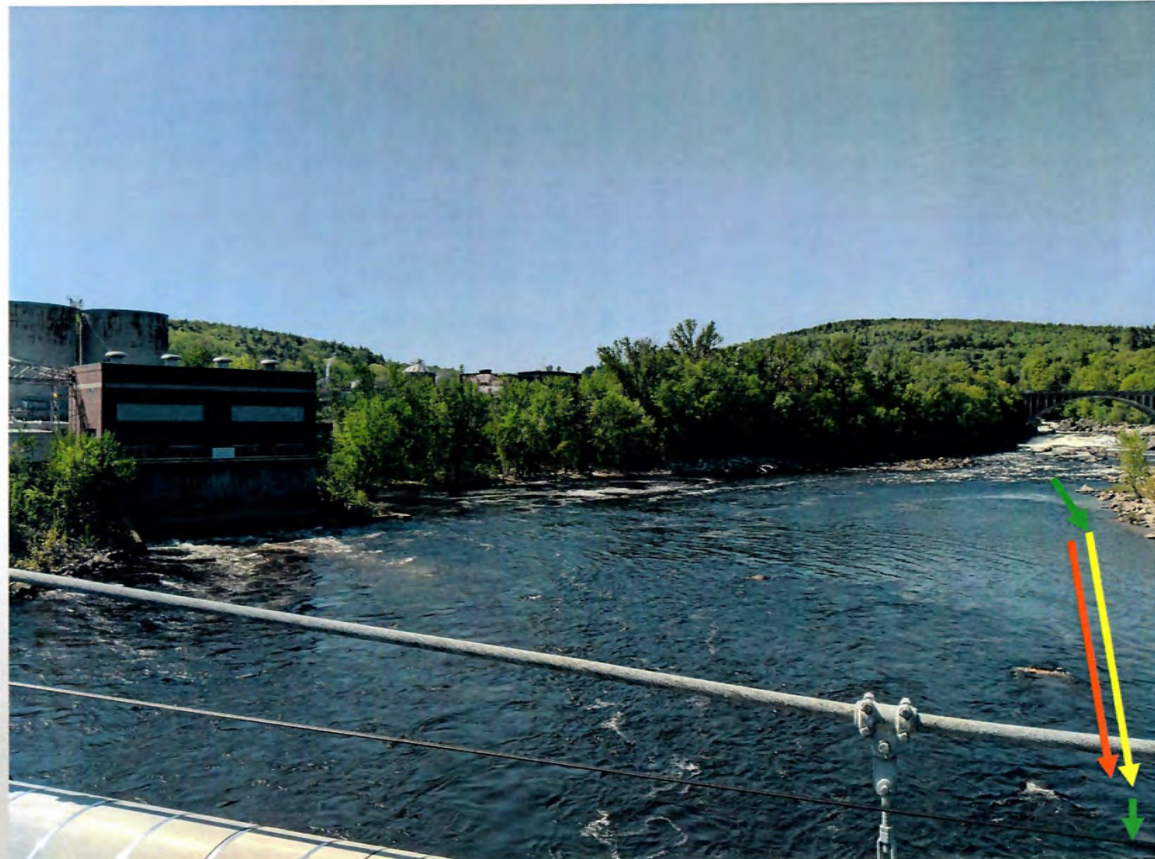


The Lower Falls and Lower Development as photographed on May 27, 2020.

Red arrow illustrates possible rafting run.

Yellow arrows illustrate possible kayak run

Green arrow illustrates safe approach and exit lanes





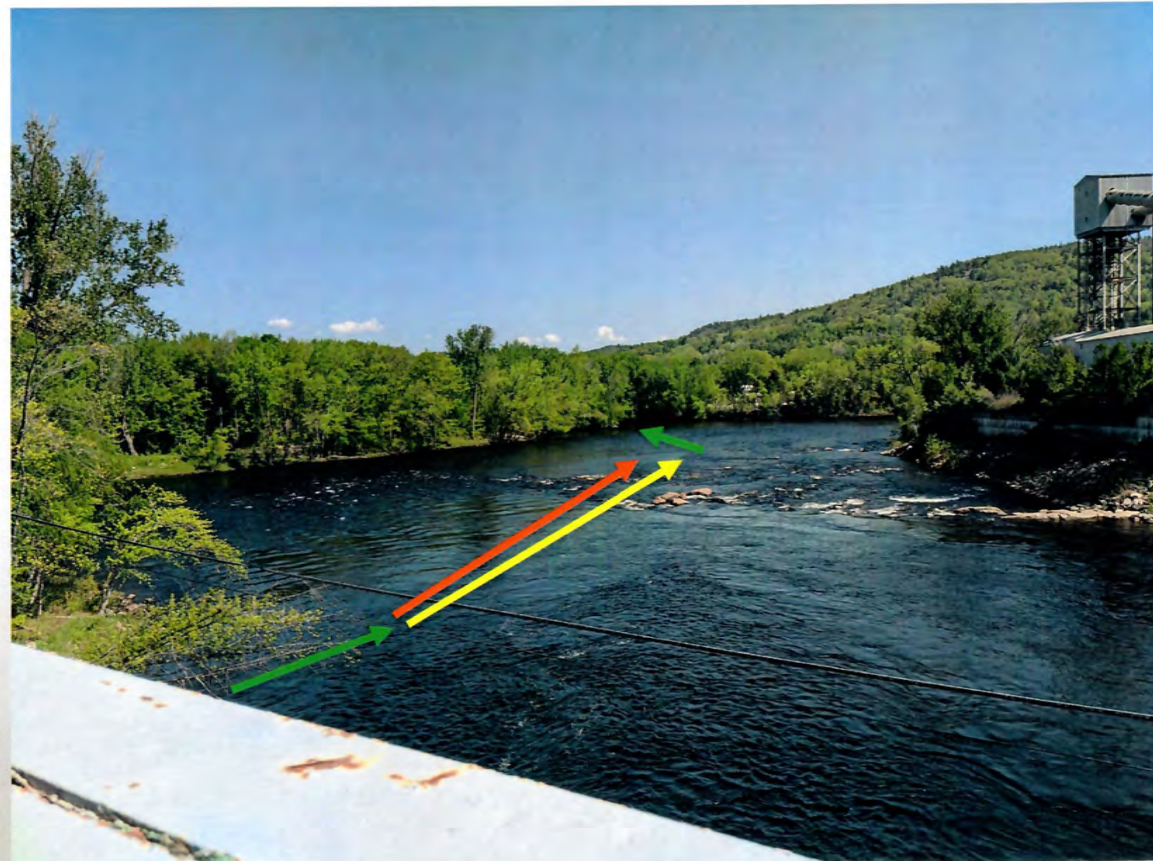


The Lower Falls and Lower Development as photographed on May 27, 2020.

Red arrow illustrates possible rafting run.

Yellow arrows illustrate possible kayak run

Green arrow illustrates safe approach and exit lanes



The confluence of the Swift River and Androscoggin River as photographed on May 27, 2020.

Red arrow illustrates possible rafting run.

Yellow arrows illustrate possible kayak run

Green arrow illustrates safe approach and exit lanes

Upstream travel is likely feasible due to minimal current from the Swift River





Mexico Boat Launch Site as  
photographed on May 27,  
2020

Green arrow illustrates safe  
approach and exit lanes

Upstream travel is likely  
feasible due to minimal  
current from the Swift River



Mexico Boat Launch Site as  
photographed on May 27,  
2020





Total Estimated River  
Mileage Boivin Park to  
Mexico Boat Launch: 1.01  
miles



Map showing return trip time of 4-5 minutes to launch site created on May 27, 2020 in Google Maps.

Short distance allows shuttling by whitewater rafting companies that could accommodate more than one run over the falls per day.

Due to ease of loading and unloading kayak runs in particular could be accommodated at very high frequency.





Town of Rumford  
Outdoor Recreation Plan  
As Accepted by the Select Board on May 21, 2020

**Introduction**

This plan is promulgated by the Select Board for the Town of Rumford with the intent to provide for the execution of the updated comprehensive plan as adopted on November 5, 2013. This is a working document which will be updated periodically in order to ensure accuracy and completeness.

This plan is written as a means to execute the policy from the Comprehensive Plan which makes the following key findings and conclusions<sup>1</sup>:

- ❖ Outdoor recreation assets and opportunities can play a role in the economic diversification in Rumford and region.
- ❖ Black Mountain is known as one of the best Nordic skiing venues in North America
- ❖ The Androscoggin River has become an important sport fishery as the result of significantly improved water quality

**Growth Strategy for Outdoor Recreation**

In support of the above three key findings and conclusions and the continued strong support of the public for growth in outdoor recreation opportunities the Select Board for the Town of Rumford adopts the following growth strategy for outdoor recreation.

1. To every extent possible the Town shall pursue new opportunities for outdoor recreation that are sustainable, feasible and realistic with the private and public sectors, to include the Town's Parks and Recreation Department.
2. Pursuit of new opportunities for outdoor recreation may include but is not limited to Town staff support and engagement with outdoor recreation developers, non-profit and advocacy groups and property owners.
3. Pursuit of grant and/or loan opportunities from either the private or public sector for funds that may be used to improve public facilities owned and operated by the Parks and Recreation Department of the Town of Rumford.
4. Identification and development of new outdoor recreation opportunities to include those which may consider acquisition of land or facilities by the Town of Rumford or those which may be of interest to private sector recreation developers to include those which may consider the sale of land or facilities by the Town of Rumford.
5. Pursuit of new opportunities for outdoor recreation that may involve the creation of new facilities or land acquisition by the state or federal government keeping in mind potential impacts on property tax revenues.

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<sup>1</sup> Rumford Comprehensive Plan Update, Page 104, Town of Rumford,  
[https://rumfordme.org/media\\_category/comprehensive-plans/](https://rumfordme.org/media_category/comprehensive-plans/)

**Consideration of Environmental Impact**

In pursuing the “Growth Strategy for Outdoor Recreation” the Select Board and all Departments and staff of the Town of Rumford will consider potential environmental impacts with a special focus on impacts to water quality resulting from increased potential for soil erosion or ground water contamination.

The Select Board recognizes the broad array of outdoor recreational activities which take place in the Town to include those activities which are motor powered and those which are unpowered. Powered recreation activities are of substantial interest to a large part of the community and represent an essential means of access to outdoor recreation for many citizens. Powered activities may have a higher level of impact on the natural environment than unpowered activities due to the higher risk of air and water pollution.

The Town strongly supports sustainable growth in powered outdoor recreation activities that minimize environmental impact from motor fuels, motor noise, motor emissions, or other causes.

The Town strongly supports sustainable growth in non-powered outdoor recreation activities that minimize environmental impact from crowding at public facilities, or other causes.

In considering outdoor recreation growth opportunities which may involve powered, unpowered or a mix of both activities the Town does not favor powered or unpowered activities over each other but rather seeks to develop a balanced mix of both which can best meet the needs of all citizens. Some outdoor recreation opportunities may be exclusively for powered activities and others for unpowered. Both are acceptable in the context of their respective contributions to the overall mix of available outdoor recreation opportunities.

Examples of outdoor recreation activities which might result in a higher risk of soil erosion and ground water contamination include operation of mud-running venues both for powered vehicles and for human endurance competitions, creation of powered or unpowered trail systems which traverse wetlands without mitigation measures, operation of motor fueling or parking areas without spill or runoff management, operation of facilities lacking adequate trash collection and sanitary systems.

**Immediate Needs for Outdoor Recreation**

The Select Board recognizes the following immediate needs for outdoor recreation in the Town of Rumford. Projects which help meet these needs in full or in part will be considered a priority matter for the Town.

1. Seasonal Outdoor Swimming Venue or Area Accessible to the General Public: At present the Town does not have a swimming venue or area which provide access to swimming as an outdoor recreation activity for members of the public. There are a limited number of areas where the public may access the Swift River for swimming but conditions are far less than ideal and are fundamentally inaccessible to individuals with even minimal ambulatory handicaps.
2. Hiking, Walking and Biking Trails Accessible to the General Public: Due to the current closure of the Falls Hill Trail the Town has an immediate need for additional hiking, walking and biking trails which have reasonable grades, good scenic views and provisions for car parking.
3. Neighborhood Playgrounds for Children: The Town has some neighborhood playgrounds for children but in many cases these are located at school facilities or at Hosmer Field, neither of which are always safely accessible to young children in their immediate neighborhoods.

Town of Rumford  
Outdoor Recreation Plan  
As Accepted by the Select Board on May 21, 2020

**Future Needs for Outdoor Recreation**

The Select Board recognizes the following future needs for outdoor recreation in the Town of Rumford. Project which help meet these needs in full or in part will be considered a priority matter for the Town after consideration of immediate needs.

1. Sidewalk Repair, Rehabilitation and Construction: The Town has a significant network of public sidewalks which provide recreational walking opportunities in residential and commercial neighborhoods. Sidewalks represent some of the most accessible and functional forms of recreation facilities available which also take advantage of natural features and beauty of scenic areas in Town. Multiple sidewalk corridors throughout the Town could benefit from paving repairs, sub-grade rehabilitation, landscaping enhancement or new construction to connect or reconnect isolated sidewalk segments or to enhance existing sidewalk networks and parks or recreation facilities.
2. Replacement of Recreation Facilities Associated with Rumford Elementary School: The Rumford Elementary School appears very likely to be replaced within the next five years by a new facility that is unlikely to be built at the existing site. Recreation facilities on site will need to be evaluated and potentially replaced or relocated in a manner that takes into consideration the needs of the community and in particular the Strathglass Park neighborhood which has a very high density of young children living there.
3. Enclosed Dog Park: Pet owners in Rumford currently do not have an “off leash” type park facility with a fence enclosure that can be used for recreation by canine companion pets. Pet ownership rates in Town are very high with a reported dog to person ratio of approximately 1 dog for every 5.7 people. Dog parks are also potentially distinguishing amenities for relocating individuals coming in to the Town.

**Implementation**

The Select Board recommends implantation of action steps to meet the identified immediate and future needs as follows:

1. Swimming: The Board recommends consideration of construction of a seasonal swimming facility to be located at the Hosmer Field complex and operated by the Parks and Recreation Department of the Town of Rumford supported in whole or in part by operating funds received from user fees from both residents and out of town guests.
2. Hiking, Walking and Biking Trails: The Board recommends continued cooperation with the Pennacook Area Community Trails group and Mahoosuc Pathways along with local snowmobile and ATV clubs in order to identify, enhance and support the maintenance and creation of additional trails and also to identify a plan forward to assist in the reopening of the Falls Hill Trail.
3. Neighborhood Playgrounds for Children: The Board recommends consideration of construction of a playground facility to be located on Town owned land inside Strathglass Park and additional planning and enhancement of playground facilities to be located in the Falmouth Street area.



Town of Rumford  
Outdoor Recreation Plan

As Accepted by the Select Board on May 21, 2020

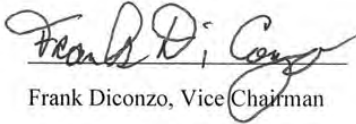
4. Sidewalks: The Board recommends identification of sidewalk corridors used extensively for recreation and consideration within capital plans for repair, rehabilitation and construction of sidewalks that support recreation.
5. Replacement of Recreation Facilities Associated with Rumford Elementary School: The Rumford Elementary School recreation facilities help provide for neighborhood access to playgrounds especially for children from Strathglass Park. Constructing a new playground facility in Strathglass Park not only enhances quality of life for young children there through better accessibility to outdoor recreation but also mitigates any potential impact to these children from the loss or relocation of facilities at the Rumford Elementary School.
6. Dog Park: The Board recommends identifying a suitable location at an existing public park that could be readily enclosed with fencing and properly signed for use by owners of dogs.

**Periodic Plan Review**

The Board shall consider this plan at least annually or more often if necessary and update it according to need.

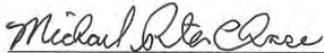


Chris Brennick, Chairman



Frank Diconzo, Vice Chairman

Mark Belanger



Peter Chase



John Pepin





ORIGINAL

# Maine



# Rivers

**OUR MISSION IS TO PROTECT, RESTORE AND ENHANCE THE ECOLOGICAL HEALTH OF MAINE'S RIVER SYSTEMS**

**EXECUTIVE DIRECTOR**

LANDIS HUDSON

**PROJECT MANAGER**

MATT STREETER

**BOARD OF DIRECTORS**

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*PRESIDENT*

JEFF REARDON  
*SECRETARY*

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*TREASURER*

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DAN GAYER  
RICK LAWRENCE  
SHARBI VENNO

**P.O. BOX 782  
YARMOUTH, ME 04096**

**PH: 207-847-9277**

**CONTACT@MAINERIVERS.ORG**

**WWW.MAINERIVERS.ORG**

June 5, 2020

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

Subject: Proposed Study Plan (PSP) for the Rumford Falls Hydroelectric Project (FERC No. 2333)

Dear Secretary Bose:

Thank you for the opportunity to comment on the Proposed Study Plan (PSP) for the Rumford Falls Hydroelectric Project (Docket P-2333-091) in Rumford, ME. The Project is located on the Androscoggin River in the Town of Rumford, Oxford County, Maine.

We are strongly in favor of requiring the application to complete a full recreational study. We understand that the Town of Rumford is requesting a comprehensive recreational plan to be completed to include trails and pathways, viewing opportunities and aesthetics, whitewater opportunities, fishing, and as well as other possible recreational uses of the Rumford Falls vicinity. We fully support this request. We are aware of reports that travelling by canoe through the area is extremely challenging because of poorly maintained and inadequate trails, and poor signage for portaging around the project area. We believe that these problems need to be addressed.

As noted by Maine State Senator Lisa Keim in a letter posted to the FERC website on June 2, 2020:

*Public access on the property existed until 2014 when Brookfield closed access with very little explanation. Despite this long history of public access and use, the Falls Hill Trail and 'West Viewing Area' has never been included in the FERC licensing as a recreational asset of the project. In the past, this may have been less vexing due to the river's pollution, however, after years of expansive cleanup effort, this deterrent is thankfully no longer an issue. Public interest in the trail and viewing area has greatly increased. The people of Rumford, and the surrounding River Valley Area live in Western Maine, in part, because of their love of the outdoors. The recreational areas situated at Brookfield dam could be a real asset to the River Valley area, positively impacting the area's attractiveness, and the community's health and wellbeing.*

*It is in the public interest of the citizens of the greater River Valley area that a formal recreation plan be created by Brookfield, and*

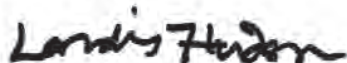
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Stamp: JUN 12 2020

*attached to the license in perpetuity to ensure that access to these resources is not compromised in the future.*

We firmly support the request made by Maine Inland Fisheries and Wildlife for a Minimum Flow Analysis to determine recommended minimum flows, specifically in the reach from Middle Dam downstream to the confluence with the Lower Station tailrace. We see the value in ensuring that any agreed upon minimum flow releases meet inland fisheries needs and assure attainment of water quality standards, to support the future health of this important community resource. We understand that this work will evaluate how various minimum flows influence the fishable aquatic habitat lotic and lentic reaches of the Androscoggin River. This minimum flow analysis should also address recreational interests.

Further, we believe that there is potential for American eel and we would like to see safe, timely and effective passage for American eel at this site.

Sincerely,

A handwritten signature in black ink that reads "Landis Hudson". The signature is written in a cursive, slightly slanted style.

Landis Hudson  
Maine Rivers, Executive Director

Alexander Kerney, West Boothbay Harbor, ME.  
I grew up along the banks of the Andro. Exploring the ecosystems on shore and the power of water had a huge role who I am today. Cutting off recreational access around falls and rapids removes the chance to feel that power. Please restore recreational access to the river corridor for people of all ages to explore.

Brie Weisman, Rumford, ME.

A resident of Rumford since 2000, I was drawn here by the area's beauty. In 2014, I started walking the trail that connects Route 108 with South Rumford Rd. I was astonished to see a remarkable view of the Rumford Falls that one can only view from this path. Although the path was closed to traffic by gates, locals told me that this has been a beloved trail for generations, having been the South Rumford road prior to its redirection over the bridge above the falls. Despite the gates and fences, hardy local seniors, men and women in their 70s and 80s were still using it as a valuable town feature. Sadly, soon after Brookfield Renewables discovered that this was the case (ironically during a discussion with the town about the possibility of reopening the path) "no trespassing" signs appeared on the gates, closing it to pedestrians as well as vehicles.

I crafted a letter to Brookfield Renewables back in 2015 asking if they could please remove the fences so that locals can continue to enjoy the views unencumbered. The response was that FERC would not allow them because it was dangerous due to the potential of rocks falling from a cliff onto the trail. I could not find any documentation that FERC had expressed such a concern. They also cited concerns about people falling into the falls or river. My research about Rumford Falls history, found no death attributed to falling into the river.

A Straw vote on the town docket in the summer of 2016, "Do the voters support having restored public access to the areas surrounding Rumford Falls with the intent of creating a public trail system". It passed with Yes votes 808 and No votes 288.

Rumford is an economically depressed mill town that has lost half its population due to automation. In order to survive, Rumford will need to turn to the attraction that first brought people here-the falls. The Androscoggin River has become a recreational mecca, providing canoeing, kayaking, stand up paddle boarding, and fishing opportunities in the summer, and snowmobiling, snow shoeing and cross country skiing in the winter. Reopening the trail along the falls would reinforce both the scenic and recreational opportunities we are becoming known for.

It cannot be denied that the falls are a critical attraction for the town and region. The Rumford information booth sits upon the opposite side of a broad pond at the base of the falls. Cars from many states and Canada are routinely seen in its parking lot, especially in the Spring when the melting snow yields awesome view of raging, misting falls spilling over boulders, roaring with raw power. I stop in to see this spectacle whenever it occurs, and tourists will often ask me how to get closer to the Falls. I have seen cars from as far away as California parked at the South Rumford Rd end of the closed trail, stopping to figure out if that trail might offer a better look, and whether it is wise to ignore the trespassing signs for the spectacle they hope to see. These falls are some of the largest in the East. We should be able to capitalize on them and get people to stop in town and perhaps spend some money in our local

shops. Being able to see the falls up close, or hike the 1.6 mile loop around the falls would encourage that. Across from that same information center, a new hotel is being built; providing a walking trail that offers majestic views of the falls for guests would be a great attraction that would encourage visitors to spread word of Rumford's unique natural beauty.

Brookfield is also denying citizens access to a beautiful historic picnic area that allows a better intimate view of the refection pond and the falls. We are asking that the the picnic area and the falls trail be included in Brookfield recreational plan so that citizens and visitors alike can enjoy this unique, valuable natural wonder.

Thank you for your consideration  
Brie Weisman  
Rumford Resident.

Jonathan Starr, Rumford, ME.

Rumford Falls is a natural wonder. The largest falls by volume east of Niagara Falls in the U.S., when water is high it engulfs an island at its base, casting mists high in the air as solid cascades of whitewater spill roaring about boulders and dwarf the four-story, hundred-plus year old hydro plant. In ages past, a park with picnic tables and cast iron lamp posts offered locals and visitors alike a means of enjoying this natural asset. Across the river from the park and busy Rte 2, a trail connected South Rumford Rd above the falls to Rte 108 below it. This trail not only offered an up-close, dramatic view of the falls, it also offered perspectives unavailable to the public elsewhere, even at a distance. In no small measure, these two features historically made the falls a social and recreational center of the town, a place for lunches and lunchtime walks, an exercise loop, a dog walk, a path free of vehicles for kids on bikes. For the communities above the falls, the trail offers a path for bicycles and pedestrians that is shorter, safer, and a far more pleasant route into Rumford's downtown business district than the sidewalk along Rte 2. That sidewalk is on a steep hill, icy in the winter and unshaded in the summer, squeezed up against a busy east-west route through Maine that is travelled by far more large vehicles than just the many logging trucks serving the Rumford Mill. The path, by contrast, is tree-shaded, less steep, quiet, beautiful. Brookfield Renewables has closed both those invaluable assets to the public, and the town is the worse for it. It has lost a safe and convenient and scenic footpath; it has lost a valuable, park-like picnic area. It has lost part of the charm and beauty, and even identity and pride of the town. Why? Brookfield has said it is because of liability. A small rock outcropping along the trail, they say, may crumble onto the path. People, they say, may wander down to the river. I have worked on several trail crews over the years; my wife has worked a summer on one in Baxter State Park. We, frankly, find the worry over the outcropping more laughable than credible. Any stone will fall beside the path, not into it. For most of the length of the trail the path is separated from the river by more than a hundred feet of steep, forested woods. If people want to get to the river that badly, a "no trespassing" sign on a closed gate will serve no better than a "keep on the path" sign on an open trail. If the path were to be reopened, the town would not only recover all these benefits, it would also gain a visitor attraction that might benefit local businesses. Currently, the popular method of viewing the falls is the information center parking lot, where the falls can be seen from a distance of perhaps more than the length of a football field. It is a nice view, but people want more. The path and picnic area would both provide that, one giving a place to eat lunches bought in town, the other providing unique views and a scenic walk that begins at one end of Rumford's downtown shop district. Despite being closed, the trail is still on a Maine trail finder website. The falls are touted on websites about falls in New England.

Reopening the trail and picnic area, both owned by Brookfield, would be a terrific morale boost to a struggling town, a benefit to pedestrians, cyclists, walkers, sight-seers, and paddlers seeking a portage route

around the falls. It would help increase tourist visits to the area and thereby provide an economic boost to the town. I sincerely hope to see the reopening of these valuable resources included in the recreational section of Brookfield's dam relicensing plan. Sincerely,

Jonathan Starr, Rumford Resident.

John M Preble, Rumford, ME.  
revised and updated

Mr. Ryan Hansen  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

FERC Docket p-2333-091

June 7, 2020

Dear Mr. Hansen,

I officially request that a formal Public Recreational Study Plan Focus Group be authorized and mandated for inclusion in the Final Recreational Study Plan to be completed for this Docket.

This requestor respectfully and with due cause believes that the creation of an independent Public Focus Group is necessary to assure that an objective recreational study evaluation is conducted and reflects the best interests of the Town of Rumford, residents, and visitors to the River Valley, nearby vicinities and the State of Maine.

Respectfully,

John M Preble  
Senior Vice President TD Bank - Retired  
Finance Director- Bank of Boston / Bank of America  
Director Mahoosuc Pathways  
Treasurer and Director Friends of Richardson Lake

Recreational Study Plan - Public Recreation Study Plan Focus Group (PFG)  
- Rumford Falls Hydro (RFH)

Brookfield's plan submission lacks sufficient detail or appropriate methodology to archive the goals of a comprehensive Recreational Study Plan. Brookfield is one of the world's largest owners and managers of renewal energy. Brookfield's staff has vast experience with and knowledge of the complex process of Hydro Licensing. Yet they chose to submit a Study Plan that FERC has sighted lacks the context necessary to complete an appropriate analysis to put forth reasonable Recreational and Scenic development opportunities. Brookfield chose not to incorporate public and agency material observations expressed by participants in the workshop held to solicit Study Plan recommendations. Additionally, in other similar applications in the State of Maine Brookfield has demonstrated an unreasonable reluctance to allow public access. "We will take it under consideration" has a whole new meaning. For those experienced with dealing with Brookfield it equates to: " when Hell freezes over "- while to the uninformed local governments ,Non-profits, and the general public it is met with false optimism ; only to be discovered after the licenses have been approved and the promises made



have not materialized and or have been degraded from prior accessibility. Brookfield's internal corporate bias precludes it from performing an objective Recreation Study Plan.

The Town of Rumford's Study Plan Request(s) endorses the establishment of a Public Focus Group but did not comment on specific roles and responsibilities.

This respondent contends that without such clearly defined roles and responsibilities the applicant could minimize and or exclude substantive observations and request of the Public Focus Group.

To ensure objective input and evaluation FERC must mandate the creation of a Public Recreational Study Plan Focus Group (PRSPFG) with similar defined roles and responsibilities as put forth in this request.

1) Goals and Objectives

The goal of this Public Recreation Study Plan Focus Group is to identify, inventory, and propose reasonable Recreation and Scenic access needs for determination by FERC as to which items are to be included in Rumford Falls Hydro's operating License. Furthermore, implementation to be completed within a reasonable timeline of license issuance. The License should also mandate that the Recreational Plan provides for on-going updates and enhancements as appropriate and complements the Town of Rumford's Comprehensive Recreation Plan and recreational desires of the River Valley vicinity.

2) Study Area

The study area will include Lands denoted by the Project Boundary and the Project vicinity.

3) Background and existing Information

Background

Hiking, biking, canoeing, boating, ATV/snowmobiling, fishing, public concerts, Tourist Information Center, scenic falls observation, Veterans Memorial, public gatherings, Rumford Community Housing outdoor access, fitness and wellness access by local residents and visiting tourist alike are just some of the many public uses of properties within the project boundary.

Existing Information - Existing Mandated

Current license has two mandates: 1) Creation of a boating Carry-in facility near the Carlton Bridge 2) a canoe Carry-in launch at Rumford Point which was never created and is a violation of the license requirement.

Existing RFH owned/ controlled sites

1. Falls trail - East shore upper Dam closed - historically allowed public access until Brookfield ownership
2. Scenic Observation Deck - west shore Falls Hill - historically allowed public access - closed with Brookfield ownership

3. Wheeler Island - up stream of Upper Dam - unimproved river island - rarely used - no physical improvements.
4. Logan - South Rumford Road - unimproved boat launch, fisheries access, winter skating
5. Boivin Park- at base of Falls Hill - public scenic observation site, tourist info center, picnic area / rest area - Maintained by Town of Rumford
6. Veterans Park - foot of Congress street - Veterans Memorial, public concert stand, benches and gardens maintained by Town of Rumford.
7. 7) Falls Hill ATV/ Snowmobile trail - East side of river - small section of trail is on RFH land - majority on land owned by the mill
8. Carlton Bridge boat carry-in launch - launch ramp accessible from street

Existing - non RFH sites

1. Hanover Boat Launch - improved ramp and parking accessible by car - Maintained by Mahoosuc Land Trust
2. Rumford Center Hastings Landing - improved canoe put-in - step landing and parking maintained by Mahoosuc Land trust
3. East Rumford Boat launch improved boat ramp and parking - maintained by Town of Rumford.
4. Citizen Park and walkway - west side of river between Bridge Street and Memorial Bridge - scenic walkway, benches and overlooks, local memorial seating - maintained by Town of Rumford
5. Scenic Library grounds - behind town Library - Maintained by Town-parking
6. White Water Surf Hole - downstream Memorial Bridge access via Library parking lot
7. White Water play area - rapids between upper Memorial Bridge and Carlton Boat launch - access via Carlton Boat launch and Library Parking lot
8. Lower Power Station fisheries pool - adjacent to and downstream of lower powerhouse.
9. Westside Swift River - rough-in river side trail from Carlton Bridge to Mountain Valley High School - owned by Town of Rumford and private citizens
10. Eastside Swift river - ATV/ snowmobile trail Carlton Bridge and north - Town of Mexico and private citizens
11. Canal Street - fishing access - Town and mill owned lands

4) Nexus

The Project currently comprises of one mandated access site and numerous unimproved sites with high potential and benefit. Prior to Brookfield ownership access was open and unencumbered and unquestioned. The mill was and is a generous financial and in-kind supporter of numerous civic and non-profit organizations in the River Valley. Brookfield's community involvement and financial support report card is dismal at best. Brookfield will tell you they reach out to local organizations but have only done so in recent months and their offers have been minimal small dollar donations in a weak effort to display Community engagement.

5) Process Observations

Study plans are to provides for a series of tasks, methodologies, and evaluations to 1) identify current use 2) enhancements to existing developed and underdeveloped sites 3) need for new access 4) identification of new opportunities 5) maintenance responsibilities of existing 6) actionable recommendations 7) binding on going access commitments 8) periodic Recreation Plan effectiveness reviews 10 ) methods to mitigate non- compliance to Recreational Final Plan 11) process to periodically update Recreational Plan and Plan enhancements 12) establishment of mandatory penalties and fines for noncompliance 13) should require Brookfield to conduct formal Recreational Plan reviews and updates for all subsequent Low Impact Hydro Institute Certification renewals.

1. Establish Recreation Study Plan Focus Group

A. Membership will be comprised of one or two individuals from each of the following groups and or organizations plus an independent facilitator to be named jointly by (FERC, Maine DEP, and Town of Rumford plus two members at large.

- a. FERC
- b. Maine DEP
- c. Town of Rumford
- d. Mahoosuc Pathways
- e. Envision Rumford
- f. Town of Mexico
- g. River Valley Voice
- h. Rumford Falls Hydro
- i. Plus, two citizens at large

B. Recreation Study Group Coordinator / facilitator

a. An Individual to be named as independent facilitator - credible project management certified facilitator with prior experience in Recreation Planning to oversee and organize the Public Recreation Study Focus Group

b. Individual selected to be jointly approved by a panel comprised of one individual each from: FEREC, Maine DEP, and Town of Rumford

c. Recommendations for independent facilitator to be solicited from interested parties and agencies formally engaged in the project and from other sources as the panel may chose.

C. Public Recreational Study Plan Focus Group roles and responsibilities:

- i. Review lists of existing sites identified in existing information contained within this request.
- ii. identify additional current need sites, potential future sites.
- iii. PFG to classify each site as immediate consideration, near term enhancement (within two to five years), and potential future enhancement or development.
- iv. PFG to utilize but not be limited by the Town of Rumford's Comprehensive Plan in determining classification and site identification.
- v. Sites classified as immediate and near term are to undergo detailed site inventory and evaluation by applicant.

- vi. PFG will submit to applicant the list of sites classified as immediate and near term to be evaluated.
- vii. Applicant will recommend method(s) to be utilized for each site evaluation identified by the PFG to PFG.
- viii. PFG will instruct applicant of additional methodology requirements as they deem necessary.
- ix. PFG is to be provided with detailed site reviews and evaluations performed by applicant.
- x. PFG may require applicant to perform additional site evaluation if deemed appropriate when info is determined to be insufficient
- xi. PFG may require "second opinions" on highly technical or engineering type evaluations - second opinions expert to be selected by PFG.
- xii. Applicant will conduct the additional evaluation methods as requested by PFG.
- xiii. Brookfield to submit revised analysis to PRSPFG.
  
- xiv. Applicant will inform PFG of the scheduling of each site evaluation. Members of the PFG may wish to
- xv. PFG members may request to accompany applicant during site inspection.
- xvi. PFG to compile and remit recommendations to FERC for License application.

Craig Zurhorst, Rumford, ME.  
Good evening,

I am requesting that FERC accept the Town of Rumford's Recreation Study Proposal in place of Brookfield's.

The Town of Rumford's Recreation Study Proposal is far more comprehensive, and asks for what the town truly needs to address its economic and recreational development goals associated with the Rumford Falls.

Thank you very much and please feel free to contact me with questions about this project that you believe I may be able to answer.

Sincerely,

Craig G. Zurhorst

757 Hancock St.  
Rumford, ME 04276  
207-357-9102  
craig.zurhorst@gmail.com

Dieter Kreckel, Rumford, ME.

I am writing to support the opening up to the public the trail around the Rumford Falls. For decades the trail was open to the public and when Brookfield Power took over the Hydroelectric plant they closed it. The area is steeped in history with the plant being the first step that Hugh Chisholm made to make Rumford an industrial center for wood products. Maine is known for its natural beauty and the falls are a real part of that. They are the highest falls east of Niagara. The trail would allow local and visitors to the area to appreciate the beauty of the falls. We are trying to rebuild our town with both businesses and tourism.

We are building a Hotel at the foot of the falls to give visitors a place to stay. The falls and any means to enjoy them even more are a huge attraction.

As a physician in town the benefit of outdoor activities including a walk around the falls is extremely important. Walking around a track is ok but pales when one can benefit from walking/running around an area of natural beauty such as the falls.

The reopening of the trail is an important part of our town's future for the population that lives here, our business/economic growth and our health and well being.

Please help us open this area to the public for its enjoyment once again. The benefits to our community cannot be underestimated.

Thank you



*Preserving our past . . . Working for Rumford's future*

June 8, 2020

I am the President of EnvisionRumford, a non-profit organization whose goal and mission are to promote the improvement of the Town of Rumford. EnvisionRumford is a downtown networking partner in the Maine Street Program administered by the Maine Development Foundation ("MDF") and works closely with MDF to advance our community. We would like to convey our hopes to the Commission that the Rumford Falls Trail and the Viewing Area at the upper development of the Rumford Falls power plant property be re-opened to the public. EnvisionRumford and the downtown merchants and businesses are united in their interest to reopen the Rumford Falls viewing area and trail.

Historically, these properties were open to the public and were part of the development of the power plant over 100 years ago. The areas known as the Falls Trail and the Viewing Area were incorporated as recreational spaces as part of the transformation of Rumford from an agrarian community to an industrial force in the early 1900s. Hugh Chisholm, who is truly responsible for this transformation, planned comprehensively to include recreational areas and opportunities for Rumford's citizens. Parks were very important in Chisholm's plans for the development of Rumford. Chisholm included recreational areas specifically in his plans for the Rumford power plant. Over the course of more than a century, the public enjoyed using these areas despite multiple changes of ownership in the Rumford Paper Mill, which controlled the Rumford Falls Power Co. as its wholly owned subsidiary. Under Hugh Chisholm's plans, the Falls Trail and Viewing Area were developed and maintained by the Rumford Falls Power Co. After the current owner, Brookfield, took over the Rumford Falls power plant, it closed off these areas to the public, defeating the intentions and aspirations of Rumford Falls power plant's creator.

The Falls Trail and the Viewing Area are important to the citizens of the Town of Rumford and having these historically accessible recreational areas removed from the inventory of assets of outdoor recreation has been devastating to citizens and visitors alike.

Our volunteer organization strongly supports re-opening these areas to the public again and hope that FERC will provide further encouragement to Brookfield to re-open them.

Respectfully submitted,

**JENNIFER F. KRECKEL**  
President, EnvisionRumford

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P.O. Drawer L – Rumford, Maine 04276

jennifer deraspe, Denmark, ME.

I was born and raised in Mexico, Maine, often exploring and rambling along the Swift and Androscoggin Rivers. Because of my appreciation for the outdoors and the beauty of these connected rivers, my chosen field has been to bring folks into the outdoor arena as a Registered Maine Guide. I am a small business owner and founder of Nurture Through Nature, an eco-retreat center located in Denmark, in the south western region of Oxford County. I have been a Recreational Maine Guide for over 20 years. Taking people paddling in Maine has proven to be very satisfying and viable as a chosen career.

In June, 2019, I was inspired to paddle the full length of the Androscoggin River, from Errol to Topsham, on a solo journey to learn more about my home river and its value to the communities it passes through. On that 13 day quest, I experienced a majestic, beautiful river way, with incredible natural beauty and deep quietude.

I could image a great river trail with parks, resting places, amenities, camp grounds, shuttle services, outfitters and guides finding quality work and providing an amazing Maine experience to both Maine residents and tourists, alike. Honestly, I was surprised it has not already happened.

The Androscoggin River is an untapped resource for eco-tourism and nature-based economic opportunities for the State of Maine. Because of the great work of organizations such as the Mahoosuc Land Trust, Androscoggin Landtrust, Maine Rivers.org and the Androscoggin River Watershed Council; the shores and waters are becoming more accessible for outdoor enthusiasts and the water quality is being restored. Industry and governmental organizations have also played a significant role in river restoration. The water is remarkably cleaner since the days when I grew up. Wildlife was abundant and there was very little development along her shores.

Having accessible open green spaces in our town is valuable for the local citizens sense of place and pride as well as their health and wellbeing. The dam owners ought to find a way to make the trails and parks open, safe and accessible for the communities they are tapping into for resources. Use would be at the community-member's own risk and full responsibility falls on the person choosing to be on this land owned by the dam. Keeping and creating parks and trails shows the dam owner's commitment to being a good neighbor and honoring the community they are in business with. In addition, having safe, well-maintained and marked/mapped portage trails around the dams is the right thing to do in sharing the river with the community. Having the portage trail be the shortest possible length makes the river trail for accessible and user-friendly for the through paddler. I feel the owners of dams ought to make these efforts to be in alignment with the fact that the river is not owned by anyone group, organization, town or corporation.

I feel this river offers a significant opportunity as a paddling river trail, for canoers, kayakers, white water enthusiasts and anglers, alike.



Bringing greater signage, mapping, portage and access points to the river opens up a whole world for the economic development to the towns in which the river travels through, especially in the Rumford Falls area around the Island, canal and business district of Rumford as a White Water paddlers' destination.

Sincerely yours,

Jennifer A Deraspe, owner  
Nurture Through Nature  
77 Warren Rd  
Denmark, ME, 04022  
207-595-8260

Jennifer F Kreckel, Rumford, ME.

I am a downtown business owner and have been a resident of the Rumford for over 25 years. It is very sad to me and my family that our community has been denied access to one of our significant natural beauties which is currently owned by Brookfield. Many people in our community have fond memories from the times that they were able to go on the Falls Trail and the picnic area which was historically open to public. Rumford Falls Power Co. developed and maintained the Falls Trail and picnic area for the citizens of Rumford and its visitors. These areas only recently were closed to the public when Brookfield acquired the property. My family and my fellow business owners in Downtown Rumford strongly encourage FERC to require Brookfield to restore the public's access to this natural wonder which will benefit our citizens and which will assist our progress in becoming a recreational destination. Our community leaders have invested in building a Best Western Hotel which will be in close proximity to the Falls Trail. The Falls Trail is also in close proximity to our downtown. Our area has great interest in developing a trail all along the Androscoggin River to connect with our neighboring communities and establish a unified trail system along this great river of Maine. Edmund Muskie was born in Rumford and helped to clean our waterways with his legislation. The Androscoggin River has become a clean water again and the public's use of the Androscoggin should be encouraged as part of our natural heritage. Please restore the public's access to the Falls Trail and the Viewing Area. Thank you for your consideration and for the opportunity to comment.

Jolan Ippolito, Rumford, ME.

When filing my original comment, I was unaware that there are two study proposals on the table related to this permit and public access. The Town of Rumford has submitted a comprehensive proposal that reflects specific needs that will help the Town of Rumford reestablish itself after years of dwindling population related to its main industry which is a paper mill. Recreation and tourism are a natural affinity for Rumford. The trails around the Rumford Falls are a part of the natural resources that will help the Town in its re-invention.

Karen Wilson, Rumford, ME.

I would like to recommend that FERC accepts the Town of Rumford's Recreation Study Proposal over Brookfield's. The citizens should get the Recreation Study they deserve based on the needs of the people who live here.

Kevin Kaulback, Rumford, ME.  
To Whom It May Concern:

Good day and thank you for the opportunity to speak about the concerns with Brookfield Power and the lack of opportunity they pose on the River Valley Community by closing off participation of land surrounding the Pennacook Falls located in Rumford Maine.

I personally write to you today as an investor in the area hospitality industry, business owner, Chamber of Commerce President and lifelong citizen in the River Valley, specifically Rumford Maine.

It is of grave concern that a business like Brookfield Power is able to close down recreational activities surrounding the Rumford Falls and is detrimental to the economic surroundings of our community. I feel it is their responsibility to not only allow the use of the land surrounding the falls for tourism and recreation but to also act as a good community steward and promote that area and what it can do to help with attracting tourism and recreation to the most majestic falls in the northeast. They should also use Town's Recreation Study Proposal. Please take the time to realize that these decisions have a very negative impact on our area at a time when it is needed most and the economy in this area is in a continuous struggle for survival for all of us, not to mention the loss of recreational resources for the citizens in the area.

Please consider these negative impacts on the area when making your decisions and help us sustain the gem we have in Western Maine.

Sincerely,  
Kevin Kaulback

Laurie Soucy, Rumford, ME.  
I would like to encourage you to accept the Towns Recreation Study  
Proposal.



June 8, 2020

To: Federal Energy Regulatory Commission  
Fr: Gabe Perkins, Executive Director, Mahoosuc Pathways  
Re: Brookfield 30-year Hydropower License Rumford, ME (Docket P-2333-091)

I am writing to support expanded recreation around the Hydropower Station in Rumford. I understand that Brookfield's 30-year Hydropower License is up for renewal, and part of this process requires Brookfield to do recreational studies to see what residents of the area want for recreation around the property. Results of these studies help FERC draft a license agreement that requires recreational access to suit the needs of the study findings, so residents can enjoy the property around the project for the next 30 years.

Mahoosuc Pathways is dedicated to ensuring economic and community vitality through recreation exists in the River Valley region surrounding Rumford. In the past four years we have made significant strides in expanding recreational activities for all people just up river in the Bethel area. We now turn our attention equally to the River Valley and know that success only comes from working together towards a common goal. The relicensing of the dam in Rumford is the perfect time for the community, the businesses, organizations, and the municipality to come together and achieve commonly held goals. To that end we request that Brookfield work with us and complete a thorough recreational study with respect to the area around the Falls Dam Rumford facility. Residents and municipal employees have told us for years that they are interested in the following:

- Reopening the multiuse trail along the east side of the falls and river. Reopening this trail will provide safe and direct access from downtown to the Virginia neighborhood just above the falls.
- Access to the property on the north side of the river with views of important architectural features, the island historic district, the falls themselves, and the reflection pool. Now more than ever before people need places to reflect and unwind safely and utilize recreation as recovery.
- Completing a broad recreational study that encompasses all potential users with respect to the Rumford facility.
- A study by Brookfield of the Androscoggin River fishery.

Thank you for the opportunity to work with you and to comment on matters pertinent and important to the citizens, businesses, organizations and the municipality.

Do not hesitate to reach out with any questions or comments.

Thank you and take care,

A handwritten signature in black ink, appearing to read 'Gabe Perkins'.

Gabe Perkins  
Executive Director



JANET T. MILLS  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



GERALD D. REID  
COMMISSIONER

June 8, 2020

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

**RE: Comments on the Proposed Study Plan for the Rumford Falls Hydroelectric Project (FERC No. 2333)**

Dear Secretary Bose:

The Maine Department of Environmental Protection (Department) received and reviewed the Proposed Study Plan (PSP), submitted on March 10, 2020 by Brookfield Renewable (Applicant), for the Rumford Falls Hydropower Project (Project) (FERC No. 2333). Department staff attended a virtual Study Plan meeting on March 24, 2020, and reviewed appropriate Project documents to prepare the following comments and recommendations.

As identified in Department comments on the Pre-Application Document for the Project, the proposed relicensing of the Rumford Falls Project is subject to water quality certification provisions under Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act). By Executive Order of the Governor of the State of Maine, the Department is the certifying agency for Projects located wholly or partially in organized towns and cities and, as such, has jurisdiction over the Project.

**Comments on the Proposed Relicensing Study Plans**

The Department appreciates the effort of the Applicant to prepare the PSP. Project study plans must be designed to evaluate the impact of project operations with respect to all of Maine's water quality standards, including designated uses and both narrative and numeric criteria. After review of the available documents, the Department has the following comments on the PSP:

**Existing Data** – The PSP discusses certain data collected in the vicinity of the Project, including a 2018 Aquatic Life Classification Attainment Report which analyzed the macroinvertebrate community in the Androscoggin River in Mexico, Maine, downstream of the Project site; various monitoring data collected along the Androscoggin River from 1995 to 2008; and impoundment elevation and flow data. In addition to the data provided in the PSP, the Applicant proposes to conduct the following studies and provide the following data, at the Department's request.

**MEDEP Study Requests**

AUGUSTA  
17 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
(207) 287-7688 FAX: (207) 287-7826

BANGOR  
106 HOGAN ROAD, SUITE 6  
BANGOR, MAINE 04401  
(207) 941-4570 FAX: (207) 941-4584

PORTLAND  
312 CANCO ROAD  
PORTLAND, MAINE 04103  
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE  
1235 CENTRAL DRIVE, SKYWAY PARK  
PRESQUE ISLE, MAINE 04769  
(207) 764-0477 FAX: (207) 760-3143

website: [www.maine.gov/dep](http://www.maine.gov/dep)



**Impoundment Trophic State Study** - - This study will allow the Department to determine if operation of the Project adversely affects water quality in the Project impoundments. The Trophic State Study initial data collection must occur twice monthly for five consecutive months during the open water season<sup>1</sup> and must be collected from the deepest location within each of the two impoundments. The Department also requires a late summer sampling event in addition to the open water season sampling, again, in each impoundment. As presented in the PSP, the Applicant indicates that water quality parameters and methods for sampling will be in accordance with MDEP's *Sampling Protocol for Hydropower Studies* (September 2019).

**Impoundment Aquatic Habitat Study** The purpose of this study is to determine the effect of impoundment drawdowns on the littoral zone of the water body and the ability of the impoundment to support fish and other aquatic life. In its Study Request included with the PAD, the Department indicated that the impoundment aquatic habitat study will not be required if the Project operates in Run-of-River operational mode and the Applicant submits at least three years of impoundment elevation and inflow/outflow data for the Rumford Falls Project. The Applicant included in its PSP a table showing the requested impoundment elevation and inflow/outflow data, however the Department requests here that the raw data be submitted as well, for Department analysis.

**Downstream Benthic Macroinvertebrate (BMI) Study** - Assessment of the benthic macroinvertebrate community is required to determine whether current in-stream flow releases affect attainment of habitat and aquatic life criteria, particularly in the bypassed reach below Middle Dam as well as downstream of the Project tailrace. The BMI study will assess the current macroinvertebrate community structure and evaluate any impacts caused by Project operations. The Department recommends the Applicant select two sampling locations for the study. The first should be located in the Androscoggin River bypass reach downstream of Middle dam, and the second should be located downstream of the powerhouse tailrace. The Applicant's consultant is working with Department staff to meet at the Project to confer on sample locations, to ensure that sample location selected by the Applicant can be approved by the Department prior to initiating the study. As described in the PSP, the Applicant indicates that it will conduct the benthic macroinvertebrate study following the MDEP's standard protocol in *Methods for Biological Sampling and Analysis of Maine's Rivers and Streams* (April 2014).

**Downstream Temperature and Dissolved Oxygen (DO) Study** - Temperature and DO must be monitored downstream of the Project to demonstrate whether the Project meets Maine's DO numeric criteria. The Applicant should select two sampling stations in accordance with to the "Rivers and Streams" section in the MDEP *Sampling Protocol for Hydropower Studies* (September 2019). One station should be located in the Androscoggin River bypass reach below Middle Dam and one should be located in the tailrace downstream of the Project powerhouse. As described in the PSP, the Applicant indicates that it will conduct the "Temperature and Dissolved Oxygen Study" in accordance with protocol provided under "Rivers and Streams" in the MDEP *Sampling Protocol for Hydropower Studies* (September 2019).

**Downstream Aquatic Habitat Cross-Section Flow Study** - Assessment of aquatic habitat downstream of the Middle Dam is required to determine whether current in-stream flow releases

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<sup>1</sup> MDEP's *Sampling Protocol for Hydropower Studies* (September 2019)

meet Maine habitat and aquatic life criteria in the bypass reach. An aquatic habitat cross-sectional flow study will inform whether downstream flows in the bypass reach provide sufficient riverine habitat for fish and other aquatic organisms. This study requires measuring width and depth at various flows to determine the flow at which at least 75% of the bank full cross-sectional area of the river or stream is continuously watered. The Applicant proposes to select sampling transects and conduct river bed and bank profile surveys, measure river width and water depth across each transect, gage river flow to determine the amount of water released from the dam during the study, estimate full bank conditions, and use a HEC-RAS model to determine at which flow 75 % of the bank full cross-sectional area of the river is continuously watered. As described in the PSP, the Department believes the study will be conducted in accordance with the “Habitat and Aquatic Life Studies” protocol under “Rivers and Streams” in the MDEP *Sampling Protocol for Hydropower Studies* (September 2019).

Thank you for the opportunity to comment on the PSP for the Rumford Falls Hydroelectric Project. Please feel free to contact me at (207) 446-2642 or via email at [Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov) if you have any questions regarding these comments.

Sincerely,



Kathy Davis Howatt  
Hydropower Coordinator  
Maine Department of Environmental Protection

Cc: Luke Anderson, Brookfield Renewable  
Project File

***Via Electronic Filing***

June 8, 2020

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

**Re: Rumford Falls Hydroelectric Project (FERC No. 2333-091)  
Proposed Study Plan – Maine Department of Inland Fisheries and Wildlife Comments**

Dear Secretary Bose:

On March 10, 2020, Rumford Falls Hydro LLC (RFH or Licensee), a subsidiary of Brookfield Renewable (Brookfield), submitted their Proposed Study Plan (PSP) to the Federal Energy Regulatory Commission (FERC) for the Rumford Falls Hydroelectric Project (Project) (FERC No. 2333). The Maine Department of Inland Fisheries and Wildlife (MDIFW) has reviewed the PSP. MDIFW also participated in the remote PSP Meeting held on April 7, 2020 and had an informal phone meeting with the Licensee regarding partnering on the Angler Creel Survey. While some questions were addressed during the PSP Meeting, several of the concerns expressed by the agencies of other interested parties were not adequately addressed or resolved during the meeting. The Licensee suggested written comments be filed with FERC; consequently, MDIFW offers the following comments on the PSP for FERC consideration, which supplement our comments filed on January 28, 2020.

**MDIFW Impoundment Water Level Data Request**

On page 2-2 of the PSP, the Licensee responded to MDIFW's request for five years of impoundment drawdown data in excess of 1-foot. MDIFW thanks RFH for supplying that information. The intent of that request was to assess seasonality and frequency of drawdowns for emergency or maintenance purposes to determine if drawdowns were occurring during the bass spawning season (generally 5/15-6/30 depending on bass species and geographic location). Impoundment drawdowns during this critical life history stage can result in year class failures for these and other species. Based on the five years of data, one drawdown (June 17, 2017) occurred during the bass spawning season for flashboard maintenance.

On May 31, 2020, MDIFW was contacted by RFH via e-mail regarding a drawdown request for flashboard repairs. For reference, those e-mail discussions are attached. RFH indicated a willingness to explore bass spawning times in the impoundment(s), as well as other to collect other data including nest depth, nest locations, and water temperature. This "extra" informal study may benefit the bass fishery resource, and the Licensee as well as it may allow the broad

spawning window to be further refined and narrowed to allow more timing flexibility for future drawdowns.

We recommend the Licensee formalize this study by adding it to the revised PSP.

### **Brown and Rainbow Trout Radio Telemetry**

On page 3-2 of the PSP, RFH rejects MDIFW's study request citing the following (italicized):

*“there is no nexus between Project operations and effects to the presence or abundance of seasonally stocked trout in the Project area.”*

MDIFW response: Although it may not have been specifically defined in detail, MDIFW believes the nexus for this study is relatively strong. First, MDIFW and the State of Maine have a relatively large investment in stocking the impoundment with 3,000 fish annually. The behavior of these trout and their returns to the angler are an important part of managing this fishery, and Project operations may be impacting their survival. For example, the diversion of most of the flows through the canal and into the powerhouse turbines with 3-inch bar grating could result in significant mortalities to stocked trout if they tend to migrate downstream post-stocking, which has been documented in several research papers.

In addition to the impoundment stockings, the tailrace is stocked with 1,850 trout annually--another significant investment in the local fishery resources. The lack of suitable flows and warm water temperatures in the bypass reach likely prevents trout from utilizing that very fishable area. In addition, stocked trout may be attracted towards the powerhouse outflow where there is little to no angler accessibility.

Lastly, under Maine Department of Environmental Protection water quality standards angling is a designated use of the resource, and as noted above Project operations are likely having some level of impact on the fishery. The telemetry study would help to answer these questions, as well as, other additional behavioral information that may lead to fishery management changes that would benefit the fishery resource and angler opportunities.

*“Article 401 of the current FERC license requires the Licensee to operate in a run-of-river mode within 1 foot of full pond elevation at the Upper and Middle Dam impoundments. The Licensee has operated the Project in this manner since the last license was issued in 1994. The MDIFW states that brown and rainbow trout fisheries in the upper Androscoggin River collapsed in 2005 and have been unable to rebound since that time. MDIFW suggests that changes in Project discharges over time could be a contributing factor to that decline. However, the seasonal pattern of Project discharges has not changed during the current license period since 1994.”*

MDIFW response: The above interpretation/suggestion was not MDIFW's intent and was partially due to an internal wordsmithing oversight. While the trout fishery *did* decline around 2005 in the upper river, it was *not* likely due to Project operations. However, it may have also occurred in the Rumford reach, too. Regardless, the possible Project impacts from operations noted above remain, and a telemetry study may shed some insight into Project impacts.

*“it remains unclear how this study would inform the development of license requirements as defined in 18 CFR 5.9(b)(5).”*

MDIFW response: If trout behavior(s) are problematic then the resource agencies and RFH can work towards viable solutions such as smaller bar grating, reduction in attraction flows towards the canal during certain times, stocking changes (i.e. timing, location, fish size); bypass flow improvements, and the development of better angler access. The latter two scenarios will be further elaborated on later in this document.

### **Minimum Flow Analysis**

On page 3-3 of the PSP, RFH states, “an Instream Flow Study proposed by MDIFW is not justified, for the reasons discussed below.” Those reasons include (italicized):

*“The C.T. Main (1989) study<sup>5</sup> involved an assessment of fish habitat values in the lower bypass reach of the Project (FERC No. 2333). Downstream of Middle Dam, the longer (920 feet) bedrock falls and cascades located in the middle of the lower bypass reach does not contain any suitable or persistent habitat for rearing or spawning life-stages of any game or non-game fish species inhabiting the Project area. For the reach from this bedrock falls and cascade, upstream to Middle Dam, the Main (1989) assessment further concluded that this 1,400-foot pool habitat does not provide quality habitat for fish or for recreational fishing. Although RFH believes this pool habitat does in fact provide some suitable juvenile or adult rearing habitat for various pool-dwelling species, this habitat lacks suitable spawning habitat, such as clean gravel substrates for trout, bass, and fallfish, or rooted aquatic vegetation for perch or pickerel. Given that conditions have remained unchanged, this lack of suitable spawning habitat, in combination with the migration barriers upstream (i.e., the dam) and downstream (i.e., the lower bedrock falls and cascades) of the pool, restricts the development of a healthy and stable resident population.”*

MDIFW response: The 1989 C.T. Main study largely assessed the bypass reaches for spawning and rearing habitat potential over 30 years ago. While the habitat remains the same, fishery management has evolved and trout stocking programs, including put-and-take and put-grow-take stockings, have produced some excellent fisheries in many similar bypass/tailrace situations that lack notable spawning and rearing habitat for trout species. The key to creating these fisheries is to have adequate flow conditions and suitable angler access. In fact, this site has produced some quality trout in recent years, as noted by the photo below of a holdover brown trout taken from the Project area. In 1989, MDIFW & USFWS agreed that the habitat assessment was adequate; however, it should be noted at that time the river was still heavily polluted, had almost no recreational use or value, and that the agencies had largely written off the river. Times have changed in the past 30 years: the river is cleaner, recreational use has exploded, and the river is producing good trout fishing in certain areas and a very high-quality bass fishery, all of which were nearly unimaginable back in the 1980’s.



RFH frequently cites the lack of rearing, spawning habitat, and an inability to produce healthy and stable resident fisheries. While the habitat does have its limitations, with appropriate minimum flows, stocking, and angler access the bypass has some potential to produce a very valuable fishery asset for the local area. In addition, spawning and rearing habitat within the mainstem bypass reach is irrelevant. The Androscoggin River has numerous cold-water tributaries that support spawning and rearing habitats, and successful spawning/rearing has been documented in these tributaries by MDIFW.

*“As noted in Main (1989), the limited access and steep banks of this habitat also restricts angler use and safety in comparison to more accessible locations outside of the Project bypass reaches. Access conditions remain unchanged since the initial assessment.”*

**MDIFW response:** As part of this licensing process, improved access conditions should be more thoroughly explored and developed and is discussed in more detail later in this document.

*“Assessing flow requirements in this pool habitat using Physical Habitat Simulation (PHABSIM) or other quantitative flow analysis is also unjustified because of the relatively insensitive nature of pools to managed flow releases. The abrupt and dramatic change in habitat formed by the bedrock lip of the cascade will effectively constrain water surface elevations in the upstream pool habitat. Minor to moderate changes in flow will have minimal effect on the depth and velocity characteristics of the pool habitat due to this dominating hydraulic control, and this insensitivity to flow changes makes the application of an incremental instream flow study of limited utility. Only very large changes in flow, akin to spill events, would be expected to result in significant changes in the amount or quality of fish habitat, and such changes are beyond the scope of this Project.”*

**MDIFW response:** MDIFW agrees a flow analysis for fisheries would not be meaningful in the uppermost pool (Area 1). This was an error: it was our intention to only request such a study from Lower Dam downstream to the confluence with the Lower Station tailrace, with primary areas for transect analysis to be Sections 2 and 3 of the image below. However, MDIFW does support the Aesthetic Flow Study requested by FERC. In addition to aesthetics, MDIFW

contains that some minimum flows over the Upper Falls would likely benefit American Eel and provide an alternative and potentially safer flow path for downstream drift of biota including fish.



*“Unlike the Main (1989) assessment, the downstream 350 feet of the lower bypass reach (from the bedrock falls and cascades to the Lower Station [powerhouse]) may contain suitable habitat for juvenile and adult rearing for several fish species. In particular, the lowermost bedrock pool along the northwest river bank may provide both habitat and fishing opportunities for bass and sunfish, and the riffle habitat on the southeast river bank may provide habitat for white suckers or trout; however, neither habitat is likely to contain suitable spawning habitat for bass, fallfish, or trout.*

*Although assessing flow habitat relationships in this lower end of the lower bypass reach is feasible, the short length (350 feet) and the small overall percentage that this habitat represents in the Project area (11% by length, or approximately 15% by area) does not, in RFH’s view, justify the utility of an incremental flow study, such as the PHABSIM analysis requested by MDIFW (2020).”*

**MDIFW response:** MDIFW concurs that Area 3 has the best potential; however, Area 1 and Area 2 have some fishery potential with stocking and acceptable access. Areas 2 and 3 should be assessed for minimum flows, and MDIFW calculates the length of these areas to be approximately 1,244 feet and approximately 1,108 feet, respectively. MDIFW is unclear how the 350 feet length was derived. In addition, the 11% by length appears to be misleading. MDIFW measured the entire bypass reach to be approximately 5,053 feet, and the reach from Lower Dam to the tailrace to be approximately 3,213 feet. MDIFW is asking for an assessment from Lower Dam downstream to the tailrace, which would equate to approximately 73% of the potential habitat (Areas 2 and 3) by length, or 34% if only including Area 3.

In addition, for clarification MDIFW is asking RFH to conduct various incremental flows (i.e. 20 cfs, 40 cfs, 60 cfs, 80 cfs, etc.—actual increments to be determined) and that transects be quantitatively assessed with the same transect data requested by the Maine Department of Environmental Protection's (MDEP) request for an Aquatic Habitat Cross-Section Flow Study. The only addition would be the need for HSI analyses for adult trout and Smallmouth Bass. MDIFW would also like to be present during the incremental flows to do some qualitative analysis and to evaluate angler wade-ability/safety at various flows. MDIFW believes that this request dovetails very nicely with MDEP's Aquatic Habitat-Cross Section Flow Study and FERC's Aesthetic Flow Study, with very limited additional effort by RFH. In addition, MDIFW recommends this approach over RFH's HECWRAS modification to MDEP's request.

Lastly, MDIFW contends the current minimum flows are extremely low given the aesthetics, physical character, length, area, biota, and fisheries potential of the bypass reach, and that a valid assessment is necessary for improvement.

### **Angler Creel Survey**

On Page 5-1, Table 5-1 Schedule for Conducting Proposed Studies has the Angler Creel Survey slated for 2020.

MDIFW Response: This date will need to be changed to 2021 and should include at least one additional year of data collection due to high year-to-year variability noted with other Maine Angler Creel Surveys on other river systems.

*Appendix C on page C-1 of the PSP describes the proposed Angler Creel Survey.*

MDIFW Response: RFH and MDIFW have had discussions about partnering on the Creel Survey, and there are still many details to work out. One of the major hurdles is that this area is at the northern border of MDIFW's regional boundaries, and travel time from our regional office would be challenging, time consuming, and expensive. In addition, MDIFW has historically had a difficult time finding staff for these types of projects, due to the part-time nature of the position, flexibility in work schedule requirements, and that seasonality of the fishing season does not coincide with typical seasonal help (i.e. college students). MDIFW has expressed that utilization of the right local person for this project, and personal or RFH vehicle use, will likely be key for a successful partnering. If these details cannot be worked through, then RFH would be required to handle the entire study.

Under the proposed partnering, RFH would supply significantly less funding (30-40%) than the projected \$61,000 cost in the PSP. RFH has asked MDIFW to train staff, manage staff including payroll, and to enter/analyze/report on the data. It should be noted that MDIFW believes a similar partnering and the savings realized by RFH for the Angler Creel Survey could likely cover the cost of the telemetry study mentioned above.



### **Recreation Study Plan**

Page D-1 of the PSP states the goals and objectives of the study are:

*“to determine if there is a need for enhancements to existing recreation facilities or the need for additional recreational facilities to support the current and future demand for public recreation at the Project and Project vicinity. The objectives of this study are to:*

- *Conduct an inventory of recreational facilities at the Project and within the Project vicinity to summarize existing recreational opportunities;*
- *Assess the condition of RFH’s Federal Energy Regulatory Commission (FERC)-approved recreation facility and other RFH-owned and operated recreation facilities to identify any need for improvements; and*
- *Characterize current recreational use and future demand of the FERC-approved recreation facility and other RFH-owned and operated recreation facilities.”*

MDIFW response: The goals and objectives *appear* to lack any commitment by RFH to explore expanded access and angling opportunities. MDIFW believes the area has more potential, and that additional access to the impoundment and the bypass reaches should be fully explored as part of the licensing process. Conversations with local anglers and people from the Town indicate that a fair amount of shore angling occurs in the canals and bypass areas. MDIFW believes there should be better access provisions for these areas, even it that includes improved accessibility measures such as stairways and/or safety railings. For example, the west shore above the lowermost tailrace provides an excellent angling opportunity, but current access provisions and low flows discourage angler use. At least two other areas of the bypass might provide beneficial angling opportunities with some revised stocking locations that MDIFW would be willing to explore and discuss with the Town and RFH. Lastly, the distance between the upstream launch and the boater barrier is approximately 1.9 miles. As many users float the river with nonmotorized watercraft from launch to launch, a new carry-in launch should be explored in the area just upstream of the boater barrier. We suggest that the best way to explore new access opportunities would be for RFH, the Town, MDIFW, and other interested parties to meet on-site. A field visit, discussions, and visual observations of site characteristics are critical as this area does have some challenging terrain and legitimate safety issues in some locations.

*Task 3 on page D-5 of PSP, indicates recreational use will only be assessed at Brookfield Recreational Sites. RFH confirmed this during the April 7, 2020 remote meeting. In addition, Schedule on page D-6 indicates that use will be assessed from May-September 2020.*

MDIFW response: Ignoring recreational activity at non-Brookfield Recreational Sites fails to give a complete understanding of the extent of recreational use and needs related to areas within the Project boundary. MDIFW believes use should be assessed at all of the sites denoted in Figure 1 on Page D-3. In addition, Figure 1 should be modified to: (1) include the informal access site to the Logans off South Rumford Road; (2) the trailered launch just downstream of the Swift River off Riverside Avenue; and (3) launch site on Figure 1 between Hastings Boat Launch and Wheeler Island should be labeled.

The assessment schedule should be extended until at least the end of October to account for likely additional use in early fall related to fall stockings and fall foliage.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in blue ink, appearing to read "John Perry".

John Perry  
Environmental Review Coordinator

Cc: Francis Brautigam, Joe Overlock--MDIFW Fisheries Division, Augusta Headquarters  
James Pellerin, Nicholas Kalejs--MDIFW Fisheries Division, Region A  
Kathy Howatt, Christopher Sferra—MDEP  
Jim Vogel--Bureau of Parks and Lands  
Anna Harris, Mark McCollough--USFWS

**Attachment 1**

Thank you.

James Pellerin  
Regional Fisheries Biologist  
Maine Dept of Inland Fisheries & Wildlife  
Sebago Lake Regional Headquarters  
15 Game Farm Road  
Gray, Maine 04039  
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**From:** Murphy, Kyle <[Kyle.Murphy@brookfieldrenewable.com](mailto:Kyle.Murphy@brookfieldrenewable.com)>  
**Sent:** Tuesday, June 02, 2020 3:02 PM  
**To:** Pellerin, James <[James.Pellerin@maine.gov](mailto:James.Pellerin@maine.gov)>  
**Cc:** Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>; Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Harris, Anna <[anna\\_harris@fws.gov](mailto:anna_harris@fws.gov)>; Maloney, Kelly <[Kelly.Maloney@brookfieldrenewable.com](mailto:Kelly.Maloney@brookfieldrenewable.com)>; Seyfried, Jason <[Jason.Seyfried@brookfieldrenewable.com](mailto:Jason.Seyfried@brookfieldrenewable.com)>; Anderson, Luke <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>  
**Subject:** RE: Rumford Falls (FERC No. 2333-ME) Upper and Middle Development Flashboard Repair/Boat Barrier Installation Notification

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Thank you Jim for your response. To follow up on yesterday's discussions, we were able to get on the Upper Rumford head pond today and got a good look at the shallow shorelines and coves from just upstream of the dam (boat barrier location) all the way to Rumford Point and didn't see any active nests. Water temps were 11 degrees in the mainstem. To help address this, we are contracting with Normandeau Assoc. to assist us in additional surveys through the month of June and will keep you posted. I appreciate the assistance on this and understanding that this required maintenance work is completed as soon as mother nature will allow and if not repaired, the pond would continue to drop and remain down at dam crest all summer creating many other resource related concerns. Let me know if you have any questions/concerns and we will keep you posted on this as we proceed. Thanks again and catch up later. Kyle.

**Kyle Murphy**  
Compliance Specialist

**Brookfield Renewable**  
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[kyle.murphy@brookfieldrenewable.com](mailto:kyle.murphy@brookfieldrenewable.com)

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**From:** Pellerin, James <[James.Pellerin@maine.gov](mailto:James.Pellerin@maine.gov)>

**Sent:** Tuesday, June 2, 2020 9:51 AM

**To:** Murphy, Kyle <[Kyle.Murphy@brookfieldrenewable.com](mailto:Kyle.Murphy@brookfieldrenewable.com)>

**Cc:** Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>; Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Harris, Anna <[anna\\_harris@fws.gov](mailto:anna_harris@fws.gov)>; Anderson, Luke <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>; Mapletoft, Thomas <[Thomas.Mapletoft@brookfieldrenewable.com](mailto:Thomas.Mapletoft@brookfieldrenewable.com)>; GRP NSCC Shift Supervisors <[GRPNSSCShiftSupervisors@brookfieldrenewable.com](mailto:GRPNSSCShiftSupervisors@brookfieldrenewable.com)>; Mcdonough, Patrick <[Patrick.McDonough@brookfieldrenewable.com](mailto:Patrick.McDonough@brookfieldrenewable.com)>; Gregg, Shawn <[Shawn.Gregg@brookfieldrenewable.com](mailto:Shawn.Gregg@brookfieldrenewable.com)>; Maloney, Kelly <[Kelly.Maloney@brookfieldrenewable.com](mailto:Kelly.Maloney@brookfieldrenewable.com)>; Seyfried, Jason <[Jason.Seyfried@brookfieldrenewable.com](mailto:Jason.Seyfried@brookfieldrenewable.com)>

**Subject:** RE: Rumford Falls (FERC No. 2333-ME) Upper and Middle Development Flashboard Repair/Boat Barrier Installation Notification

Kyle –

MDIFW is generally not supportive of nonemergency drawdowns in excess of 1 foot on impoundments during the bass spawning season (generally 5/15-6/30 for both Small and Largemouth Bass). Drawdowns of this nature can result in year class failures for these species. For the Rumford impoundment, Smallmouth Bass are the primary concern and this location is at the northern end of our Region, as discussed on the phone some additional evidence may allow you to narrow down that window. I would suggest either as part of or in lieu of the current relicensing you:

- (1) Look at historical operations data (at least 15-20 years) to see how often drawdowns during the spawning period noted above exceeded 1 foot; and
- (2) conduct a spawning survey to determine the time frame when bass begin and stop nesting behaviors in the Rumford Impoundment;
- (3) and provide that information to MDIFW and other interested resource agencies.

For this event, MDIFW will allow the drawdown for the proposed maintenance activities but in the future we will likely not be supportive of drawdowns during the bass spawning season. However, providing the information above may result in data that allows more flexibility in performing such activities at the Rumford facility. Thank you.

**James Pellerin**

**Regional Fisheries Biologist**

Maine Dept of Inland Fisheries & Wildlife

Sebago Lake Regional Headquarters

15 Game Farm Road

Gray, Maine 04039

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*Correspondence to and from this office is considered a public record and may be subject to a request under the Maine Freedom of Access Act. Information that you wish to keep confidential should not be included in email correspondence.*

**From:** Murphy, Kyle <[Kyle.Murphy@brookfieldrenewable.com](mailto:Kyle.Murphy@brookfieldrenewable.com)>  
**Sent:** Sunday, May 31, 2020 9:46 PM  
**To:** Pellerin, James <[James.Pellerin@maine.gov](mailto:James.Pellerin@maine.gov)>; Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>; Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Harris, Anna <[anna\\_harris@fws.gov](mailto:anna_harris@fws.gov)>  
**Cc:** Anderson, Luke <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>; Mapletoft, Thomas <[thomas.mapletoft@brookfieldrenewable.com](mailto:thomas.mapletoft@brookfieldrenewable.com)>; GRP NSCC Shift Supervisors <[GRPNSSCCShiftSupervisors@brookfieldrenewable.com](mailto:GRPNSSCCShiftSupervisors@brookfieldrenewable.com)>; Mcdonough, Patrick <[Patrick.McDonough@brookfieldrenewable.com](mailto:Patrick.McDonough@brookfieldrenewable.com)>; Gregg, Shawn <[Shawn.Gregg@brookfieldrenewable.com](mailto:Shawn.Gregg@brookfieldrenewable.com)>; Maloney, Kelly <[Kelly.Maloney@brookfieldrenewable.com](mailto:Kelly.Maloney@brookfieldrenewable.com)>; Seyfried, Jason <[Jason.Seyfried@brookfieldrenewable.com](mailto:Jason.Seyfried@brookfieldrenewable.com)>  
**Subject:** Rumford Falls (FERC No. 2333-ME) Upper and Middle Development Flashboard Repair/Boat Barrier Installation Notification

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Good evening all. I am emailing your agency to notify you that the river conditions have receded enough to safely install the Rumford Safety Boater barriers and make needed repairs to damaged flash boards at Rumford Upper and Middle Projects. Flows up until now have not allowed for this work to be scheduled and if repairs are not done to the flashboards, the pond levels will continue to decrease having potential impact to spawning SMB later in June. As in the past, a slow drawdown is scheduled and will begin Monday June 1 and will be reduce Rumford Upper by approximately 2.7 ft to allow for the safe flash board repairs. The pond will be down by Thursday June 4, 2020 and the work will be completed in one day, once completed, the project will be refilled. After Upper Rumford flash board repairs are completed, Middle flashboard repairs will follow with an approximate 2.24 ft drawdown of Rumford Middle beginning on June 4 and the flash board repairs being completed on June 5, 2020. Project operations are anticipated to be back to normal levels by approximately June 7, 2020. In the event of a station trip, minimum flow will be provided at Upper Dam with water passing over the dam crest and minimum flow at Middle Dam will be provided through leakage and pipes (21cfs). As always, feel free to contact me with any question or concerns. As I mentioned above, this required maintenance work has not been able to be safely completed any earlier due to high flow conditions. Thank you for your time. Kyle.

**Kyle Murphy**  
Compliance Specialist

**Brookfield Renewable**  
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Filed via "eFiling"

June 8, 2020

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Division  
888 First Street, N.E.  
Washington, D.C. 20426

**RE: Comment on Proposed Study Plan, Rumford Falls Project (FERC No. 2333)**

Dear Secretary Bose,

The Maine Department of Agriculture, Conservation and Forestry, Bureau of Parks and Lands has reviewed the Proposed Study Plan for the Rumford Falls Project and offers the comments below. We preface these comments by noting, as has the Town of Rumford, Trout Unlimited, the Maine Department of Inland Fisheries and Wildlife (IF&W) and several other agencies, NGOs and individual stakeholders, that the recreation opportunities available on the Androscoggin River are generating increasing interest due to greatly improved environmental conditions, far different from conditions when the current license was issued. We encourage Rumford Falls Hydro, LLC (RFH) to work through the relicensing process to develop with the local community a common vision for the river-oriented recreation and access sites, including the now-closed Rumford Falls Trail, managed for a high-quality experience. The Bureau supports a partnership approach for the management of RFH project facilities along the river and the adjacent community-based facilities.

Recreation Study Plan

The Bureau supports the requests of the Commission, dated May 8, 2020, for a more detailed study plan and more robust data collection methodology. In particular, we believe that collecting data through focus groups or interviews, and to include all recreation sites in the project vicinity, not just those owned/operated by RFH, are necessary to acquire adequate data for assessing recreation needs.

More specifically, the Bureau believes the inventory portion of the study should include all lands associated with the Project waters (including lands presently owned by RFH and lands it does not own) to identify areas needed for project purposes, including existing and potential public recreation and access sites, and areas needed for scenic protections. The Bureau further believes

the assessment portion of the study should incorporate the scenic and aesthetic values associated with each site, particularly as regards Rumford Falls, given its primary importance as a scenic feature in the community and attraction to those from outside the community and its close relation to the Rumford Falls Trail. In addition to characterizing recreation use and future demand, we believe the results of the study should inform an evaluation by FERC as to whether the Project boundary should be expanded to include all of the now-closed Rumford Falls Trail, only part of which is on lands owned by RFH and only part of which is currently within the Project boundary, and potentially other recreation facilities.


The Bureau also wishes to go on record as supporting the requests made by IF&W in their comments on the Pre-Application Document (PAD), dated January 28, 2020, to consider various put-in and take-out relationships among the access sites above and below the dam areas, including necessary portage trail(s), in the Recreation Study. We also appreciate the addition of an Angler Creel Survey by RFH in response to the IF&W study request, which will complement the Recreation Study.

Additional Comments

The Bureau supports the requests made by the Town of Rumford, and supported by Trout Unlimited, for a comprehensive recreational plan to be part of the conditions of relicensing. This would include the parks, paths, viewing opportunities and aesthetics, whitewater opportunities, fishing, and other potential recreational uses of the Rumford Falls Project vicinity. The Recreation Study should be conducted with the objective to fully inform such a comprehensive recreation plan.

Thank you for the opportunity to submit these comments. Please feel free to contact me at (207) 287-2163 or via email at [Jim.Vogel@maine.gov](mailto:Jim.Vogel@maine.gov) if you have any questions regarding these comments.

Sincerely,



Jim Vogel, FERC Coordinator  
Bureau of Parks and Lands

Cc: Andrew Cutko, Director  
John Perry, Maine Department of Inland Fisheries and Wildlife  
Luke Anderson, Brookfield Renewable

Stephanie Reed, Rumford, ME.

Please support the Town of Rumford's recreational proposal instead of the inadequate farce that has been proposed by Brookfield. This is what is truly meant by the idea of requiring these proposals. Many community groups, residents and visitors alike support & would benefit from better access to the recreational opportunities that Brookfield has denied us while profiting from our resources.



Todd Papianou, Rumford, ME.  
To Whom it May Concern,

I'm a Physical Education teacher at Mountain Valley High School in Rumford and had been using the old rail bed/ road on the South Easterly side of the Rumford Falls for teaching several classes before it was closed. I teach a class called "LifeTime Pursuits." During a Commuter Bike Unit and Intro to Trail Riding Unit, the class would be tasked with riding up the graded dirt road. The fact that it is an old railbed and was perfectly graded at the same consistent pitch was perfect to discuss shifting and or the need to not shift on this even pitch. Our class was treated to the magnificent roar and thump of the Falls in the Spring. We would ride to the top and assemble on the concrete pad at the top of the dam and I would proceed with my lesson.

I would cover many topics from that location as it was relevant to the history of our region.

An example of this teaching was about the existence of the Dam and its relationship to the Mill, in the days before good roads when rivers were used as highways and transportation systems.

Our classes would later do a Canoe Unit and connect the "BoomPiers" above the dam and how the different lots of logs could be penned up and processed through the Saw Mill above the Falls and then put on Trains to run down the railbed and toward Portland. We learned about how our community was historically designed as a Walking Town. If the town was viewed from a plane it's clear the Mill and the Island are the hubs of networks of pathways that lead to the homes, churches, schools, and other community centers.

Our Physical Education classes also include a Walking For Fitness elective. For this class we used the areas adjacent to and surrounding the Dam, talking about history. Imagine a lovely stroll after dinner on the Island to end up at the scenic overlook under with its ornate stone benches and turrets that hang over the water and beneath the Falls. Walking under the gaslights that lit this walkway was a daily part of life for many.

The trail I used for my LifeTime Pursuits, and Walking for Fitness classes are now neglected and chained off. A metal fence greets anyone wishing to enjoy viewing the Falls. The area has become unattractive and has morphed into a sterile industrial waste of space. Our community needs to have walking opportunities for its health and wellness. The return of these precious areas that enable a close connection to the Falls and the grand cascade is vital to preserving the history and culture of the town Hugh Chisholm built for the people that lived and worked in the town.

Beyond our community, this Falls is a significant geographic phenomenon that folks from farther away come to see. They deserve to see it and feel it from the original access points.

The emerging recreational tourist sector relies heavily on natural attractions like the Great Falls of Rumford. I also have been a

Registered Maine Guide since 1989. Restricting this area and letting the assets fall to disrepair is not being a "Good Neighbor"

The citizens of Rumford ask for several things:

#1: Comprehensive studies of recreational, fishing, streamflow, and economic cultural significance be performed.

#2: Repair and reopening of the Picnic Grounds and the Gaslight Balcony and Gaslight Pathway

#3: A consistent approach to facility management and recreational promotion that other Brookfield facilities have in Quebec. When visiting a Dam in Canada, Brookfield had spent time and effort to make the area welcoming and engaging to the public.

#4 Walking or riding a bike should be a right that is restored to the public around the hydro facility.

I trust FERC and Brookfield will do the right thing for the people of Rumford.

Sincerely,  
Todd Papanou

Filed via "eFiling"

July 23, 2020

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Division  
888 First Street, N.E.  
Washington, D.C. 20426

**RE: Comment on Revised Study Plan, Rumford Falls Project (FERC No. 2333)**

Dear Secretary Bose,

The Bureau appreciates the response of Rumford Falls Hydro to comments on the Recreation Study which have resulted in a proposal for a more substantive study effort, including an expanded number of sites to be visited and a wider range of survey and other information gathering methodologies to be employed. We believe the general level of effort proposed and the number of sample days (20 days between late May and early September) is appropriate.

We believe some refinements of the study sampling plan could help ensure robust and informative user counts, observations and visitor surveys. We also recommend that the recreation site inventory and evaluation specifically address aesthetics, perhaps by replacing the campsite section of the inventory and assessment form given that there are no overnight recreation facilities in the Project area or vicinity.

We would like to participate in the site visit and focus group meeting planned for Spring 2021. Our participation would provide an opportunity to engage with knowledgeable recreationists, local residents and other stakeholders, which would inform our suggestions on study plan refinements. Suggestions would be provided to Rumford Falls Hydro as soon as possible after the site visit and focus group meeting, to allow ample time for finalizing data collection details prior to the start of the sample period in late May.

Thank you for the opportunity to submit these comments. Please feel free to contact me at (207) 287-2163 or via email at [Jim.Vogel@maine.gov](mailto:Jim.Vogel@maine.gov) if you have any questions regarding these comments.

Sincerely,

A handwritten signature in blue ink that reads "Jim Vogel". The signature is written in a cursive style.

Jim Vogel, FERC Coordinator  
Bureau of Parks and Lands

Cc: Andrew Cutko, Director  
John Perry, Maine Department of Inland Fisheries and Wildlife  
Luke Anderson, Brookfield Renewable

*Via Electronic Filing*

July 24, 2020

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

**Re: Rumford Falls Hydroelectric Project (FERC No. 2333-091)  
Revised Study Plan – Maine Department of Inland Fisheries and Wildlife Comments**

Dear Secretary Bose:

On March 10, 2020, Rumford Falls Hydro LLC (RFH or Licensee), a subsidiary of Brookfield Renewable (Brookfield), submitted their Proposed Study Plan (PSP) to the Federal Energy Regulatory Commission (FERC) for the Rumford Falls Hydroelectric Project (Project) (FERC No. 2333). The Maine Department of Inland Fisheries and Wildlife (MDIFW) has reviewed the PSP and participated in the remote PSP Meeting held on April 7, 2020. On June 8, 2020, MDIFW filed written comments that supplemented our original January 28, 2020 comments.

On July 7, 2020, RFH filed the Revised Study Plan (RSP). MDIFW offers the following comments on the RSP for FERC consideration.

**Brown and Rainbow Trout Radio Telemetry**

Similar to the PSP, RFH continues to reject MDIFW's Brown and Rainbow Trout Radio Telemetry study request citing the lack of Project nexus. Respectfully, MDIFW continues to disagree with the position of RFH. To reiterate our position, the diversion of most of the flows in the river through the canal and into the powerhouse turbines with 3-inch bar grating could be resulting in significant mortalities to stocked trout if they tend to migrate downstream post-stocking, a phenomenon that has been documented in several research papers. Because of the relatively large investment of MDIFW and the State of Maine in stocking a total of 4,850 fish in the Project area annually, it is important to understand what impacts a series of hydroelectric dams, with an artificial flow regime, has on the survivability of these stocked fish. In addition to the concerns with powerhouse entrainment, the lack of suitable flows and warm water temperatures in the bypass reach may also be preventing trout from utilizing that very fishable area. Finally, stocked trout may be also attracted towards the powerhouse outflow where there is little, or no, angler accessibility.

### Minimum Flow Analysis

MDIFW continues to request an Instream Flow Study. While the habitat remains the same, fishery management has evolved and trout stocking programs, the Androscoggin River is cleaner, recreational use has exploded, and the river is producing good trout fishing in certain areas and a very high-quality bass fishery, all of which were non-existent back in the 1980's. To reiterate, MDIFW is respectfully requesting that RFH incorporate HSI analyses for adult trout and Smallmouth Bass into their Revised Flow Analyses. MDIFW would also like to be present during the incremental flows to do some qualitative analysis and to evaluate angler wade-ability/safety at various flows. Lastly, MDIFW contends the current minimum flows are extremely low given the aesthetics, physical character, length, area, biota, and fisheries potential of the bypass reach, and that a valid assessment is necessary for improvement.

Finally, we apologize to RFH and FERC for not meeting the July 23 filing deadline as ongoing COVID-19 considerations continue to impact staff working schedules and logistics.

Thank you for your consideration. Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,



John Perry  
Environmental Review Coordinator

Cc: Francis Brautigam, Joe Overlock--MDIFW Fisheries Division, Augusta Headquarters  
James Pellerin, Nicholas Kalejs--MDIFW Fisheries Division, Region A  
Kathy Howatt, Christopher Sferra—MDEP  
Jim Vogel--Bureau of Parks and Lands  
Anna Harris, Antonio Bentivoglio--USFWS

## Attachment 1

Thank you.

James Pellerin  
Regional Fisheries Biologist  
Maine Dept of Inland Fisheries & Wildlife  
Sebago Lake Regional Headquarters  
15 Game Farm Road  
Gray, Maine 04039  
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**From:** Murphy, Kyle <[Kyle.Murphy@brookfieldrenewable.com](mailto:Kyle.Murphy@brookfieldrenewable.com)>  
**Sent:** Tuesday, June 02, 2020 3:02 PM  
**To:** Pellerin, James <[James.Pellerin@maine.gov](mailto:James.Pellerin@maine.gov)>  
**Cc:** Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>; Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Harris, Anna <[anna\\_harris@fws.gov](mailto:anna_harris@fws.gov)>; Maloney, Kelly <[Kelly.Maloney@brookfieldrenewable.com](mailto:Kelly.Maloney@brookfieldrenewable.com)>; Seyfried, Jason <[Jason.Seyfried@brookfieldrenewable.com](mailto:Jason.Seyfried@brookfieldrenewable.com)>; Anderson, Luke <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>  
**Subject:** RE: Rumford Falls (FERC No. 2333-ME) Upper and Middle Development Flashboard Repair/Boat Barrier Installation Notification

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Thank you Jim for your response. To follow up on yesterday's discussions, we were able to get on the Upper Rumford head pond today and got a good look at the shallow shorelines and coves from just upstream of the dam (boat barrier location) all the way to Rumford Point and didn't see any active nests. Water temps were 11 degrees in the mainstem. To help address this, we are contracting with Normandeau Assoc. to assist us in additional surveys through the month of June and will keep you posted. I appreciate the assistance on this and understanding that this required maintenance work is completed as soon as mother nature will allow and if not repaired, the pond would continue to drop and remain down at dam crest all summer creating many other resource related concerns. Let me know if you have any questions/concerns and we will keep you posted on this as we proceed. Thanks again and catch up later. Kyle.

**Kyle Murphy**  
Compliance Specialist

**Brookfield Renewable**  
150 Main Street, Lewiston, Maine, 04240  
Office (207) 755-5626 Mobile (207) 458-5861  
[kyle.murphy@brookfieldrenewable.com](mailto:kyle.murphy@brookfieldrenewable.com)

**From:** Pellerin, James <[James.Pellerin@maine.gov](mailto:James.Pellerin@maine.gov)>  
**Sent:** Tuesday, June 2, 2020 9:51 AM  
**To:** Murphy, Kyle <[Kyle.Murphy@brookfieldrenewable.com](mailto:Kyle.Murphy@brookfieldrenewable.com)>  
**Cc:** Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>; Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Harris, Anna <[anna\\_harris@fws.gov](mailto:anna_harris@fws.gov)>; Anderson, Luke <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>; Mapletoft, Thomas <[Thomas.Mapletoft@brookfieldrenewable.com](mailto:Thomas.Mapletoft@brookfieldrenewable.com)>; GRP NSCC Shift Supervisors <[GRPNSSCCShiftSupervisors@brookfieldrenewable.com](mailto:GRPNSSCCShiftSupervisors@brookfieldrenewable.com)>; Mcdonough, Patrick <[Patrick.McDonough@brookfieldrenewable.com](mailto:Patrick.McDonough@brookfieldrenewable.com)>; Gregg, Shawn <[Shawn.Gregg@brookfieldrenewable.com](mailto:Shawn.Gregg@brookfieldrenewable.com)>; Maloney, Kelly <[Kelly.Maloney@brookfieldrenewable.com](mailto:Kelly.Maloney@brookfieldrenewable.com)>; Seyfried, Jason <[Jason.Seyfried@brookfieldrenewable.com](mailto:Jason.Seyfried@brookfieldrenewable.com)>  
**Subject:** RE: Rumford Falls (FERC No. 2333-ME) Upper and Middle Development Flashboard Repair/Boat Barrier Installation Notification

Kyle –

MDIFW is generally not supportive of nonemergency drawdowns in excess of 1 foot on impoundments during the bass spawning season (generally 5/15-6/30 for both Small and Largemouth Bass). Drawdowns of this nature can result in year class failures for these species. For the Rumford impoundment, Smallmouth Bass are the primary concern and this location is at the northern end of our Region, as discussed on the phone some additional evidence may allow you to narrow down that window. I would suggest either as part of or in lieu of the current relicensing you:

- (1) Look at historical operations data (at least 15-20 years) to see how often drawdowns during the spawning period noted above exceeded 1 foot; and
- (2) conduct a spawning survey to determine the time frame when bass begin and stop nesting behaviors in the Rumford Impoundment;
- (3) and provide that information to MDIFW and other interested resource agencies.

For this event, MDIFW will allow the drawdown for the proposed maintenance activities but in the future we will likely not be supportive of drawdowns during the bass spawning season. However, providing the information above may result in data that allows more flexibility in performing such activities at the Rumford facility. Thank you.

James Pellerin  
Regional Fisheries Biologist  
Maine Dept of Inland Fisheries & Wildlife  
Sebago Lake Regional Headquarters  
15 Game Farm Road  
Gray, Maine 04039  
(207) 287-5765  
[mefishwildlife.com](http://mefishwildlife.com) | [facebook](https://www.facebook.com/mefishwildlife) | [twitter](https://twitter.com/mefishwildlife)

*Correspondence to and from this office is considered a public record and may be subject to a request under the Maine Freedom of Access Act. Information that you wish to keep confidential should not be included in email correspondence.*



**From:** Murphy, Kyle <[Kyle.Murphy@brookfieldrenewable.com](mailto:Kyle.Murphy@brookfieldrenewable.com)>  
**Sent:** Sunday, May 31, 2020 9:46 PM  
**To:** Pellerin, James <[James.Pellerin@maine.gov](mailto:James.Pellerin@maine.gov)>; Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>; Perry, John <[John.Perry@maine.gov](mailto:John.Perry@maine.gov)>; Harris, Anna <[anna\\_harris@fws.gov](mailto:anna_harris@fws.gov)>  
**Cc:** Anderson, Luke <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>; Mapletoft, Thomas <[thomas.mapletoft@brookfieldrenewable.com](mailto:thomas.mapletoft@brookfieldrenewable.com)>; GRP NSCC Shift Supervisors <[GRPNSSCCShiftSupervisors@brookfieldrenewable.com](mailto:GRPNSSCCShiftSupervisors@brookfieldrenewable.com)>; Mcdonough, Patrick <[Patrick.McDonough@brookfieldrenewable.com](mailto:Patrick.McDonough@brookfieldrenewable.com)>; Gregg, Shawn <[Shawn.Gregg@brookfieldrenewable.com](mailto:Shawn.Gregg@brookfieldrenewable.com)>; Maloney, Kelly <[Kelly.Maloney@brookfieldrenewable.com](mailto:Kelly.Maloney@brookfieldrenewable.com)>; Seyfried, Jason <[Jason.Seyfried@brookfieldrenewable.com](mailto:Jason.Seyfried@brookfieldrenewable.com)>  
**Subject:** Rumford Falls (FERC No. 2333-ME) Upper and Middle Development Flashboard Repair/Boat Barrier Installation Notification

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Good evening all. I am emailing your agency to notify you that the river conditions have receded enough to safely install the Rumford Safety Boater barriers and make needed repairs to damaged flash boards at Rumford Upper and Middle Projects. Flows up until now have not allowed for this work to be scheduled and if repairs are not done to the flashboards, the pond levels will continue to decrease having potential impact to spawning SMB later in June. As in the past, a slow drawdown is scheduled and will begin Monday June 1 and will be reduce Rumford Upper by approximately 2.7 ft to allow for the safe flash board repairs. The pond will be down by Thursday June 4, 2020 and the work will be completed in one day, once completed, the project will be refilled. After Upper Rumford flash board repairs are completed, Middle flashboard repairs will follow with an approximate 2.24 ft drawdown of Rumford Middle beginning on June 4 and the flash board repairs being completed on June 5, 2020. Project operations are anticipated to be back to normal levels by approximately June 7, 2020. In the event of a station trip, minimum flow will be provided at Upper Dam with water passing over the dam crest and minimum flow at Middle Dam will be provided through leakage and pipes (21cfs). As always, feel free to contact me with any question or concerns. As I mentioned above, this required maintenance work has not been able to be safely completed any earlier due to high flow conditions. Thank you for your time. Kyle.

**Kyle Murphy**  
Compliance Specialist

**Brookfield Renewable**  
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[www.brookfieldrenewable.com](http://www.brookfieldrenewable.com)

John M Preble, Rumford, ME.  
Via E-Filing

July 26, 2020

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

Subject: Rumford Falls Hydroelectric Project: FERC  
Docket 2333-001 Revised Study Plan - Recreation Study Plan Comments

Dear Secretary Bose,

The respondent acknowledges that considerable enhancements have been included in the revised Recreation Study Plan submitted on July 8, 2020. Yet substantive adjustments are needed to add omissions improve effectiveness and completeness of input. Responses and comments to individual observations follow:

1.0 Goals and Objectives -

Observation: RFP failed to include the obvious - the creation of a Recreation Plan for current and future usage.

Comment: add the following:

- 1) Creation of a current and future potential Recreation Plan task including timeline and roles and responsibilities.
- 2) On-going process task to monitor progress and to periodically update Plan including roles and responsibilities for such tasks`

3.0 Background and existing information- in Rumford Falls Power LLC (RFP) latest submission Boating and fishing are stated as being the primary recreational uses.

Comments: The upper waterfalls are a key scenic draw and is viewed by thousands each spring to watch the powerful display of mother nature. The Rumford Falls are frequently a subject of TV media coverage during high flows. The Boivin Park is often filled to capacity to view the spectacle of the falls. Large numbers of individuals and family members stop daily to view the falls and to take photos passing thru Rumford. During summer and fall Boivin Park is a popular scenic viewing area especially when there are water flows over the upper dam and a frequently used rest stop, lunch and picnic area. This is in sharp contrast to RFP comment that recreation use is limited around the Middle Dam impoundment.

4.0 Project Nexus - RFP states "the results of this Study will be useful for the development of a recreation plan; which RFP is proposing to develop.

Comment: no where in RFP's submission is there a task that specifies rules and responsibilities for creation of a Recreation Plan that includes.

5.0 Methodology: RFP notes that the evaluation of the Rumford Falls Trail will be

limited to the portion of trail that occurs on RFP Land – this is unacceptable – the condition of the entire Rumford Falls Trail needs to be evaluated and included in remediation projects.

#### 5.0 Task 2 Characterizing Current Recreation Use and Future Demand of Recreation Facilities at the Project and within Project Vicinity.

RFP intends to have members of the Focus group to spend one day visiting sites and then meeting that same day to discuss

‘key recreational assets, different seasonal uses, historic and present uses, access, suitability for use of existing resources, and potential needs for rehabilitation and improvements’. There are currently eleven sites to be evaluated. Some are in close proximity to others while others are more distant and require travel time. Site evaluations alone will take in excess a full day.

Comment: Task 2 is a critical element of the Recreation Study Plan and limiting this task to one day may not allow for adequate discovery and or discussion. No provision has been made to evaluate sites other than those identified in RFP plan submission nor is it apparent that the Focus Group has the freedom to identify additional sites within the Project or Project Vicinity for site evaluation and inclusion in the plan. The following changes need to be made to Task 2:

- 1) Focus Group should initially be convened in fall of 2020 to discuss merits and issues with the submitted listing of existing and future use sites. This input to be documented and used as individual site evaluation preview guide and whether technical evaluations and data will be required. The Focus Group should have the authority to put forth additional sites that would be added to the 2021 site evaluation and survey list, (example: trails on west and east banks of Swift River, Mt. Ziron trail head, downstream boat launches in Mexico and Dixfield etc.).
- 2) Site evaluation visits to be scheduled based on a reasonable estimate as to how long each evaluation is likely to take place allowing for a thorough inspection of each site. Transport time and time to regroup to be included in time estimate. Multiple evaluation and discussion days are to be scheduled as needed to complete the Task.
- 3) Evaluations that are dependent on professional assessments made by RFP and its agents are subject to second opinions at the discretion of the Focus Group and Town of Rumford. Agents and parties conducting any such second opinion evaluations to be selected by the Town of Rumford and or consensus of the Focus Group.
- 4) Multiple sites are currently closed by RFP stating safety and security concerns. It is obvious these sites will require technical evaluation.
- 5) Technical evaluations should be conducted, and Focus Group provided with findings prior to site visitation to aide in site review effectiveness and remediation recommendations.

Recreation Observations and recreation Facilities – RFP proposes a fixed list as presented:

Comment: Need to add additional sites as identified by Focus Group

Task 3 – Reporting –

Observation - there is no defined criteria or specificity for this task

Comment: At minimum the following should be reported for each site valuated.

- 1) Pros and cons for inclusion in Recreation Plan
- 2) Focus group comments and conclusions
- 3) Classification as currently actionable or future consideration

#### 6.0 Schedule-

Comment: The entire proposed timeline needs to be changed to the following order:

- 1) Establish Focus group - Fall 2020
- 2) Focus group site discussion - documented pros, cons, issues for site evaluation Fall 2020
- 3) Identification of appropriate additional sites Fall 202
- 4) Identification to RFP of sites requiring technical evaluation Fall 2020
- 5) Completion of technical evaluation and report of details to Focus Group including RFP proposal regarding mitigation options Spring 2021
- 6) Identification of requested second opinions upon completion of item 5 above spring 2021
- 7) Complete second opinion evaluation summer 2021
- 8) Prepare report comparing first technical opinion vs second opinion summer 2021
- 9) Conduct site inspections summer 2021
- 10) Review Survey results with Focus Group Fall 201
- 11) Compose Recreation Plan fall 2021
  - a. Current Actionable -complete with Focus Group comments and observation
  - b. Future Recreation potential complete with Focus Group comments and observations
  - c. Establish Recreation Current Actionable Plan detail timeline

Respectfully Submitted

John M Preble

Director Mahoosuc Pathways

Director Friends of Richardson Lake

Retired Senior Vice President - Bank of Boston / Bank of America

Retired Senior President - Director of Finance Strategic Projects

TD Bank (Toronto Dominion Bank)

Retired Chief Financial Officer Casco Northern Bank

Resident Town of Rumford

July 27, 2020

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



Via online submission to: <http://www.ferc.gov>

**Subject: Comments of Maine Council of Trout Unlimited on the Revised Study Plan (RSP) for the Rumford Falls Hydroelectric Project (FERC No. 2333)**

Dear Secretary Bose:

On behalf of its chapters and their over 2,000 members, Maine Council of Trout Unlimited (TU) submits these comments on Brookfield's Rumford Falls Hydro LLC Revised Study Plan (RSP) for the Rumford Falls Project (P-2333-0091) on the Androscoggin River in Rumford Maine dated July 7, 2020.

The project contains the third largest generation capacity of any single generation facility in Maine. Located on the site of Maine's largest waterfall --the largest falls in the United States east of Niagara Falls -- the two dams the project includes marginalize views of the falls, and under low flow conditions, currently authorized minimum flows dewater the falls and the bypass.

The response by the people of Rumford and the surrounding area to Brookfield's fencing off of walking paths that have provided views of the falls for many years was overwhelming. The people of Rumford see the falls as the heart of their community and resent being denied the views that they formerly enjoyed. Many of them posted comments to that effect to the FERC Rumford Falls Project docket.

People from the town attempted to discuss recreational study plan content at the Revised Study Plan Teleconference held April 7, 2020 - the Brookfield response was the tell them to submit a FERC Study Request. The town obliged Brookfield and submitted a FERC Study Request along with a specific whitewater study.<sup>1</sup> FERC subsequently commented on the Brookfield study plans,<sup>2</sup> specifically the Angler Creel Survey Study and the Recreational Study Plan asking for more details to be added as to how the studies were to be conducted. Based on continuing comments, FERC later requested that Brookfield conduct an aesthetic flow study<sup>3</sup> stating: "*There is insufficient information in the record to evaluate the need and benefit and cost of such releases.*" We agree and would like to point out that this does open the possibility of change to project operations. While we can assume that the project will remain run of river, change from the current minimum flows of minimum flow of 1 cfs from the Upper Dam and 21 cfs from the Middle Dam are matter to be considered by the relicensing process. This will bear on our further comments regarding study requests.

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<sup>1</sup> Town of Rumford Letter dated June 5, 2020

<sup>2</sup> FERC Letter dated May 8, 2020, Subj: Comments on Proposed Studies

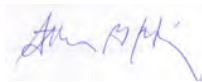
<sup>3</sup> FERC Letter dated June 2, 2020, Subj: Staff Study Request

Comments filed by the Director of Mahoosuc Pathways on July 26, 2020<sup>4</sup> detailed how the Recreational Study included in the RSP by Brookfield falls short of what the Town had requested. TU supports this filing, and that an inclusive recreational plan should be developed along the timetable specified in his filing. The Town's study request should take precedence, especially after Brookfield asked the Town to submit it.

MDIFW reiterated its study requests for Brown and Rainbow Trout Radio Telemetry and Minimum Flow Analysis in their RSP Comments.<sup>5</sup> The Brookfield assertion that there is no nexus because the project does not affect the movements of trout continues to puzzle us, especially for a project that allows such extremely low minimum flows. How the project is operated can affect trout in the project area and too little is known of how trout interact with the Rumford Falls Project. Radio telemetry is the best science available to determine this, and if project operations may be potentially affected by aesthetic considerations, they may also be for the recreational opportunity trout fishing supplies. TU continues to support these studies, as did a number of other organizations and individuals in their PSP comments including the Town of Rumford and the Maine Bureau of Parks and Lands as a review of the comment letters included with the RSP will show. Telemetry studies should be considered common practice as they have been conducted on Rapid River/Umbagog Lake and Magalloway River/Umbagog Lake, Moosehead Lake, Brassua Lake and in reservoirs or tailwaters of hydroelectric projects whose licenses are currently held by Brookfield.

Maine Council of Trout Unlimited appreciates this opportunity to comment. COVID-19 delayed our response to the RSP and we trust that the Commission will accept these comments.

Respectfully,



Stephen G. Heinz  
Maine TU Council FERC Coordinator

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<sup>4</sup> John Preble letter dated July 26, 2020, Subj: Rumford Falls Hydroelectric Project: FERC Docket 2333-001 Revised Study Plan – Recreation Study Plan Comments

<sup>5</sup> Maine Department of Inland Fisheries and Wildlife letter dated July 24, 2020



OFFICE OF THE TOWN MANAGER

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(207) 364-4576 Ext. 212  
(207) 364-5642 FAX  
town@rumfordme.org

Mr. Ryan Hansen  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

**VIA FERC SERVICE**

Reference: Docket Number: P-2333-091

July 28, 2020

Dear Mr. Hansen,

The Town of Rumford hereby responds to the submission of the applicant and specifically addresses their response to our request for a Whitewater Rafting Recreation Study. In effect the applicant's response conducts a safety and operational analysis that the Town has requested but does so on a summary basis as quoted below:

“RFH does not believe that whitewater activities are safe or commercially feasible at the Project for the reasons described below. The Town of Rumford places specific emphasis on use of the area by commercial whitewater outfitters (kayaker and rafters). However, the reach described is approximately one mile in length with only one relatively short rapid (Figures 4-2 and 4-3), providing a very limited opportunity that is unlikely to be economically viable as a commercial run. Nevertheless, the particular concern of using this reach in support of whitewater recreation is the public safety aspects given the Project's existing and likely future operations and the fact that the bypass reach, which is the primary river reach of interest for this study, serves as the spillway for the Lower Development. In addition, the steep and developed nature of this reach, including steep banks and gated and fenced private property, result in difficult access for potential boaters and rescue personnel.”

The Town believes that given the length of licensing that the proposal is worthy of in depth consideration beyond several concise paragraphs. Notably, the applicant delivers a judgment of commercial viability of the business proposal without including any supporting expert evidence or factual basis for such judgement. The applicant is not in the business of whitewater rafting nor are they a Registered Maine Guide with such experience nor do they quote or otherwise supply an opinion from such an expert.

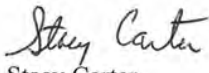
The Town notes correspondence delivered to the docket from two Registered Maine Guides, Ms. Jennifer Deraspe of Denmark, Maine and Mr. Todd Papianou of Rumford giving their opinion of business viability in support of whitewater rafting or paddling opportunities. We believe these opinions constitute information from experts that is sufficient to support the contention that local professionals in the whitewater and paddling field believe the opportunity is economically viable and therefore worthy of study.

With regards to the restoration of the West Viewing Area and the aesthetic improvements at Veterans Park the Town notes that both of these areas were original project features whose design and construction was conducted by the Rumford Falls Power Company to which Rumford Falls Hydro is the successor in both title and operating rights. The chain link fencing found through the project is either on or at the boundary of the applicant's reservation and creates a blighted appearance in its current state. At present the applicant's effort to secure the public viewing area(s) constitutes only signage and coincidental surveillance either by facility staff or other means. The applicant's own actions, present security configuration, and allowance for occasional incidental or accidental public trespass appear to support the idea that the public can safely have access to the West Viewing area and the Rumford Falls Trail without creating a serious threat to public safety or security that would mandate removal of all public access or the use of more rigorous barriers.

While the Town understands the applicant's desire to maintain operations which are as operationally simple as possible, we believe that the Rumford Falls Hydro project is now long overdue for a substantial change in operational approach that better recognizes community recreational interests, fully appreciates the importance of public access, restores the integrity of the original historical features and gives the entire project the beautification that it needs and which the Town deserves.

With our gratitude for the Commission's continued regard for our Town,

Sincerely,



Stacy Carter

Town Manager

Rumford, Maine





**Maine Department of Environmental Protection  
Biological Monitoring Program  
Aquatic Life Classification Attainment Report**

**Station Information**

<b>Station Number:</b> S-1186	River Basin: Androscoggin
Waterbody: Androscoggin River - Station 1186	HUC8 Name: Lower Androscoggin
Town: Rumford	Latitude: 44 32 36.24 N
Directions: LOCATED APPROXIMATELY 200 FT DS OF MIDDLE IMPOUNDMENT - IN BYPASS	Longitude: 70 32 46.83 W
	Stream Order: 6

**Sample Information**

<b>Log Number:</b> 2853	Type of Sample: ROCK BASKET	Date Deployed: 7/30/2020
Subsample Factor: X1	Replicates: 3	Date Retrieved: 8/27/2020

**Classification Attainment**

<b>Statutory Class:</b> C	<b>Final Determination:</b> A	Date: 11/23/2020
Model Result with P $\geq$ 0.6: A	<b>Reason for Determination:</b> Model	
Date Last Calculated: 11/23/2020	Comments:	

**Model Probabilities**

<u>First Stage Model</u>		<u>C or Better Model</u>	
Class A	0.79	Class A, B, or C	1.00
Class B	0.21	Non-Attainment	0.00
<u>B or Better Model</u>		<u>A Model</u>	
Class A or B	1.00	Class A	1.00
Class C or Non-Attainment	0.00	Class B or C or Non-Attainment	0.00

**Model Variables**

01 Total Mean Abundance	633.33	18 Relative Abundance Ephemeroptera	0.38
02 Generic Richness	58.00	19 EPT Generic Richness	27.00
03 Plecoptera Mean Abundance	7.33	21 Sum of Abundances: <i>Dicrotendipes</i> ,	0.33
04 Ephemeroptera Mean Abundance	243.00	<i>Micropsectra</i> , <i>Parachironomus</i> , <i>Helobdella</i>	
05 Shannon-Wiener Generic Diversity	3.93	23 Relative Generic Richness- Plecoptera	0.07
06 Hilsenhoff Biotic Index	3.79	25 Sum of Abundances: <i>Cheumatopsyche</i> ,	30.05
07 Relative Abundance - Chironomidae	0.11	<i>Cricotopus</i> , <i>Tanytarsus</i> , <i>Ablabesmyia</i>	
08 Relative Generic Richness Diptera	0.38	26 Sum of Abundances: <i>Acroneuria</i> ,	99.00
09 <i>Hydropsyche</i> Abundance	96.00	<i>Maccaffertium</i> , <i>Stenonema</i>	
11 <i>Cheumatopsyche</i> Abundance	20.00	28 EP Generic Richness/14	1.14
12 EPT Generic Richness/ Diptera	1.23	30 Presence of Class A Indicator Taxa/7	0.57
Generic Richness			
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	4.67		
16 Tanypodinae Mean Abundance (Family Functional Group)	12.39		
17 Chironomini Abundance (Family Functional Group)	16.41		

**Five Most Dominant Taxa**

Rank	Taxon Name	Percent
1	<i>Chimarra</i>	20.37
2	<i>Maccaffertium</i>	15.21
3	<i>Hydropsyche</i>	15.16
4	<i>Acerpenna</i>	13.26
5	<i>Paraleptophlebia</i>	4.00



**Maine Department of Environmental Protection  
Biological Monitoring Program  
Aquatic Life Classification Attainment Report**

**Station Number: S-1186**

Town: Rumford

Date Deployed: 7/30/2020

**Log Number: 2853**

Waterbody: Androscoggin River - Station 1186

Date Retrieved: 8/27/2020

**Sample Collection and Processing Information**

Sampling Organization: NORMANDEAU ASSOCIATES

Taxonomist: NORMANDEAU ASSOCIATES

**Waterbody Information - Deployment**

Temperature: 25.3 deg C  
 Dissolved Oxygen: 7.95 mg/l  
 Dissolved Oxygen Saturation: 96.8 %  
 Specific Conductance: 38 uS/cm  
 Velocity: 11.28 cm/s  
 pH: 6.6  
 Wetted Width: 28.8 m  
 Bankfull Width: 61.9 m  
 Depth: 99 cm

**Waterbody Information - Retrieval**

Temperature: 21.3 deg C  
 Dissolved Oxygen: 9.05 mg/l  
 Dissolved Oxygen Saturation: 102.1 %  
 Specific Conductance: 37 uS/cm  
 Velocity: 11.13 cm/s  
 pH: 6.7  
 Wetted Width: 29.1 m  
 Bankfull Width: 60.9 m  
 Depth: 97 cm

**Water Chemistry**

**Summary of Habitat Characteristics**

<u>Landuse Name</u>	<u>Canopy Cover</u>	<u>Terrain</u>	
Upland Hardwood	Open	Hilly	
Urban			
<u>Potential Stressor</u>	<u>Location</u>	<u>Substrate</u>	
Regulated Flows	Below Dam	Bedrock	0 %
Thermal	Below Road Crossing	Boulder	95 %
Urban Runoff		Clay	0 %
		Detritus	0 %
		Gravel	0 %
		Muck	0 %
		Rubble/Cobble	5 %
		Sand	0 %
		Silt	0 %

**Landcover Summary - 2004 Data**

**Sample Comments**



**Maine Department of Environmental Protection  
Biological Monitoring Program  
Aquatic Life Taxonomic Inventory Report**

**Station Number: S-1186**      Waterbody: Androscoggin River - Station 1186      Town: Rumford  
**Log Number: 2853**      Subsample Factor: X1      Replicates: 3      Calculated: 11/23/2020

Taxon	Maine Taxonomic Code	Count (Mean of Samplers)		Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance %	
		Actual	Adjusted			Actual	Adjusted
DugesIIDae	03010102	17.67	17.67		--	2.8	2.8
<i>Nais</i>	08020202009		0.33		CG		0.1
<i>Nais communis</i>	08020202009005	0.33			--	0.1	
<i>Isoperla</i>	09020207026	2.67	2.67	2	PR	0.4	0.4
<i>Acroneuria</i>	09020209042	2.67	2.67	0	PR	0.4	0.4
<i>Paragnetina</i>	09020209049		1.00	1	PR		0.2
<i>Paragnetina immarginata</i>	09020209049149	0.67			--	0.1	
<i>Paragnetina media</i>	09020209049151	0.33			--	0.1	
<i>Agnatina</i>	09020209050	0.67	1.00	2	PR	0.1	0.2
<i>Agnatina capitata</i>	09020209050152	0.33		2	PR	0.1	
<i>Hagenius</i>	09020302008		0.67	1	PR		0.1
<i>Hagenius brevistylus</i>	09020302008015	0.67			PR	0.1	
Libellulidae	09020306	0.33	0.33		--	0.1	0.1
<i>Baetis</i>	09020401001	3.00	3.00	4	CG	0.5	0.5
<i>Acerpenna</i>	09020401007		84.00	5	CG		13.3
<i>Acerpenna pygmaea</i>	09020401007011	84.00			--	13.3	
<i>Plauditus</i>	09020401012	4.33	4.33		CG	0.7	0.7
<i>Leucrocuta</i>	09020402011	14.67	14.67	1	SC	2.3	2.3
<i>Stenacron</i>	09020402014	1.33	1.33	7	SC	0.2	0.2
<i>Maccaffertium</i>	09020402015		96.33	4	SC		15.2
<i>Maccaffertium modestum</i>	09020402015051	96.33			--	15.2	
<i>Isonychia</i>	09020404018	5.67	5.67	2	CF	0.9	0.9
<i>Paraleptophlebia</i>	09020406026	25.33	25.33	1	CG	4.0	4.0
<i>Ephemerella</i>	09020410035	5.67	5.67	1	CG	0.9	0.9
<i>Serratella</i>	09020410037	0.67	0.67	2	CG	0.1	0.1
<i>Tricorythodes</i>	09020411038	1.00	1.00	4	CG	0.2	0.2
<i>Caenis</i>	09020412040	1.00	1.00	7	CG	0.2	0.2
<i>Chimarra</i>	09020601003	129.00	129.00	2	CF	20.4	20.4
<i>Polycentropus</i>	09020603010	10.67	10.67	6	PR	1.7	1.7
<i>Cheumatopsyche</i>	09020604015	20.00	20.00	5	CF	3.2	3.2
<i>Hydropsyche</i>	09020604016	72.67	96.00	4	CF	11.5	15.2
<i>Hydropsyche morosa</i>	09020604016030	10.67			--	1.7	
<i>Hydropsyche phalerata</i>	09020604016047	12.67			--	2.0	
<i>Macrostemum</i>	09020604018		2.67	3	CF		0.4
<i>Macrostemum zebratum</i>	09020604018054	2.67			--	0.4	
<i>Rhyacophila</i>	09020605019	0.33	0.33	2	PR	0.1	0.1
<i>Hydroptila</i>	09020607026	0.33	0.33	6	P	0.1	0.1



**Maine Department of Environmental Protection  
Biological Monitoring Program  
Aquatic Life Taxonomic Inventory Report**

**Station Number: S-1186**      Waterbody: Androscoggin River - Station 1186      Town: Rumford  
**Log Number: 2853**      Subsample Factor: X1      Replicates: 3      Calculated: 11/23/2020

Taxon	Maine Taxonomic Code	Count (Mean of Samplers)		Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance %	
		Actual	Adjusted			Actual	Adjusted
<i>Mayatrichia</i>	09020607033	0.33	0.33		SC	0.1	0.1
<i>Psilotreta</i>	09020614068	0.33	0.33	0	SC	0.1	0.1
Leptoceridae	09020618	8.00			--	1.3	
<i>Ceraclea</i>	09020618072	2.00	4.82	3	CG	0.3	0.8
<i>Oecetis</i>	09020618078	3.67	8.84	8	PR	0.6	1.4
<i>Corydalis</i>	09020701002		0.33	6	PR		0.1
<i>Corydalis cornutus</i>	09020701002002	0.33			--	0.1	
Chironomidae	09021011	0.33			--	0.1	
<i>Ablabesmyia</i>	09021011001		3.01	8	PR		0.5
<i>Ablabesmyia mallochii</i>	09021011001004	3.00			--	0.5	
<i>Labrundinia</i>	09021011008	0.67	0.67	7	PR	0.1	0.1
<i>Nilotanypus</i>	09021011012		2.34	6	PR		0.4
<i>Nilotanypus fimbriatus</i>	09021011012027	2.33			--	0.4	
<i>Pentaneura</i>	09021011014		3.68	6	PR		0.6
<i>Pentaneura inconspicua</i>	09021011014028	3.67			--	0.6	
<i>Thienemannimyia</i>	09021011020		2.68	3	PR		0.4
<i>Thienemannimyia group</i>	09021011020041	2.67			--	0.4	
<i>Diamesa</i>	09021011024	1.33	1.34	5	CG	0.2	0.2
<i>Corynoneura</i>	09021011036	0.33	0.33	7	CG	0.1	0.1
<i>Cricotopus</i>	09021011037	5.33	5.36	7	SH	0.8	0.8
<i>Eukiefferiella</i>	09021011041	0.67	0.67	8	CG	0.1	0.1
<i>Orthocladius</i>	09021011050	3.33	3.35	6	CG	0.5	0.5
<i>Rheocricotopus</i>	09021011057		5.36	6	CG		0.8
<i>Rheocricotopus robacki</i>	09021011057105	5.33			--	0.8	
<i>Synorthocladius</i>	09021011061	0.33	0.33	2	CG	0.1	0.1
<i>Tvetenia</i>	09021011065		4.02	5	CG		0.6
<i>Tvetenia vitracies</i>	09021011065113	4.00			--	0.6	
<i>Rheotanytarsus</i>	09021011072	0.33	17.75	6	CF	0.1	2.8
<i>Rheotanytarsus exiguus group</i>	09021011072127	9.33			CF	1.5	
<i>Rheotanytarsus pellucidus</i>	09021011072128	8.00			CF	1.3	
<i>Tanytarsus</i>	09021011076	1.67	1.67	6	CF	0.3	0.3
<i>Dicrotendipes</i>	09021011085	0.33	0.33	8	CG	0.1	0.1
<i>Microtendipes</i>	09021011094		2.34	6	CF		0.4
<i>Microtendipes pedellus group</i>	09021011094166	2.33			--	0.4	
<i>Polypedilum</i>	09021011102		13.73	6	SH		2.2
<i>Polypedilum aviceps</i>	09021011102181	0.33			--	0.1	
<i>Polypedilum flavum</i>	09021011102182	12.67			--	2.0	



**Maine Department of Environmental Protection  
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Taxon	Maine Taxonomic Code	Count (Mean of Samplers)		Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance %	
		Actual	Adjusted			Actual	Adjusted
<i>Polypedilum illinoense group</i>	09021011102185	0.33			--	0.1	
<i>Polypedilum ontario</i>	09021011102194	0.33			--	0.1	
<i>Helopelopia</i>	090210111114	0.33	0.33	6	PR	0.1	0.1
<i>Simulium</i>	09021012047	8.33	8.33	4	CF	1.3	1.3
<i>Atherix</i>	09021015055		0.33	2	PR		0.1
<i>Atherix lantha</i>	09021015055089	0.33			--	0.1	
<i>Hemerodromia</i>	09021016057	0.33	0.33	3	PR	0.1	0.1
<i>Dineutus</i>	09021104032	1.33	1.33	2	--	0.2	0.2
<i>Stenelmis</i>	09021113070		9.00	5	SC		1.4
<i>Stenelmis humerosa</i>	09021113070056	9.00			--	1.4	
<i>Sperchon</i>	09030107001	1.33	1.33		--	0.2	0.2
<i>Amnicola</i>	10010104013	0.33	0.33		SC	0.1	0.1

October 25, 2021

**VIA FedEx**

Megan Rideout  
Dr. Arthur Spiess  
Maine Historic Preservation Commission  
55 Capitol Street  
65 State House Station  
Augusta, ME 04333

**Subject: Rumford Falls Hydroelectric Project (FERC No. 2333-091)  
Historic Architectural Survey Report**

Dear Ms. Rideout and Dr. Spiess:

Rumford Falls Hydro LLC (RFH), a subsidiary of Brookfield Renewable, is pursuing a new license from the Federal Energy Regulatory Commission (FERC or Commission) for the Rumford Falls Hydroelectric Project (Project), a two-development hydroelectric facility on the Androscoggin River in the Town of Rumford, Oxford County, Maine. RFH has elected to use the Commission's Integrated Licensing Process for the relicensing of the Project as defined in 18 Code of Federal Regulations (CFR) Part 5.

In accordance with 18 CFR §5.15, RFH has conducted studies as provided in the study plan and schedule approved in the Commission's August 6, 2020 Study Plan Determination for the Project, including a Historic Architectural Survey. Consistent with Maine Historic Preservation Commission's (MHPC's) guidelines,<sup>1</sup> the report and forms were submitted electronically to MHPC for preliminary review on August 5, 2021. MHPC completed its preliminary review on August 6, 2021, and approved the forms in CARMA but requested a few minor changes to the report and maps. The requested edits were incorporated into the report and RFH is herein providing the enclosed final, hard-copy submission for consultation with MHPC which includes the:

1. Historic Architectural Survey Report;
2. Survey forms with photographs attached; and a
3. CD with digital images.

<sup>1</sup> Maine Historic Preservation Commission. 2013. *Above Ground Cultural Resource Survey Manual, Guidelines for Identification: Architecture and Cultural Landscapes, Federal and State Regulatory Project Review Specific*. Augusta, Maine. December. Online [URL]: [Review and Compliance Above Ground Cultural Resource Survey Manual Revised 2013 \(maine.gov\)](https://www.maine.gov/mhpc/above-ground-cultural-resource-survey-manual-revised-2013).

If there are any questions or comments regarding this submittal, please contact me by phone at (207) 755-5613 or at [luke.anderson@brookfieldrenewable.com](mailto:luke.anderson@brookfieldrenewable.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'L. Anderson', with a long horizontal flourish extending to the right.

Luke Anderson  
Manager, Licensing  
Brookfield Renewable

Enclosures (3)



## United States Department of the Interior



### FISH AND WILDLIFE SERVICE

Maine Ecological Services Field Office

P. O. Box A

East Orland, ME 04431

Phone: (207) 469-7300 Fax: (207) 902-1588

<http://www.fws.gov/mainefieldoffice/index.html>

In Reply Refer To:

February 08, 2022

Project Code: 2022-0005062

Project Name: Rumford Falls Hydroelectric Project (FERC No. 2333)

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:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2))



(c). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

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

**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/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

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

Attachment(s):

- Official Species List

## **Official Species List**

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

This species list is provided by:

**Maine Ecological Services Field Office**

P. O. Box A

East Orland, ME 04431

(207) 469-7300

## Project Summary

Project Code: 2022-0005062

Event Code: None

Project Name: Rumford Falls Hydroelectric Project (FERC No. 2333)

Project Type: Dam - Operations

Project Description: The Rumford Falls Hydro Project (FERC No. 2333) is a multi-development hydroelectric facility located on the Androscoggin River in Rumford, Maine. The Project is 44.5 MW and is operated as run-of-river.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.526190650000004,-70.53959741977519,14z>



Counties: Oxford County, Maine

## Endangered Species Act Species

There is a total of 3 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
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

### Fishes

NAME	STATUS
Atlantic Salmon <i>Salmo salar</i> Population: Gulf of Maine DPS There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/2097">https://ecos.fws.gov/ecp/species/2097</a>	Endangered

### Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

### Critical habitats

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

---

## **IPaC User Contact Information**

Name: Michelle Dufault  
Address: 970 Baxter Blvd.  
City: Portland  
State: ME  
Zip: 04103  
Email: michelle.dufault@hdrinc.com  
Phone: 2072393878

**APPENDIX E.2**  
**VEGETATION OBSERVED WITHIN THE RUMFORD FALLS**  
**PROJECT AREA (RUMFORD FALLS POWER CO. 1991)**

TABLE E.3-4  
VEGETATION OBSERVED WITHIN THE RUMFORD FALLS PROJECT AREA

Common Name	Scientific Name	Abundance <sup>1</sup>
<b>I. <u>Overstory</u> (Trees)</b>		
Eastern hemlock	<u>Tsuga canadensis</u>	U
Eastern white pine	<u>Pinus strobus</u>	C
Black willow	<u>Salix nigra</u>	C
Big-toothed aspen	<u>Populus grandidentata</u>	U
Quaking aspen	<u>P. tremuloides</u>	C
Yellow birch	<u>Betula lutea</u>	C
American white birch	<u>B. papyrifera</u>	C
Gray birch	<u>B. populifolia</u>	U
American beech	<u>Fagus grandifolia</u>	U
Red oak	<u>Quercus rubra</u>	C
Black cherry	<u>Prunus serotina</u>	U
Box-elder	<u>Acer negundo</u>	C
Red maple	<u>A. rubrum</u>	C
Silver maple	<u>A. saccharinum</u>	C
Sugar maple	<u>A. saccharum</u>	U
White ash	<u>Fraxinus americana</u>	C
American basswood	<u>Tilia americana</u>	U
Slippery elm	<u>Ulmus rubra</u> <sup>2</sup>	C
Domestic apple	<u>Pyrus malus</u>	U
<b>II. <u>Understory</u><sup>2</sup> (Shrubs &amp; Vines)</b>		
Common juniper	<u>Juniperus communis</u>	U
Willow	<u>Salix</u> spp.	C
Sweet gale	<u>Myrica gale</u>	U
Speckled alder	<u>Alnus rugosa</u>	C
Barberry	<u>Berberis</u> spp.	U
Hawthorn	<u>Crataegus</u> sp.	U
Witch-hazel	<u>Hamamelis virginiana</u>	U
Meadowsweet	<u>Spiraea latifolia</u>	C
Steeplebush	<u>S. tomentosa</u>	C



TABLE E.3-4 (cont'd)

Common Name	Scientific Name	Abundance
Blackberry	<u>Rubus allegheniensis</u>	C
Raspberry	<u>R. idaeus</u>	C
Black locust	<u>Robinia pseudoacacia</u>	C
Juneberry	<u>Amelanchier sp.</u>	U
Smooth sumac	<u>Rhus glabra</u>	C
Staghorn sumac	<u>R. typhina</u>	C
St. Johnswort <sup>3</sup>	<u>Hypericum sp.</u>	U
Striped maple	<u>Acer pensylvanicum</u>	C
Mountain maple	<u>A. spicatum</u>	C
Wild grape	<u>Vitus spp.</u>	U
Honeysuckle	<u>Lonicera sp.</u>	U
Red-osier dogwood	<u>Cornus stolonifera</u>	C
Silky dogwood	<u>C. amomum</u>	U
Huckleberry	<u>Gaylussacia spp.</u>	U
Lowbush blueberry	<u>Vaccinium vacillans</u>	U
Common lilac	<u>Syringa vulgaris</u>	U
Common privet	<u>Ligustrum sp.</u>	U
American elderberry	<u>Sambucus canadensis</u>	U
Sweet fern	<u>Comptonia peregrina</u>	U
Sheep laurel	<u>Kalmia angustifolia</u>	U
Common chokecherry	<u>Prunus virginiana</u>	U
Mapleleaf viburnum	<u>Viburnum acerifolium</u>	U
Smooth blackhaw	<u>V. prunifolium</u>	U
Hobblebush	<u>V. alnifolium</u>	U
Arrowwood	<u>Viburnum sp.</u>	U
III. <u>Ground Cover</u> (herbaceous, including emergent species)		
Mosses	<u>Bryophyta</u>	C
Horsetail	<u>Equisetum sp.</u>	U
Lady fern	<u>Athyrium Filix-femina</u>	U
Spinulose woodfern	<u>Dryopteris spinulosa</u>	C
Marginal woodfern	<u>D. marginalis</u>	U

TABLE E.3-4 (cont'd)

Common Name	Scientific Name	Abundance
Vetch	<u>Vicia</u> sp.	C
Clover	<u>Trifolium</u> spp.	U
Beggar-ticks	<u>Bidens frondosa</u>	U
Poison-ivy	<u>Rhus radicans</u>	U
Virginia creeper	<u>Parthenococcus quinquefolia</u>	C
Common milkweed	<u>Asclepias syriaca</u>	U
Evening primrose	<u>Oenothera biennis</u>	U
Wintergreen	<u>Gaultheria procumbens</u>	U
Bristley sarsaparilla	<u>Aralia hispida</u>	U
Wild sarsaparilla	<u>A. nudicaulis</u>	U
Yarrow	<u>Anchillea millefolium</u>	C
Clintonia	<u>Clintonia borealis</u>	U
Aster*	<u>Aster</u> spp.	C
Ground nut	<u>Apios americana</u>	U
Virgin's bower	<u>Clematis virginiana</u>	U
Bulb-bearing water hemlock <sup>3</sup>	<u>Cicuta bulbifera</u>	U
Thistle	<u>Cirsium</u> sp.	U
Wild cucumber	<u>Echinocystis lobata</u>	U
Joe-pye-weed	<u>Eupatorium</u> sp.	C
Purple loosestrife	<u>Lythrum salicaria</u>	U
Goldenrod	<u>Solidago</u> spp.	C
Jewelweed	<u>Impatiens capensis</u>	U
Jack-in-the-pulpit	<u>Arisaema atrorubens</u>	U
IV. <u>Aquatic Bed</u> (Submergent herbaceous)		
Fragrant water-lily	<u>Nymphaea odorata</u>	U
Bushy pondweed <sup>3</sup>	<u>Najas</u> sp.	U
Wild celery	<u>Vallisneria americana</u>	U
Pond weed	<u>Potamogeton</u> spp.	U
Floating brownleaf <sup>3</sup>	<u>P. natans</u>	U
Knotty pondweed <sup>3</sup>	<u>P. nodosus</u>	U
Bullhead-lily	<u>Nuphor variegatum</u>	U

TABLE E.3-4 (cont'd)

Common Name	Scientific Name	Abundance
Boott's fern	<u>D. x Boottii</u>	U
Hayscented fern	<u>Dennstaedtia punctilobata</u>	C
Cinnamon fern	<u>Osmunda cinnamoena</u>	U
Interrupted fern	<u>O. Claytoniana</u>	U
Royal fern	<u>O. regalis</u>	U
Sensitive fern	<u>Onoclea sensibilis</u>	C
Massachusetts fern	<u>Thelypteris simulata</u>	C
Long beech fern	<u>T. phegopteris</u>	U
Common polypody	<u>Polypodium vulgare</u>	U
Fragile fern	<u>Cystopteris fragilis</u>	U
Bracken fern	<u>Pteridium aquilinum</u>	U
Spikerush <sup>3</sup>	<u>Eleocharis sp.</u>	U
Creeping spikerush <sup>3</sup>	<u>E. palustris</u>	U
Needlerush	<u>E. acicularis</u>	U
Grass	Gramineae	C
Bluejoint <sup>3</sup>	<u>Calamagrostis canadensis</u>	U
Rush	<u>Juncus spp.</u>	U
Sedge	<u>Carex spp.</u>	C
Tussock sedge <sup>3</sup>	<u>C. stricta</u>	C
Bulrush	<u>Scirpus spp.</u>	C
Woolgrass	<u>S. cyperinus</u>	C
Common cattail	<u>Typha latifolia</u>	U
Canada mayflower	<u>Maianthemum canadense</u>	C
Bur-reed	<u>Sparganium sp.</u>	U
Smartweed	<u>Polygonum sp.</u>	U
Japanese knotweed	<u>P. cuspidatum</u>	U
Pinkweed <sup>3</sup>	<u>P. pensylvanicum</u>	U
Meadow-rue	<u>Thalictrum sp.</u>	U
Tall meadow-rue	<u>T. pubescens</u>	U
Pickernelweed	<u>Pontederia cordata</u>	U
Big-leaved arrowhead	<u>Sagittaria latifolia</u>	U
Cinquefoil	<u>Potentilla sp.</u>	U

TABLE E.3-4 (cont'd)

Common Name	Scientific Name	Abundance
Waterweed	<u>Elodea canadensis</u>	U
Coontail	<u>Ceratophyllum demersum</u>	U
Duckweed <sup>3</sup>	<u>Lemna minor</u>	U
Big duckweed <sup>3</sup>	<u>Spirodela polyrhiza</u>	U
Watershield <sup>3</sup>	<u>Brasenia Schreberi</u>	U
Bladderwort <sup>3</sup>	<u>Utricularia sp.</u>	U

<sup>1</sup> U = Uncommon, C = Common

<sup>2</sup> Also includes small trees of species listed in overstory.

<sup>3</sup> Listed only in QUEST 1987.

<sup>4</sup> Asters observed not identified to species, but determined not to be leafy-  
(bracted asters).

**EXHIBIT F**  
**GENERAL DESIGN DRAWINGS**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT F – GENERAL DESIGN DRAWINGS**

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# **Exhibit F**

## **General Design Drawings**

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### **1.0 Exhibit F Drawings**

The Exhibit F drawings will be filed with the Commission as Critical Energy Infrastructure Information (CEII) with the Final License Application.

### **2.0 Supporting Design Report**

The Project is subject to the requirements of 18 Code of Federal Regulations (CFR) Part 12 – Safety of Water Power Projects and Project Works, Subpart D – Inspection by an Independent Consultant. In 2003, the Commission instituted a new program to be used in the context of the Part 12 Independent Consultant Safety Inspection Program entitled “Potential Failure Modes Analysis” (PFMA), which is a dam- and project-safety tool intended to broaden the scope of the safety evaluations to include potential failure scenarios that may have been overlooked in past investigations. In conjunction with these endeavors, the Commission also initiated a requirement for development of a Supporting Technical Information Document (STID) for projects subject to Part 12D of the Commission’s regulations.

The STID includes sufficient information to understand the design and current engineering analyses for the Project such as:

- A complete copy of the PFMA report and associated addendums;
- A detailed description of the Project and Project works;
- A summary of the construction history of the Project;
- Summaries of Standard Operating Procedures;
- A description of geologic conditions affecting the Project works;
- A summary of hydrologic and hydraulic information;
- Summaries of instrumentation and surveillance for the Project;
- Summaries of stability and stress analyses for the Project works;
- A summary of the spillway gate analyses; and
- Pertinent dam safety correspondence.

Given that the Project is subject to Part 12D of the Commission’s regulations, the Project has been inspected by an independent consultant within the past five years and an STID has been prepared and submitted to the Commission. For reference purposes, Table 2.0-1 provides the dates for which the Project’s most recent Part 12 Safety Inspection Report and PFMA Report, which are included within the STID, were filed with the Commission. Based on these filings, a Supporting Design Report is not being included in this application for a new license for the Project.

**TABLE 2.0-1  
RECENT PART 12 SAFETY INSPECTION REPORTS AND PFMA REPORTS**

<b>Document Name</b>	<b>Filing Date</b>
Initial PFMA Report	2004
Initial STID	2004
Most Recent STID Update	March 12, 2021
11 <sup>th</sup> Part 12 Safety Inspection	December 23, 2019



**EXHIBIT G**  
**PROJECT MAPS**

**Exhibit G will be provided in the Final License Application**

**EXHIBIT H**  
**DESCRIPTION OF PROJECT MANAGEMENT AND NEED FOR**  
**PROJECT POWER**

**RUMFORD FALLS HYDROELECTRIC PROJECT (FERC NO. 2333)**  
**DRAFT LICENSE APPLICATION**  
**EXHIBIT H – DESCRIPTION OF PROJECT MANAGEMENT AND NEED**  
**FOR POWER**

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# **Exhibit H**

## **Description of Project Management and Need for Project Power**

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### **1.0 Introduction**

The Rumford Falls Hydroelectric Project (Project) is an existing hydroelectric project owned by, and licensed to, Rumford Falls Hydro LLC (RFH or Licensee). The Licensee is an independent power producer and, as such, does not provide electric service to any particular group or class of customers. The Project generates clean, carbon-free, renewable power that is currently sold to the New England wholesale market administered by the non-profit Independent System Operator (ISO) New England. ISO New England administers all significant aspects of the New England Power Pool (NEPOOL) power market including: (1) the NEPOOL Open Access Transmission Tariff; (2) the dispatch, billing, and settlement system for interchange power in NEPOOL; (3) NEPOOL energy and automatic generation control markets; and (4) the NEPOOL installed capability market.

### **2.0 Information to be Supplied by All Applicants**

#### **2.1 Plans and Ability of Owners to Operate and Maintain Project**

##### **2.1.1 Plans to Increase Capacity or Generation**

The Licensee has no current plans to increase the capacity or generation of the Project. However, as economic conditions change, RFH routinely performs periodic evaluations of generating facilities regarding potential upgrades and will continue to do so into the future.

##### **2.1.2 Plans to Coordinate the Operation of the Project with Other Water Resource Projects**

Flows on the Androscoggin River are regulated by upstream non-project and non-Rumford Falls Hydro storage reservoirs established by the 1909 Androscoggin River Company Headwater Benefits Agreement, which was updated in 1983 (Androscoggin Reservoir Company [ARCO] HBA, 1909 / 1983). The storage reservoirs are operated as seasonal storage reservoirs and have a combined capacity of approximately 644,000 acre-feet.

Additionally, there are 18 Federal Energy Regulatory Commission (FERC or Commission)-licensed hydroelectric projects on the Androscoggin River (Table 2.1-1) and more within the watershed. The Shelburne Hydroelectric Project (FERC No. 2300) is the first project upstream from the Project, and the Riley-Jay-Livermore Hydroelectric Project (FERC No. 2375) is the first dam downstream of the Project on the Androscoggin River. The operations for these Projects are established by each projects’ existing FERC licenses.

**TABLE 2.1-1  
FERC-LICENSED PROJECTS ON THE ANDROSCOGGIN RIVER**

<b>Project No.</b>	<b>Project Name</b>	<b>Authorized Capacity (kW)</b>	<b>Licensee</b>	<b>State</b>
P-3133	Errol	2,031	Brookfield White Pine Hydro, LLC	ME
P-2861	Pontook	9,600	Pontook Operating Limited Partnership and NH Dept-Enir Serv-Wtr Res Div	NH
P-2422	Sawmill	3,174	Great Lakes Hydro America LLC	NH
P-2423	Riverside	7,900	Great Lakes Hydro America LLC	NH
P-2287	J. Brodie Smith	15,000	CRPNH Smith, LLC	NH
P-2326	Cross Power	3,220	Great Lakes Hydro America LLC	NH
P-2327	Cascade	7,920	Great Lakes Hydro America LLC	NH
P-2311	Gorham	4,800	Great Lakes Hydro America LLC	NH
P-2288	Gorham	2,150	CRPNH Gorham, LLC	NH
P-2300	Shelburne	3,720	Great Lakes Hydro America LLC	NH
P-2333	Rumford Falls	44,500	Rumford Falls Hydro LLC	ME
P-2375	Riley-Jay-Livermore	19,725	Andro Hydro, LLC	ME
P-8277	Otis	10,350	Andro Hydro, LLC	ME
P-2283	Gulf Island-Deer Rips	38,133	Brookfield White Pine Hydro, LLC	ME
P-2302	Lewiston Falls	28,440	Brookfield White Pine Hydro, LLC	ME
P-3428	Worumbo	19,100	Brown Bear II Hydro, LLC	ME
P-4784	Pejepscot	13,880	Topsham Hydro Partners Ltd Pt	ME
P-2284	Brunswick	19,000	Brookfield White Pine Hydro, LLC	ME

### 2.1.3 Plans to Coordinate the Operation of the Project with Other Electrical Systems

RFH is an independent power producer and member of NEPOOL that currently sells power wholesale from the Project to ISO New England. NEPOOL is a voluntary association whose members include not only traditional, vertically-integrated electric utilities, but independent power producers such as RFH that are participating in the competitive wholesale electricity marketplace. ISO New England serves as the independent system operator of the regional bulk power system and administers the wholesale marketplace. The primary responsibilities of ISO New England are to coordinate, monitor, and direct the operations of the major generating and transmission facilities in the region. The objective of ISO New England is to promote a competitive wholesale electricity marketplace while maintaining the electrical system's integrity and reliability. ISO New England seeks to ensure both maximum reliability and economy of the bulk power supply for New England.

Therefore, the electric facilities of NEPOOL member companies are operated as if they comprised a single power system. ISO New England accomplishes this by central dispatching of available power resources and using the lowest cost generation and transmission equipment available at any given time, consistent with meeting reliability requirements. As a result of this economic dispatch, utilities and their customers realize significant savings annually. NEPOOL participants also have strengthened the reliability of the bulk power system through shared operating reserves and coordinated maintenance scheduling.

ISO New England staff constantly monitors and directs the operation of more than 300 generators and more than 7,600 miles of transmission lines in New England. ISO New England is also responsible for forecasting the various levels of daily electricity demand that will occur throughout the region and scheduling resources to meet the demand.

## 2.2 Need for the Electricity Generated by the Project

### 2.2.1 The Reasonable Cost and Availability of Alternative Sources of Power

The Project is a certified Low Impact Hydropower Institute (LIHI) facility<sup>1</sup>. Electrical output from the Project is sold wholesale into the ISO New England administered market. The replacement of

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<sup>1</sup> LIHI certified through December 9, 2028

energy and capacity provided by the Project would be met through other sources, likely to be fossil-fired generating units, whose fuel and other variable costs would be significantly higher than those of the Project over the life of the new license. As often the lowest variable cost resource among power supply alternatives, hydroelectric assets such as the Project can bid energy into the ISO New England market at lower prices than alternative resources. Therefore, loss of a low-variable cost resource such as the Project would result in upward pressure on the clearing prices in the NEPOOL market and on the prices ultimately paid by electric consumers in New England.

The Project provides carbon-free, renewable power without the emissions of air pollutants or greenhouse gases that the marginal fossil fuel plants produce. This is an increasingly important fact in New England where all six New England states have enacted legislation to reduce the dependence on fossil-fired generation through the introduction of Renewable Portfolio Standards (RPS), or similar legislation, that encourages and requires the use of renewable power sources in the state's total resource output. Many of these RPS programs include an annual escalating supply requirement to further encourage reliance on renewable power sources. These enacted legislations are designed to increase the amount of renewable power supply in the region's mix of generation resources or, alternatively, reduce the amount of fossil-fired generation as a percentage of the total resource output.

#### 2.2.2 Increase in Costs if the Licensee is not Granted a License

If RFH is not granted a license, this Project would cease to provide clean, renewable, and affordable electricity to the NEPOOL, likely resulting in an unquantified increase in costs to the New England electric consumer and greenhouse gas emissions to the environment.

#### 2.2.3 Effects of Alternative Sources of Power

##### 2.2.3.1 Effects on Licensee's Customers

This section is not applicable to the Licensee, because the Licensee is a wholesale supplier.

##### 2.2.3.2 Effects on Licensee's Operating and Load Characteristics

The Licensee is an independent power producer and, as such, does not maintain a separate transmission system which could be affected by replacement or alternative power sources.



### **2.2.3.3 Effects on Communities Served by the Project**

See the discussion above in Section 2.2.1 and Section 2.2.2 regarding the loss of generation if RFH is not granted a new license for the Project. Because the Licensee cannot predict with any certainty the actual type or location of a potential alternative facility to provide replacement power, it cannot specifically discuss potential effects on any particular community.

## **2.3 Need, Reasonable Cost and Availability of Alternative Sources of Power**

### **2.3.1 Average Annual Cost of Power**

The estimated average annual operation and maintenance cost of the Project will be provided in the Final License Application (FLA).

### **2.3.2 Project Resources Required by the Applicant to Meet Short- and Long-Term Capacity and Energy Requirements**

The Project is owned and operated by RFH, a wholesale electric power producer. Power at the Project is sold through to the New England wholesale market that is administered by ISO New England to meet consumer demands.

## **2.4 Effect of Power on Licensee’s Industrial Facility**

Use of electricity generated at the facility is limited to station service to generate electricity, as compared to other industrial uses, and thus, this section is not applicable.

## **2.5 Need of Indian Tribe Licensee for Electricity Generated by Project**

RFH is not an Indian Tribe, so this section is not applicable.

## **2.6 Impacts on the Operations and Planning of Licensee’s Transmission System**

The Licensee is an independent power producer and does not own the local transmission system. Power generated by the Project is currently transmitted to the Central Maine Power’s (local utility) transmission/distribution system. A single-line diagram for the Project, will be filed separately as Controlled Unclassified Information (CUI)/Critical Energy Infrastructure Information (CEII) under 18 Code of Federal Regulations (CFR) §388.113 in the FLA.

## **2.7 Statement of Need for Modifications**

The Licensee is not proposing any fundamental changes to the Project facilities or operation.

## **2.8 Consistency with Comprehensive Plans**

The Licensee does not have plans to modify existing Project facilities or operations.

Section 10(a)(2) of the Federal Power Act (FPA) requires FERC to consider the extent to which a project is consistent with Commission-approved federal and state comprehensive plans for improving, developing, and conserving waterways affected by the Project. In accordance with Section 10(a)(1) of the FPA, the list of Commission-approved federal and state comprehensive plans was reviewed to determine applicability to the Project (FERC 2021). Additionally, the Commission’s SD1 identified 17 comprehensive plans for the State of Maine that are potentially relevant to the Project. These plans are identified and described in Section 7.0 of Exhibit E – Environmental Report. RFH believes that the Project is consistent with the applicable comprehensive plans.

## **2.9 Financial and Personnel Resources**

The Licensee is a subsidiary of Brookfield Renewable (Brookfield), which has considerable experience operating not only the Project, but other licensed hydroelectric and water-storage projects in the region as well. As a corporation with multiple hydroelectric plants located throughout the region and the State of Maine, Brookfield either has or can acquire the necessary resources to continue the operation and maintenance of the Project.

Within the Androscoggin River area there are maintenance/operations technicians, the Administrative Assistant, the Maintenance Planner, the Water Resource Manager, Project Managers, Compliance Specialists, and the Managers. Additionally, staff can be utilized from other nearby Brookfield facilities, or contractors can be retained to undertake larger scale maintenance or upgrade projects. In addition, the Licensee has available administrative, licensing, and support personnel that are needed to maintain compliance with the terms of the license.

Information regarding the Project’s expected annual costs and value will be provided in Exhibit D of the FLA.

## **2.10 Notification of Affected Landowners**

The Licensee is proposing to update the Project Boundary to completely include the transmission lines pursuant to the Commission’s June 3, 2021 Order Amending License to Include Battery System<sup>2</sup>. If the Licensee does not own all of the land proposed for inclusion within the Project Boundary or if it is adjacent to land owned by others (abutters), the Licensee will notify the abutters of the proposed change in the FLA.

## **2.11 Applicant’s Electricity Consumption Efficiency Improvement Program**

The Licensee is an independent power producer; therefore, this section is not applicable.

## **2.12 Identification of Indian Tribes Affected by Project**

There are no Tribal lands located within the Project Boundary. The federally-recognized Indian tribes likely to be interested in the relicensing have been, and continue to be, included on the distribution list for the Project.

## **3.0 Information to be Provided by an Applicant who is an Existing Licensee**

### **3.1 Measures Planned to Ensure Safe Management, Operation, and Maintenance of Project**

The Project is operated remotely from the Licensee’s control center in Marlborough, Massachusetts, which is in the process of moving to Queensbury, New York. However, there are also three local technicians stationed at the Project from 6:00 AM to 2:30 PM, Monday through Friday, and there is also a technician on call 24 hours a day, seven days a week, if needed.

Additionally, Part 12 dam safety inspections are routinely conducted by FERC’s New York Regional Office. The Licensee completes all necessary corrective actions to address comments and recommendations arising from FERC inspections in a timely manner. The dam is inspected annually by the Licensee’s Engineering and Operations staff.

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<sup>2</sup> The Licensee will revise the Exhibit G drawings to include the entire battery storage system within the Project Boundary within 90 days of completing construction of the battery system.

RFH maintains an Emergency Action Plan (EAP) for the Project and annually verifies the accuracy of the EAP contact list to be used in the event of a dam failure at the Project. Additionally, there is an annual EAP training for Project personnel.

### 3.1.1 Existing and Planned Operation of the Project During Flood Conditions

During high flow conditions, flows in excess of the hydraulic capacity of the generating units at the Upper (i.e., 4,550 cubic feet per second [cfs]) and Lower (i.e., 3,100 cfs) Stations pass over the spillways into the Stations' bypass reaches. The Obermeyer spillway system at the Upper Dam is lowered to help manage impoundment water levels but is set to automatically deflate as a safety precaution if the Upper Dam impoundment elevation is approximately 2.0 feet or more above full pond elevation (elevation 603.74 U.S. Geological Survey Datum [USGS]). At the Lower Station Development, the headgates at the Middle Dam Canal are closed to manage the canal elevation, which directs additional flow over the spillway.

Although there is storage capacity at the headwaters of the Androscoggin River, the Project has no designated flood storage due to the Project's small reservoirs, and provides little flood attenuation capability. A more-detailed description of the existing and continued operation of the Project during normal and high-water conditions is contained in Exhibit B of this license application.

### 3.1.2 Warning Devices Used to Ensure Downstream Public Safety

RFH developed a Public Safety Plan for the Project that illustrates the location of safety signs, sirens, barriers, and other safety devices. The plan also includes measures required by FERC, or installed by RFH on its own initiative, to warn and/or protect the public in its use of Project lands and waters. The Licensee's most recently updated Public Safety Plan for the Project was filed with the Commission on November 23, 2015, and is considered CEII in accordance with the Commission's regulations, and thus, is not being distributed with this license application.

### 3.1.3 Proposed Changes Affecting the Existing Emergency Action Plan

RFH filed its most recent EAP status report with FERC on December 21, 2021. RFH does not propose any modifications to the EAP as a result of issuance of a new license for the Project.

3.1.4 Existing and Planned Monitoring Devices

The Projects are maintained by RFH in accordance with manufacturers’ instructions and industry best practices and monitored as described in the Dam Safety Surveillance and Monitoring Plan (DSSMPs) that are maintained for the Project and filed with the Commission.

3.1.5 Project’s Employee and Public Safety Record

No lost-time accidents involving employees have occurred at the Project within the period of recordkeeping for the facility. No project-related deaths or serious injuries to members of the public within the Project Boundary have occurred within the period of recordkeeping for the facility.

**3.2 Current Operation of the Project**

A description of the Project Operation is contained in Exhibit B of this license application.

**3.3 Project History**

A description of the Project History is contained in Exhibit C of this license application.

**3.4 Lost Generation Due to Unscheduled Outages**

Table 3.4-1 lists the record of unscheduled outages and related lost generation for the period 2017 through 2021.

**TABLE 3.4-1  
RUMFORD FALLS PROJECT UNSCHEDULED OUTAGES  
AND LOST GENERATION, 2017-2021**

Station*	Unit	Event Start Date & Time	Event End Date & Time	Duration (Hours)	Reason for Outage
U	4	2/15/2017 7:28	2/16/2017 15:19	32	Breaker maintenance
U	2	2/26/2017 11:32	3/8/2017 18:05	247	Rack Raker Out Of Service / Plugged Strainers
U	3	2/26/2017 11:32	3/9/2017 8:08	261	Rack Raker Out Of Service / Plugged Strainers
U	3	4/7/2017 15:02	4/10/2017 9:16	66	Intake/ Bearing Cooling Water
U	2	4/7/2017 18:13	4/9/2017 17:35	47	Intake Cooling Water Clogged

Station*	Unit	Event Start Date & Time	Event End Date & Time	Duration (Hours)	Reason for Outage
U	3	4/11/2017 11:34	4/19/2017 9:04	190	Wicket Gate Drifted Shut/ Rack Raker Out Of Service
U	1	4/12/2017 17:09	4/19/2017 8:33	159	Rack Raker Out Of Service / High Trashrack Differential
U	3	9/25/2017 8:30	11/22/2017 15:00	1,399	Headgate Will Not Open Due To Stripped Out Stem Nut
U	2	10/30/2017 15:00	10/31/2017 15:25	24	Unavailable Due To Trash Building Up
L	2	3/19/2018 5:55	3/28/2018 16:59	227	Exciter Card Failure
U	1	6/7/2018 13:11	3/25/2019 10:56	6,982	Excessive Runout on Bearing
L	2	6/11/2018 8:59	6/14/2018 12:00	75	HPU Motor Failure
U	2	7/12/2018 2:10	7/13/2018 9:35	31	Cooling / Seal Water High Temperature Clogged Strainers
L	2	11/23/2018 3:16	11/26/2018 8:38	77	Low Surge Tank Elevation - Trashrack Intake Ice
L	2	12/27/2018 5:39	1/2/2019 15:00	153	Card Component Failure
L	1	1/15/2019 14:20	2/23/2019 8:03	930	Trashrack Failure Investigation
L	2	1/15/2019 14:20	2/7/2019 9:17	547	Trashrack Failure Investigation
L	2	2/27/2019 10:42	3/1/2019 12:01	49	Tripped on Exciter Card
U	1	3/25/2019 13:30	3/27/2019 14:06	49	Excessive Runout on Bearing
U	3	4/15/2019 20:10	4/17/2019 9:16	37	Bearing Cooling Water Flow
U	3	4/20/2019 21:26	4/23/2019 14:00	65	High Trashrack Differential
L	2	7/13/2019 11:41	7/15/2019 6:40	43	Bad Exciter Circuit Card
L	2	11/24/2019 7:18	11/25/2019 12:07	29	Bad PLC Input
L	1	11/28/2019 4:51	11/29/2019 16:42	36	Bad PLC Input
L	2	11/28/2019 13:07	11/29/2019 17:35	28	Bad PLC Input
U	3	12/19/2019 18:22	12/23/2019 7:26	85	High Trashrack Differential
U	4	12/20/2019 1:30	12/23/2019 7:32	78	High Trashrack Differential
U	1	1/14/2020 12:55	3/4/2020 16:49	1,204	High Upper And Lower Guide Bearing Temperatures
L	2	2/9/2020 0:54	2/10/2020 16:16	39	Trashrack Icing
L	1	4/22/2020 11:45	4/24/2020 13:53	50	Intake Panel Inspection/Repair
L	2	4/22/2020 11:48	4/24/2020 14:19	51	Intake Panel Inspection/Repair
U	4	4/29/2020 9:45	5/20/2020 11:20	506	Broken Wicket Gate Arm
U	2	12/1/2020 10:10	12/2/2020 13:26	27	Trashrack Differential
U	3	12/16/2020 13:48	12/18/2020 10:41	45	Trashrack Icing
L	2	12/16/2020 14:43	12/17/2020 20:45	30	River Icing
U	2	12/25/2020 14:40	12/28/2020 6:45	64	Trashrack Icing

Station*	Unit	Event Start Date & Time	Event End Date & Time	Duration (Hours)	Reason for Outage
L	1	12/25/2020 16:31	12/28/2020 7:48	63	River Icing
U	4	12/30/2020 1:04	12/31/2020 9:00	32	High Trashrack Differential/ Icing
U	1	1/10/2021 3:53	1/12/2021 7:23	52	Trashrack Icing/ High Differential
U	2	1/18/2021 22:17	1/20/2021 7:06	33	Trashrack Icing/ High Differential
U	3	1/24/2021 5:33	1/25/2021 8:53	27	Trashrack Icing/ High Differential
U	4	2/1/2021 9:51	2/19/2021 11:50	434	Broken Wicket Gate
U	3	3/27/2021 5:29	3/29/2021 11:36	54	High Trashrack Differential
U	4	5/25/2021 13:25	6/8/2021 13:42	336	Re-Sample Oil Possible Arcing On Tap Changer.
U	2	6/25/2021 13:55	6/28/2021 7:55	66	Broken Exciter Breaker
U	3	9/24/2021 17:52	9/27/2021 12:05	66	Low Governor Oil Pressure
L	2	10/5/2021 7:25	10/6/2021 8:30	25	Unit Tripped Offline
U	2	10/5/2021 7:26	10/7/2021 7:12	48	Tree Branch Fell On Line 3
L	1	11/29/2021 13:43	12/2/2021 13:00	71	Exciter Issues

\* U = Upper Station; L = Lower Station

### 3.5 Record of Compliance

A review of the Licensee’s records indicates no violations of the terms and conditions of the license. In addition, the Licensee has not received any communication from FERC indicating possible noncompliance.

### 3.6 Actions Affecting the Public

RFH has strong ties with the communities in the region, as a generator of electric power and as an employer and taxpayer in the region. The Project is important locally as a clean and reliable energy source.

The Licensee generally allows public access to the Project impoundments and surrounding lands. However, if necessary, the Licensee will restrict public access to specific areas that pose a threat to public safety and Project security.

The Licensee provides public recreation access to the FERC-approved, carry-in canoe facility at the Carlton Bridge.

### **3.7 Ownership and Operating Expenses that would be Reduced if the Licensee were Transferred**

The Licensee is applying for a long-term license to continue to maintain and operate the Project. There is no competing application for the Project or proposal to transfer the Project license; therefore, this section is not applicable to the Project.

### **3.8 Annual Fees for Use of Federal or Native American Lands**

This section is not applicable to the Project since it uses no federal or Native American lands.

## **4.0 References**

Federal Energy Regulatory Commission (FERC). 2022. List of Comprehensive Plans. January. Online [URL]: List of Comprehensive Plans | Federal Energy Regulatory Commission (ferc.gov) (Accessed February 11, 2022).