DRAFT ENVIRONMENTAL ASSESSMENT FOR HYDROPOWER LICENSE

Rumford Falls Hydroelectric Project
FERC Project No. 2333-094

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, D.C. 20426

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ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
APE	area of potential effects
ATV	all-terrain vehicle
AWS	area-weighted suitability
CEQ	Council for Environmental Quality
cfs	cubic feet per second
CMP	Central Maine Power
Commerce	U.S. Department of Commerce
Commission or FERC	Federal Energy Regulatory Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEA	draft Environmental Assessment
DFA	Demonstration Flow Analysis
DO	dissolved oxygen
EFH	essential fish habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FPA	Federal Power Act
fps	feet per second
FWS	U.S. Fish and Wildlife Service
GSU	Generation step-up unit
GOM DPS	Gulf of Maine Distinct Population Segment
HPMP	Historic Properties Management Plan
HSC	habitat suitability criteria
Interior	U.S. Department of Interior
IPaC	Information for Planning and Conservation
KOP	key observation point
kV	kilovolt
Maine DACF	Maine Department of Agriculture, Conservation, and Forestry
Maine DEP	Maine Department of Environmental Protection
Maine DIFW	Maine Department of Inland Fisheries and Wildlife
Maine DMR	Maine Department of Marine Resources
Maine SHPO	Maine State Historic Preservation Officer
Maine TU	Maine Chapter of Trout Unlimited
Mg/l	milligram/liter
MHPC	Maine Historic Preservation Commission (Maine SHPO)
MW	megawatt
MWh	megawatt-hour
National Register	National Register of Historic Places
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act

NLEB	northern long-eared bat
NMFS	National Marine Fisheries Service
Ppm	parts per million
REA	Ready-for-Environmental-Analysis notice
RFH	Rumford Falls Hydro
RM	river mile
SCADA	Supervisory Control and Data Acquisition
SD1	Scoping Document 1
SD2	Scoping Document 2
SU	standard unit
THPO	Tribal Historic Preservation Officer
USGS	United States Geologic Survey

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1.0 INTRODUCTION

1.1 APPLICATION

On September 29, 2022, Rumford Falls Hydro LLC (RFH) filed an application for a new license with the Federal Energy Regulatory Commission (Commission or FERC) to continue operating its 44.5-megawatt (MW) Rumford Falls Hydroelectric Project No. 2333 (Rumford Falls Project or project).[1] The project is located on the Androscoggin River in the Town of Rumford, Oxford County, Maine (figure 1).

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The purpose of the Rumford Falls Project is to provide a source of hydroelectric power. Therefore, under the provisions of the Federal Power Act (FPA), the Commission must decide whether to issue a new license to RFH for the project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project would be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, or water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection of, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality. Issuing a new license for the Rumford Falls Project would allow RFH to continue to generate electricity at the project for the term of a new license, making electric power from a renewable resource available to its customers. We prepared this draft EA (DEA) in compliance with the

[1] A license for the project was issued to Rumford Falls Power Company on October 18, 1994, for a term of 30 years, with an effective date of October 1, 1994, and an expiration date of September 30, 2024. *See Rumford Falls Power Company*, 69 FERC ¶ 61,063 (1994). On May 24, 2006, the license was transferred to Rumford Falls Hydro LLC. *See Rumford Falls Power Company, et. al*, 115 FERC ¶ 62,210 (2006).

requirements of the National Environmental Policy Act of 1969 (NEPA),[2] the Council on Environmental Quality (CEQ) regulations for implementing NEPA,[3] and the Commission's implementing regulations.[4]

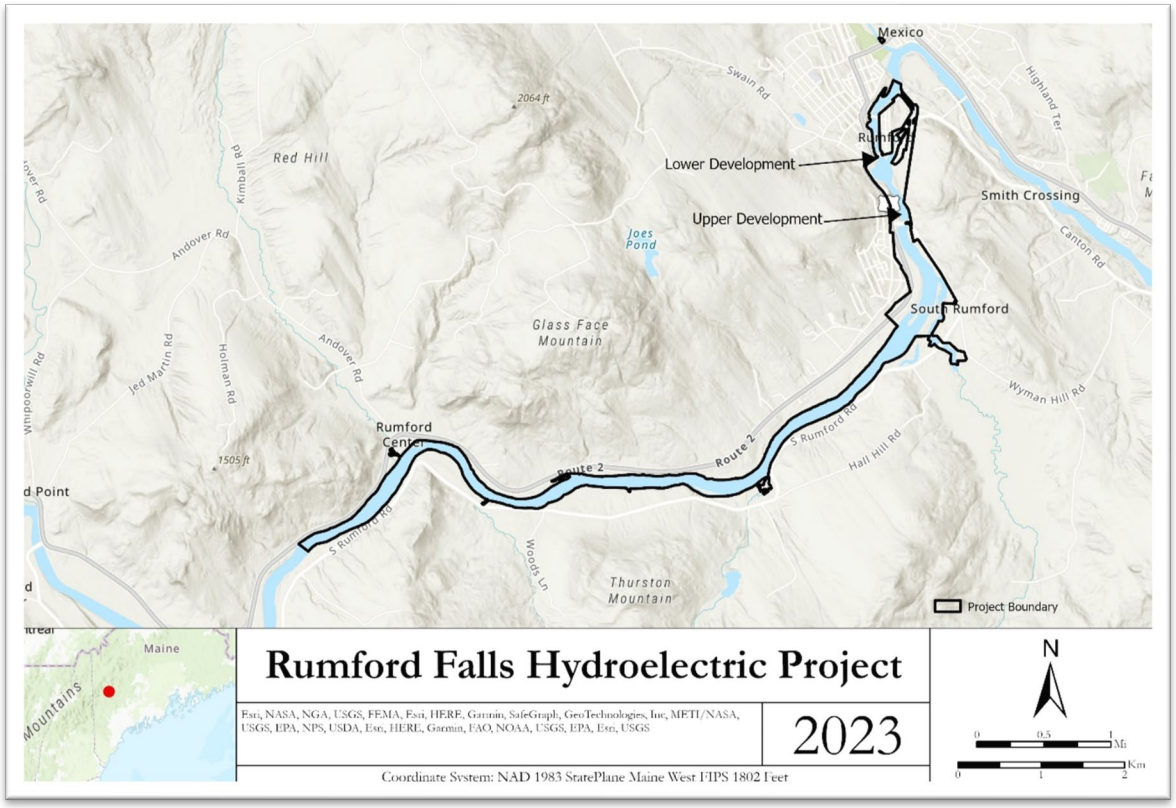

Figure 1: Location of the Rumford Falls Hydroelectric Project (Source: staff)

In this DEA, we assess the environmental and economic effects of: (1) continued project operation and maintenance as proposed by RFH (proposed action), (2) the proposed action with additional or modified measures (staff alternative), and (3) no action. The primary issues associated with relicensing the project are effects to aquatic resources, recreation, and aesthetic resources in the project area.

[2] National Environmental Policy Act of 1969, amended (Pub. L. 91-190. 42 U.S.C. §§ 4321–4347, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, Pub. L. 97-258, §4(b), September 13, 1982, Pub. L. 118-5, June 3, 2023).

[3] 40 C.F.R. Parts 1500-1508.

[4] 18 C.F.R. Part 380.

1.2.2 Need for Power

The Rumford Falls Project provides hydroelectric generation to meet part of the region's power requirements, resource diversity, and capacity needs. The Rumford Falls Project has a generating capacity of 44.5 MW and generates approximately 270,800 megawatt-hours (MWh) per year.

To assess the need for power, we look at the needs in the operating region in which the project is located. The North American Electric Reliability Corporation (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The Rumford Falls Project is located within the Northeast Power Coordinating Council's New England region (NPCC-New England) of the NERC. According to NERC's 2023 Long-Term Reliability Assessment, the net internal demand for this region is projected to increase annually by about 1.32% from 2024 to 2033. The anticipated reserve margin (i.e., the primary metric used to evaluate the adequacy of projected generation resources to serve forecasted peak load) is expected to range from 9.2% in 2033 to 27.2% in 2025. The New England region is forecasted to meet NPCC-New England's reference reserve margin from 2024 to 2033, which ranges from 10.0% in 2030 to 12.9% in 2024 (NERC, 2023).

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.

Power from the Rumford Falls Project would continue to help meet the need for power in the NPCC-New England region. The project provides power that can displace generation from non-renewable sources and contributes to a diversified generation mix. Displacing the operation of non-renewable facilities may avoid some power plant emissions, thus creating an environmental benefit.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

The licensing process for the Rumford Project is subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described in Appendix A.

1.4 PUBLIC REVIEW AND COMMENT

The Commission's regulations[5] require that an applicant consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and other federal

[5] 18 C.F.R. §§ 5.1-5.16 (2022).

statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

1.4.1 Scoping

Before preparing this DEA, we conducted scoping for the Rumford Falls Project to determine what issues and alternatives should be addressed. We issued an initial scoping document (SD1) requesting written comments on November 19, 2019. It was noticed in the *Federal Register* on November 25, 2019.[6] The following entities filed comments on SD1:

Commenting Entity	Date Filed
Town of Rumford	January 17, 2020
Maine Department of Environmental Protection	January 27, 2020
Maine Council of Trout Unlimited	January 28, 2020
Maine Department of Inland Fisheries and Wildlife	January 28, 2020

In addition to the written comments filed, we held two public scoping meetings on December 17, 2019, in Rumford, Maine, to solicit comments on the scope of issues to be addressed in our environmental document and study needs for the project. While we received several comments during the scoping process, they did not affect the content of SD1. On February 27, 2020, we issued a letter stating that a revised scoping document 2 (SD2) was not needed and that we would use SD1 to prepare the DEA.

1.4.2 Interventions

On June 26, 2023, the Commission issued a notice accepting the license application and setting August 25, 2023, as the deadline for filing protests and motions to intervene. The notice was published in the *Federal Register* on July 3, 2023.[7] The following entities filed notices of intervention or motions to intervene:

Entity	Date Filed
Maine Council of Trout Unlimited	August 4, 2023
ND Paper Inc.	August 21, 2023
Maine Rivers	August 22, 2023
Friends of Richardson Lake	August 22, 2023
American Whitewater	August 22, 2023
Conservation Law Foundation	August 25, 2023

The interventions of the Maine Council of Trout Unlimited (Maine TU) and the Conservation Law Foundation are in opposition to relicensing the project.

[6] 84 Fed. Reg. 64,883.

[7] 88 Fed. Reg. 42,705.

1.4.3 Comments on the Application

The June 26, 2023, notice also solicited comments, recommendations, terms and conditions, and fishway prescriptions. The Department of Interior (Interior) filed a reservation of authority to prescribe fishways on August 18, 2023. The following entities filed comments on the application:

Entity	Date Filed
Brie Wiseman	July 5, 2023
Town of Rumford	July 14, 2023
Maine Council of Trout Unlimited	August 4, 2023[8]
American Whitewater	August 22, 2023
Maine Bureau of Parks and Lands	August 28, 2023
Mi'kmaq Nation Tribal Historic Preservation Office	December 11, 2023

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the current license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives, and to compare the benefits and costs of measures that might be required under a new license.

2.1.1 Existing Project Facilities

The Rumford Falls project consists of two developments, the Upper Station and Lower Station Developments, which are located less than a mile apart on the Androscoggin River in the town of Rumford, Oxford County, Maine.

[8] Maine TU "asserts that the Rumford Falls Project cannot be relicensed unless conditioned as the NGOs previously stated in their USR/DLA filing," which was August 31, 2022. However, Maine TU's August 4, 2023 filing also modified certain of the August 31, 2022 recommendations. Therefore, we consider the August 31, 2022 recommendations in the environmental analysis, as modified by Maine TU's August 4, 2023 filing.

2.1.1.1 Upper Station

The Upper Station Development consists of a dam, forebay, impoundment, gatehouse, powerhouse, transmission lines, and appurtenant facilities. The concrete gravity Upper Dam consists of a 464-foot-long, 37-foot-high, 10-foot-wide ogee-type spillway section with a crest elevation of 598.63 feet.[9] The spillway section is topped with 32-inch-high, pin-supported wooden flashboards and a rubber Obermeyer spillway system.

When the flashboards are engaged, the dam impounds a reservoir that has a surface area of approximately 419 acres at a maximum pond elevation of 601.13 feet and provides approximately 2,900 acre-feet of gross storage. The dam forms one side of the 2,300-foot-long, 150-foot-wide forebay of the Upper Station; the other side of the forebay consists of a 160-foot-long masonry and concrete wall along the shoreline.

A masonry gatehouse containing eight power-operated hoists and gates, two for each penstock, regulates flow from the forebay to the penstocks. The gates are 11.5 feet wide and 14.67 feet high. Flow through the gates is screened by 3-inch, open-spaced coarse trashracks that span the length of the gatehouse. Four 110-foot-long steel penstocks convey flow to the powerhouse. Three of the penstocks have a diameter of 12 feet and the remaining penstock has a diameter of 10 feet. The powerhouse located on the western bank of the Androscoggin River, consists of two adjacent stations: (a) a 110-foot-long, 30-foot-wide, 92-foot-high Old Station, and (b) a 140-foot-long, 60-foot-wide, 76-foot-high New Station. The Old Station contains one horizontal Francis turbine (Unit 4) with a capacity of 4.3 MW and the New Station contains three vertical Francis turbines, two of which have a capacity of 8.1 MW (Units 1 and 2) and one of which has a capacity of 8.8 MW (Unit 3). The total installed capacity the Upper Station development is 29.3 MW. The minimum and maximum hydraulic capacities of the Upper Station development are 1,475 and 4,550 cubic feet per second (cfs) respectively.

A concrete-lined tailrace conveys flow from the powerhouse back to the Androscoggin River, creating a 650-foot-long bypassed reach. Power from the powerhouse is transmitted to the Generation Step-up Unit (GSU) Substation through two 11.5-kilovolt (kV) transmission lines. Line 2 is 3,250 feet long and Line 3 is 3,410 feet long.[10] The GSU is where the project power interconnects with Central Maine Power's transmission line. The Upper Station project facilities are shown in figure 2.

There are no Commission required project recreation facilities at the Upper Station.

[9] All elevations in this document are based on the North American Vertical Datum of 1988 (NAVD88).

[10] There were two other lines, designated Lines 1 and 4, formerly in use.

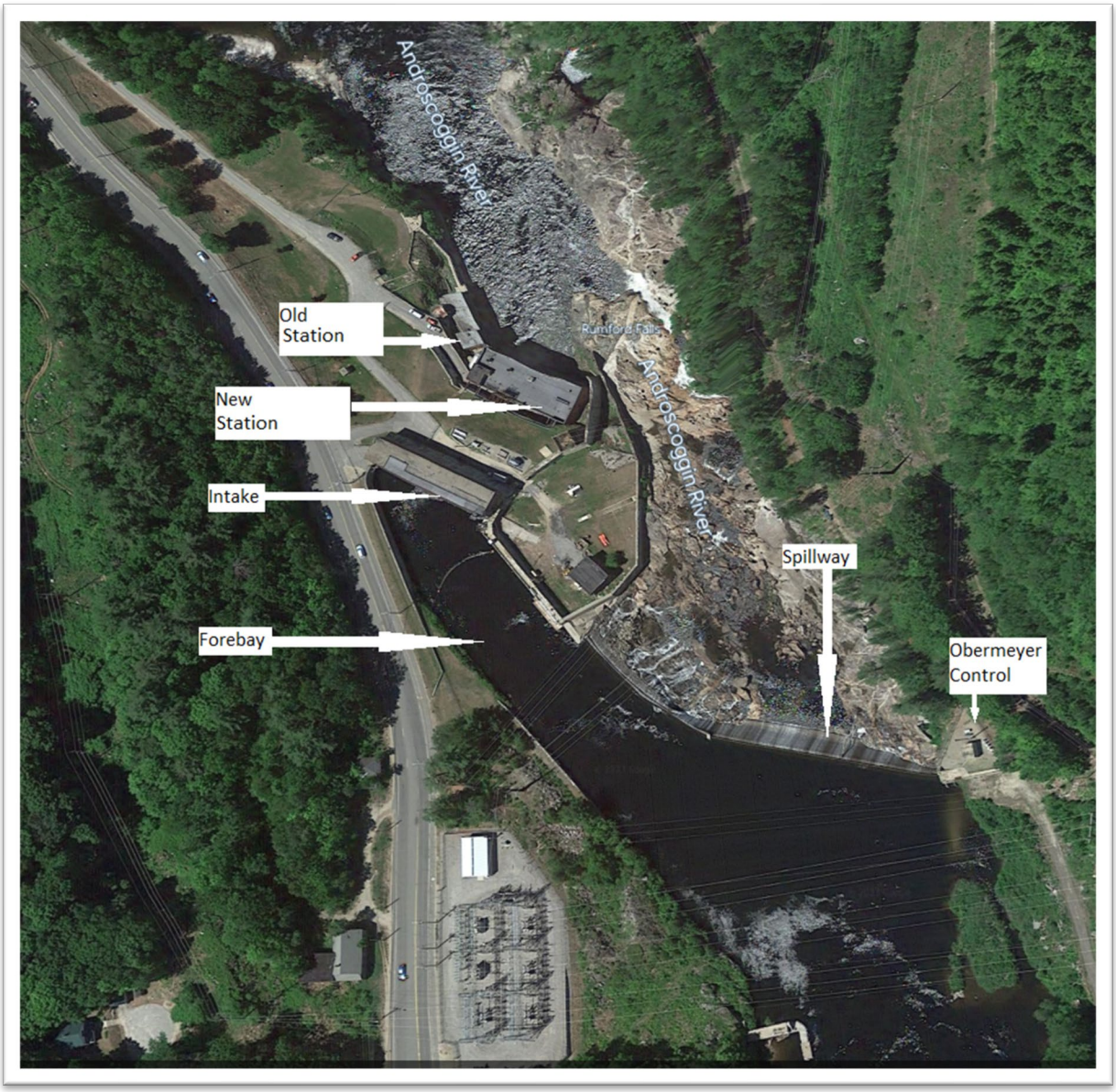

Figure 2. Upper Station Major Project Features (Source: staff)

2.1.1.2 Lower Station

The Lower Station Development consists of a dam, headgate structure, canal, impoundment, gatehouse, powerhouse, transmission line, and appurtenant facilities. The rock-filled, wood-crib, gravity-type Middle Dam is capped and reinforced with concrete and includes a 328.6-foot-long spillway. The dam is approximately 20 feet high, and the crest of the dam is fitted with 16-inch-high pin-type flashboards. The elevation at the top of the installed flashboards is 502.63 feet. A 12-inch-diameter and an18-inch-diameter pipe installed in center of the dam are used to provide a minimum flow to the bypassed reach.

The Middle dam impounds a reservoir that has a surface area of approximately 21 acres at a normal maximum pond elevation of 502.63 feet. When the flashboards are in place, the reservoir provides approximately 141 acre-feet of gross storage.

The Middle Dam diverts flow from the Androscoggin River through a 120-foot-wide headgate structure into the 2,400-foot-long, 75 to 175-foot-wide, 8 to 16-foot-deep Middle Canal. The headgate structure, located adjacent to the Middle Dam, contains 10 headgates, six of which are operated locally and four of which can be operated locally or remotely. A 120-foot-long waste weir, topped with 1-foot-high flashboards, located within the Middle Canal and perpendicular to the headgate structure, diverts floating debris back into the Androscoggin River.

The Lower Station gatehouse regulates flow from the Middle Canal to the penstocks via two motorized gate hoist and headgates. A 2.6-inch, open-spaced trashrack that spans the length of the gatehouse screens debris from the flow that passes through the gates. The gatehouse also houses the transmitter responsible for controlling the water level in the canal. Two 12-foot-diameter, 815-foot-long steel penstocks convey flow from the gatehouse to two 50.5-foot-tall, 36-foot-diameter steel surge tanks. From the surge tanks, the penstocks convey flow another 77 feet to the powerhouse.

The 78-foot-long, 40-foot-wide masonry Lower Station powerhouse is located on the eastern bank of the Androscoggin River. The powerhouse contains two vertical Francis turbines (Units 1 and 2), each with a 7.6-MW capacity. The total installed capacity of the development is 15.2 MW. The minimum and maximum hydraulic capacities of the Lower Station development are 1,450 and 3,100 cfs respectively.

A 25-foot-wide concrete-lined tailrace apron conveys flow from the powerhouse back to the Androscoggin River, creating a 2,865-foot-long bypassed reach. Power from the powerhouse is transmitted to the GSU Substation through two 1,820-foot-long, 11.5-kV transmission lines. The Lower Station project facilities are shown in figure 3.

The Lower Station has one project recreation facility: a carry-in canoe facility at the Carlton Bridge. It is located downstream of the Middle Dam at the confluence of the Androscoggin and Swift Rivers. It provides river and angling access to project waters as well as access to an ATV trail for motorized vehicle use and walking/hiking. The site, consisting of a concrete carry-in boat launch, ATV trail access, signage, eight delineated standard size parking spaces and one Americans with Disabilities Act (ADA) parking space, is unstaffed, and is open

to the public year-round. Non-project recreation facilities that are located at the Middle Dam and lower bypassed reach include J. Eugene Boivin Park, the Town of Rumford Information Center, and Chisolm Trail and Overlook. Each of these facilities are owned and maintained by the Town of Rumford. The Maine Department of Agriculture, Conservation, and Forestry (Maine DCAF) Boat Launch in the town of Mexico also provides access to the lower bypassed reach and is owned and operated by Maine DCAF.

Figure 3. Lower Station Major Project Features (Source: staff)

2.1.2 Current Project Boundary

The current project boundary encompasses approximately 607 acres and includes all the project facilities listed above in section 2.1.1. It also encloses the following non-project recreation facilities owned and operated by RFH: the West Viewing Area, the Rumford Falls Trail, Logan Brook Access, Wheeler Island, and a portion of an ATV trail on project land.

Veteran's Park is another RFH-owned park within the project boundary, but it is maintained by the Town of Rumford. Other non-project recreation facilities located within the project boundary that are owned and operated by entities other than RFH include: Hastings Boat Launch, J. Eugene Boivin Park, MDACF Boat Launch in Rumford, and Rumford Information Center. The project does not occupy federal land.

2.1.3 Project Safety

The Rumford Falls Project has been operating under the current license issued in 1994.[11] During this time, Commission staff has conducted operational inspections focusing on the continued safety of the structures, identification of unauthorized modifications, efficiency, safety of operations, compliance with the terms of the license, and proper maintenance. In addition, the project has been inspected and evaluated every 5 years by an independent consultant, and a consultant's safety report has been submitted for Commission review.

As part of the relicensing process, Commission staff will evaluate the continued adequacy of the proposed project facilities under a new license. Special articles will be included in any license issued, as appropriate. Commission staff would continue to inspect the project during the new license term to assure continued adherence to Commission-approved plans and specifications; special license articles relating to construction (if any), operation, and maintenance; and accepted engineering practices and procedures.

2.1.4 Current Project Operation

RFH currently operates the Rumford Falls developments in a run-of-river mode. RFH maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation, 601.13 feet at the Upper Dam impoundment and 502.63 feet at the Middle Dam impoundment, to minimize the fluctuations of the reservoir surface elevation. It also maintains a discharge from the projects so that, at any point in time, flows immediately downstream from the project tailraces approximate the sum of the inflows to the project reservoirs. Total average annual energy production is approximately 270,800 MWh.

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.

2.1.4.1 Upper Station

RFH provides a minimum flow of 1 cfs into the 650-foot-long bypassed reach through leakage from the flashboards. If inflow exceeds the maximum hydraulic capacity of the turbines (4,450 cfs), excess flow is passed over the pneumatically actuated Obermeyer spillway. During periods of very high flow, typically following snow melt in the spring or heavy rains in autumn, RFH collapses the Obermeyer spillway and allows spill over the dam at crest level. Also, the wooden flashboards at the Upper Dam are designed to fail during high flow events, which

[11] *Rumford Falls Power Company*, 69 FERC ¶ 61,063.

supports the passage of additional flows and the lowering of impoundment levels, eventually to the dam crest elevation once flows subside. If the flashboards are damaged during high flow events, they are replaced as soon as conditions safely allow. The Upper Station has an average annual energy production value of approximately 171,775 MWh.

2.1.4.2 Lower Station

RFH provides a minimum flow of 21 cfs into the 2,865-foot-long bypassed reach through pipes installed in center of the dam. If inflow exceeds the maximum hydraulic capacity of the turbines (3,100 cfs), excess flow is passed over the crest of Middle Dam. During periods of very high flow, portions of the flashboards on the crest of Middle Dam may break away, reducing the water level in the impoundment to the crest elevation of the dam. Any flashboards that have broken away are replaced once the high flow condition subsides. The Lower Station has an average annual energy production value of approximately 99,025 MWh.

2.2 RFH'S PROPOSAL

2.2.1 Proposed Operation and Environmental Measures

RFH proposes to:

- Continue to operate the project in a run-of-river mode where the Upper Dam and Middle Dam impoundments are maintained within 1 foot of full pond elevation (elevation 601.13 feet at the Upper Dam impoundment and elevation 502.63 feet at the Middle Dam impoundment) and flows immediately downstream from the project tailraces approximate the sum of the inflows to the project reservoirs.
- Continue to release a minimum flow of 1 cfs into the Upper Dam bypassed reach.
- Increase the minimum flow in the Middle Dam bypassed reach from 21 cfs year-round to 95 cfs from May 1 to October 31 and 54 cfs from November 1 to April 30 primarily via notched flashboards. Maintain the current minimum flow of 21 cfs during flashboard maintenance or other work that requires the Middle Dam impoundment to be drawn down temporarily below the dam crest.
- Develop an Operations Compliance Management Plan.
- Provide a total of 3 scheduled whitewater boating flow releases in the Middle Dam bypassed reach within the targeted range of 1,200 to 1,500 cfs from 10am to 3pm in June, July and August. Releases would be scheduled in consultation with the Town of Rumford and American Whitewater.
- Provide a total of 3 scheduled aesthetic flow releases in the Upper Dam bypass reach within the targeted range of 1,200 – 1,500 cfs from 10am – 4pm in June, July, and August. Releases would be scheduled in consultation with the Town of Rumford.
- Post via SafeWaters (or comparable system)[12] proposed scheduled aesthetic and whitewater boating flow events.

[12] SafeWaters is a publicly accessible website and toll-free phone line operated by Brookfield Renewables US, the parent company of RFH.

- Develop a Recreation Plan that includes provisions for: (1) continuing to maintain the existing carry-in canoe facility at the Carlton Bridge; (2) building a new whitewater boating and angler access and or steps from behind the Rumford Public Library to the river in consultation with the town of Rumford; (3) providing flood lighting of the falls at the Upper Dam station between 8 PM and 12 AM when flows are greater than 6,000 cfs; (4) reopening the West Viewing Area and operating the recreation site from dawn to dusk from April 15 to October 31, patching and repairing concrete surfaces at the facility, relocating security fencing, adding a public gravel parking area for four cars, providing a painted pedestrian walkway along the Upper Powerhouse driveway to connect the West Viewing Area with J. Eugene Boivin Park, relocating the flood lights used to light the falls from the top of the banister to below the banister to improve public safety and viewing opportunities, and installing a project/history kiosk, two picnic tables and a bench; and (5) providing year-round daytime access to the Rumford Falls Trail and improving the trail by firming the trail bed and adding wood crib steps where appropriate, installing a removable bollard or swing gate to prohibit unauthorized vehicle access, installing a bench and kiosk at the falls overlook, adding signage at the trail entrances with maps of the trail, and obtaining an easement from ND Paper for a portion of the trail that crosses their land.
- Develop a Historic Properties Management Plan that includes a framework for consultation if work is proposed within the National Register-eligible Rumford Falls Hydro and Canal District, a provision to consult with the Mi'kmaq Nation if human remains, artifacts, or any other evidence of Native American presence is discovered and continued biennial monitoring for erosion of the National Register-eligible archaeological sites in the upper dam impoundment.

2.3 STAFF ALTERNATIVE

Under the staff alternative, any new license would require RFH's proposed measures and the following modifications and additions to RFH's proposed measures:

- Develop a Whitewater Boating and Aesthetic Flow Plan, that includes: (a) providing whitewater boating flows of 1,200 to 1,500 cfs from 10:00 a.m. to 3:00 p.m to the Middle Dam bypassed reach for ten days (total) per year during the months of June, July, and August (instead of three days total as proposed); (b) providing aesthetic flows of at least 1,200 cfs from 10:00 a.m. to 4:00 p.m to the Upper Dam bypassed reach for ten weekend days (total) in June, July, and August (instead of 3 weekend days); (c) lighting the falls from the Upper Station between evening civil twilight (i.e, sunset) and 12 AM (instead of 8 PM to 12 AM); and (d) developing protocols and a schedule for determining which days boating and aesthetic flows would be released and for communicating the flows to the public.
- Include in the proposed Recreation Management Plan provisions to (1) install a grade separated sidewalk along the Upper Station powerhouse driveway within two years of license issuance instead of providing a painted walkway; (2) include a conceptual plan and schedule for improving the river access to the Middle Dam bypassed reach from the Rumford Falls Public library that includes installing the access within two

years of license issuance; (3) include a plan and schedule to the relocate Logan Brook Access closer to the boat barrier and Rumford Falls Trail that includes a conceptual plan and drawings showing: (a) the proposed access site; (b) proposed improvements (ramp, stairs, railings, and signage directing boaters to the portage trail); and (c) a schedule for constructing the facility within two years of license issuance; (4) include a recreation monitoring plan to determine if recreation needs are changing in response to the enhancements and over time; and (5) include a plan and schedule for ongoing maintenance of project recreation facilities (e.g., weekly trash removal, mowing, and snow removal).

- Avoid any tree-cutting and trimming from April 15 through October 31 to protect the Northern long-eared bat, unless the trees represent a public safety hazard.
- Execute a Programmatic Agreement (PA) for the project to protect historic properties.

2.4 STAFF ALTERNATIVE WITH MANDATORY CONDITIONS

Section 18 of the FPA states that the Commission is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretary of Commerce or the Interior. Interior, by letter filed August 18, 2023, requests that a reservation of authority to prescribe fishways under section 18 be included in any license issued for the project.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Certain alternatives to RFH's proposal were considered but eliminated from further analysis because they are not reasonable in this case. These alternatives are discussed in Appendix B.

3.0 ENVIRONMENTAL ANALYSIS

This section includes a general description of the project's vicinity, and our analysis of the proposed action and other recommended environmental measures. Tables and figures that are referred to in this section can be found in Appendix C. Sections are organized by resource area, with historical and current conditions described first. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures. Staff conclusions and recommended measures are discussed in section 5.1, *Comprehensive Development and Recommended Alternative*.[13]

[13] Unless noted otherwise, the source of our information is the final license application filed on September 29, 2022, as well as additional information filed by RFH on October 21, 2022, March 6, 2023, March 30, 2023, May 16, 2023, June 9, 2023, and November 2, 2023.

3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Androscoggin River Basin occupies 3,500 square miles in western Maine and northeastern New Hampshire. Approximately 80 percent of the drainage is in Maine and 20 percent is in New Hampshire (Maine DMR 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 (Maine DEP 2016). The Androscoggin River Basin includes approximately 1,264 miles of rivers and streams (New Hampshire DES 2008). The Project is located at river mile (RM) 80 on the Androscoggin River in the Lower Androscoggin basin. The Androscoggin River Basin contains over 200 dams, most of which are on various tributaries to the mainstem.

3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

According to the CEQ's regulations for implementing the NEPA (40 C.F.R., § 1508.7), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time, including hydropower and other land and water development activities.

Based on our review of the license application and agency and public comments, we have not identified any resources that may be cumulatively affected by the proposed operation and maintenance of the Rumford Falls Project.

3.3 PROPOSED ACTION AND ACTION ALTERNATIVES

In this section, we discuss the effects of the project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the environmental effects of the project alternatives.

Only the resources that would be affected are addressed in this DEA. We have not identified any substantive issues related to geology and soils associated with the proposed action, and therefore, these resources are not addressed in this DEA. We also consider the effects of the project on environmental justice communities. We present our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative*.

3.3.1 Aquatic Resources

3.3.1.1 Affected Environment

Water Quantity

Annual and monthly river flows for the Androscoggin River at U.S. Geological Survey (USGS) gage #01054500, located just downstream of the project tailrace, from January 1, 2000, to December 31, 2021, are provided in Table 1. Annual minimum, average, median, and

maximum flows are estimated to be 1,259 cfs, 4,410 cfs, 4,130 cfs, and 26,350 cfs, respectively. The maximum monthly median flow (9,395 cfs) is typically in April and the minimum monthly median flow is typically in September (2,099 cfs).

Water uses within the project vicinity include hydroelectric generation and industrial uses with limited recreation (i.e., fishing and boating). 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. The ND Paper outfall is located directly between the Lower Station's two turbine outflows. No additional existing or proposed uses of project waters have been identified.

Water Quality

Water quality standards and the water quality classifications of the State of Maine are established in 38 Maine Revised Statute §464-467. Waters within the project boundary are classified as Class C waters. 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, navigation, and as a habitat for fish and other aquatic life. For Class C waters, discharges must not cause the ambient temperature of any freshwater body to be raised more than 5 degrees Fahrenheit, and in no event, should any discharge cause the temperature of a freshwater body to exceed 85 degrees Fahrenheit (29.4 degrees Celsius). 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.

As a part of the re-licensing process, RFH sampled water quality constituents in the project impoundments, in the Middle Dam bypassed reach, and in the Middle Dam canal adjacent to the intake at the lower powerhouse from June to October 2020 (figures 4 and 5). No water quality data was collected in the upper bypassed reach due to safety considerations.

RFH sampled at a single, deep-water site within the Upper Dam and Middle Dam impoundments. 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. Water temperature never exceeded the state water quality standard in either impoundment. 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.

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 suggest the impoundments are poorly buffered and sensitive to acid precipitation.

Chlorophyll a ranged from less than 1.0 to 2.7 micrograms per liter (µg/L) in the Upper Dam impoundment and from less than 1.0 to 3.4 µg/L in the Middle Dam impoundment, suggesting 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.

Hourly water temperature and DO data collected from a single site in the Middle Dam bypassed reach and in the Middle Dam canal from late-July to late-September during the summer low-flow, high-temperature period showed that water temperatures were comparable between the two sites and temperature and DO meet state standards (figures 4 and 5).

Fisheries Resources

Fish Community

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 in the Upper Station Development (RM 81.0) impoundment, at RMs 88.7 and 83.1. 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. Collected species consisted of a variety of warmwater and coldwater fishes. Fish collected of interest to area anglers included smallmouth bass and a small number of brown trout. The data collected at these two sampling locations are presented in Table 2.

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 at RM 79.3. A total of 388 fish representing 10 different species were collected in a 1,000-meter sampling area at RM 78.5. The data collected at these two sampling locations are presented in Table 3.

In June of 2008, Maine DIFW 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 population in this reach of the river. Approximately 43 hours of angling was performed from June 9 through June 18, 2008. The results of the sampling effort are presented in Table 4.

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 (Maine DIFW 2014). Brown trout and rainbow trout have been the focus of Maine DIFW'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 smallmouth bass. Maine DIFW 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), one site in Rumford, and one location downstream of the project (Mexico). Fish stocking records from 2017 through 2021 are presented in Table 5.

Aquatic Habitat in the Bypassed Reaches

The 650-foot-long Upper Dam bypassed reach is composed of a high gradient cascade dominated by bedrock substrate. The gradient of the upper bypassed reach averages about 9% with steeper sections present in the falls (over 50%). There are three shallow pools within the bypassed reach that appear to be sustained by existing seepage and spill flows. The largest is located immediately below the dam spillway along with a second smaller pool. The third pool is located approximately 150 feet downstream in the middle of the Rumford Falls cascade (figure 9). There is no field data to describe the aquatic habitat in the upper bypassed reach because the reach is too dangerous to allow *in situ* sampling.

The 2,865-foot-long Middle Dam bypassed reach also consists of cascades over bedrock and boulder substrate, but at a lower gradient than the Upper Dam bypassed reach. The Middle Dam bypassed reach has an average river gradient of 1.8 percent. Under current minimum flow requirements, the channel depths throughout the Middle Dam bypassed reach are two feet or deeper providing connectivity throughout the entire reach. The Middle Dam bypassed reach is characterized by a long upper pool segment starting immediately downstream of Middle Dam. Flow proceeds downstream through an alternating series of high gradient cascade and pools prior to discharging into a lower gradient area of pool, and boulder/cobble dominated run, and riffle habitat immediately upstream of the confluence with the Lower Powerhouse tailrace.

3.3.1.2 Environmental Effects

Run-of-River Operation and Impoundment Levels

Flow fluctuations during the operation of hydropower projects can affect shoreline littoral and riverine habitat in impoundments and downstream reaches by exposing them to periodic dewatering, making them unsuitable for aquatic biota. Flow fluctuations can also increase erosion of project shorelines, particularly in a project's reservoir.

RFH proposes to continue to operate the project in a run-of-river mode where it maintains the Upper Dam and Middle Dam impoundments within 1 foot of full pond elevation (elevation 601.13 feet at the Upper Dam impoundment and elevation 502.63 feet at the Middle Dam impoundment) and 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).

Staff Analysis

Continuing to operate the project in run-of-river mode would minimize fluctuations in the project impoundment and in the Androscoggin River downstream of the project. Maintaining stable impoundment levels would continue to protect shoreline habitat and fish and other aquatic organisms that rely on near-shore habitat in the impoundment for spawning, foraging, and cover. Stable impoundment levels would also reduce any erosion of streambanks. Minimizing flow fluctuations downstream of the project would also continue to protect aquatic habitat and minimize the potential for fish stranding.

Upper Dam Bypassed Reach Minimum Flows

Except for 1 cfs from leakage, the project diverts up to 4,550 cfs of the river flow to the Upper Development powerhouse for generation, bypassing 650 feet of the Androscoggin River. The diversion of water can reduce available aquatic habitat and affect water quality in the bypassed reach.

RFH proposes to continue to release a minimum flow of 1 cfs into the Upper Dam bypassed reach.

Maine TU recommends that RFH release a minimum flow of 250 to 500 cfs from the Upper Dam at all times to: (1) re-establish a sustainable fisheries and aquatic habitat; (2) reduce aquatic species mortality by providing oxygenating, constant flows through several dewatered pools, and (3) create a downstream spawning path for American eels and other indigenous aquatic organisms. In support, Maine TU states that the current 1 cfs minimum flow dewaters the Upper Falls under most flow conditions, creating stagnant isolated pools that will not likely meet state numeric or narrative water quality standards. Maine TU states, based on its observations of similar habitat conditions in the Penobscot River basin, that with sufficient flow these pools can support abundant aquatic life.

American Whitewater supports Maine TU's comments and recommends that RFH be required to "increase minimum flows in the project bypassed reach to support aquatic, recreational, and aesthetic values". Therefore, we assume American Whitewater also recommends a minimum flow between 250 and 500 cfs be provided in the Upper Dam bypassed reach.

In comments on the license application filed on February 17, 2023, Maine DIFW states that "there is limited aquatic habitat potential in the Upper Dam bypass; therefore, from the perspective of aquatic habitat only, MDIFW has no objections to the current and proposed minimum flow of 1 cfs."

Staff Analysis

Under RFH's proposed 1 cfs continuous minimum flow, there would be no change to available aquatic habitat and water quality conditions in the Upper Dam bypassed reach. Flows in the bypassed reach exceed 1 cfs because flows typically exceed the maximum hydraulic capacity (4,550 cfs) of the Upper Development on average 27.8% of the year, from a high of

78.9% during the month of April to a low of 3.9% in September (Table 6). However, flows can drop to 1 cfs almost any time of the year except March, April, and May.

Increasing the minimum flow from 1 cfs year-round to 250 or 500 cfs would increase the wetted area within the bypassed reach, provide a more consistent and higher flow to the pools, may improve water temperatures and DO levels within the pools, and increase habitat connectivity between the pools and downstream habitats. Some benthic high-gradient invertebrate specialists could colonize the cascade under higher minimum flows.

However, habitat conditions within the bypassed reach are poor for fish and most aquatic invertebrates at any flow. Increasing minimum flows would not significantly improve habitat conditions for fish because of the high gradient, rapid velocities, turbulence, shallow depths, and limited refuge areas within the bedrock substrate (Figure 6). The only fish that are expected to inhabit the pools within the bypassed reach would be those passing over the dam during spill events. This is because the pools are located upstream from a large cascade (better known as Rumford Falls) and are unreachable to most fish and other aquatic organisms when swimming upstream. Rumford Falls is the historic, natural barrier to anadromy on the Androscoggin River (MDMR and MDIFW 2017). Some of the fish that pass over the dam during spill events could become trapped in the pools as spill flows recede. The higher flows recommended by Maine TU would prevent stranding because the pools within the bypassed reach would remain wetted allowing for volitional egress to downstream areas. However, there is no information on the record to suggest that stranding of fish in the pools is common, affecting resident fish species, or affecting downstream eel migration.

Maine TU states that the cribworks on West Branch of the Penobscot River downstream of Ripogenus Dam is a stream reach with similar habitat characteristics to that of the upper bypassed reach at Rumford Falls. Maine TU reasons that since a recent study showed that the West Branch of the Penobscot supported varied and numerous aquatic species, the upper bypassed reach at Rumford Falls should as well with sufficient flow.

However, our review of the available information indicates that the West Branch of the Penobscot is not comparable to the Upper Dam bypassed reach because of the difference in stream gradient. The Penobscot reach has an average gradient of 3.6%, much lower than the Upper Dam bypassed reach which averages about 9% near the dam with much steeper sections present in the falls (over 50%). The steeper, high-energy habitat within the Upper Dam bypassed reach limits its utility to aquatic fauna (see elevation profiles in Figures 7 and 8).

Middle Dam Bypassed Reach Minimum Flows

RFH proposes to provide a minimum flow into the Middle Dam bypassed reach of 95 cfs from May 1st to October 31st and 54 cfs from November 1 to April 30. The minimum flow would be provided primarily via notched flashboards. If flashboard maintenance or other work that requires the Middle Dam impoundment to be drawn down for short periods below dam crest, RFH would maintain a minimum flow during this period of 21 cfs using the existing 12-inch-diameter and 18-inch-diameter pipes installed in center of the dam.

In support of the proposed flows, RFH states "the lower proposed flow release of 54 cfs during the winter and early spring periods are biologically justified by the target species' natural responses to cold water temperatures, and because the trout fishery is hatchery-dependent and spring spawning by stocked trout is unlikely to occur in the Middle Dam bypass reach. The dominant game fish in the bypass reach, adult resident trout and bass, are all known to prefer deeper and slower water habitats under winter conditions with low water temperatures." RFH states that "fish inhabiting the upstream pool above the cascade have an abundance of deep/slow habitat at virtually all bypass flows, and the lower section of the bypass with its shallow/swift boulder and cobble habitat are not expected to provide suitable overwintering habitat for adult trout or bass, especially during winter spill events or periods of ice formation. Instead, those fish would be expected to move downstream into the deeper and slower pool habitats adjacent to the powerhouse or downstream of the Swift River confluence." RFH adds that physical habitat characteristics and the amount of suitable habitat within the bypassed reach for target species (smallmouth bass, rainbow and brown trout, and benthic macroinvertebrates) continues to increase up to the maximum measured or modeled flows for most target species. Even lower gains in physical habitat as measured by cross-sectional areas (ft^2) or wetted perimeter (ft) are evident, with changes less than 5 percent per 20 cfs flow increment for all flows over 80 cfs (table 9) RFH states that "gains start to "become limited" as flows exceed 100 cfs, and gains per 20 cfs drop to just 5 percent at flows less than 200 cfs for the combined species area-weighted suitability (AWS) [14] curve" (figure 12).

Maine DIFW did not file any recommendations in response to the Commission's notice that the project is ready for environmental analysis. However, in comments on the license application filed on February 17, 2023, Maine DIFW states that it is concerned that the current and proposed minimum flows "for the Middle Dam bypass are extremely low and unacceptable given the drainage area, physical character, length, area, biota, and fisheries potential of the bypass reach." Maine DIFW states that based on its site observations and experience with evaluating aquatic habitats, flows between 250 and 500 cfs appear to be appropriate to protect and enhance the habitat for fish and other aquatic organisms and enhance angling. Maine DIFW adds that "although the licensee reports that the combined flow from the 12- and 18-inch diameter pipes and seepage through the dam equates to approximately 21 cfs, information from the Flow Study demonstrated that this combined flow to be approximately 54 cfs. Therefore, rather than improving low flow conditions from November 31 to April 30 as suggested in the license application, operation under the proposed flow is exactly the same as it has been under the current license for this seasonal period."

Maine TU recommends that RFH provide a minimum flow between 250 and 500 cfs below the Middle Dam as recommended by Maine DIFW to protect and enhance the habitat for fish and other aquatic organisms, remain reasonably wadable, as well as improve recreational use and aesthetics.

[14] Area Weighted Suitability is an index of suitability in units of ft^2 /ft. Although AWS is expressed in units of ft^2 /ft, it is a weighted measure of habitat suitability, and not an area (Herrick 2021).

Staff Analysis

RFH evaluated minimum flow/habitat relationships through: (1) an *in situ* Demonstration Flow Analysis (DFA), and (2) one-dimensional hydraulic habitat modeling. RFH mapped habitats and measured physical attributes (velocity, substrate/cover, depth, water surface elevations, wetted permitter, and cross-sectional area) at five cross-sectional transects (two in pools, two in riffles, and one in a slow riffle/shallow pool habitat) in the Middle Dam bypass reach (figure 10). Studied target flows included 21 cfs, 95 cfs, 165 cfs, and 240 cfs. A flow of 400 cfs was also assessed only using 1-D modeling at the request of Maine DIFW. Habitat suitability criteria (HSC) were developed for the target species: 1) adult smallmouth bass, 2) adult rainbow trout, 3), adult brown trout, and 4) benthic macroinvertebrates (BMI).

RFH currently releases 21 cfs into the lower bypassed reach via the two minimum flow pipes through the dam. However, additional leakage from the flashboards and pressure releases from vertical drain holes likely result in higher base flows. During the DFA, the 21 cfs release combined with leakage resulted in a total base flow of about 54 cfs. However, leakage can vary; therefore, we cannot predict with any accuracy whether the 54 cfs accurately represents the base flow under the minimum flow release required by the current license as suggested by Maine DIFW. Therefore, we use 21 cfs as the baseline to compare habitat changes between flows.

The DFA analysis shows that for most species the relative amount of habitat classified as suitable increases from the low flow of 54 cfs to the high flow of 265 cfs. The increase in suitable habitat is most pronounced from 54 cfs to 90 cfs, except for smallmouth bass, which showed relatively little change across all four flows from a minimum of 73.6 ft to a maximum of 91.5 ft, an increase of just 24%. BMI showed the most pronounced increase in habitat with flow (a 122% increase overall), which is largely due to the increase in wetted area as flows increase and the BMI's high suitability for shallow water and a wide range in suitable velocities (Table 10).

1-D modeling results also indicate that increasing flows change wetted permitter, cross-sectional area, and stream width, but average depth and velocity do not change dramatically across flows. Table 9 shows average habitat values across all transects. At a flow of 20 cfs, the Middle Dam bypassed reach averages 124 feet-wide with a wetted perimeter of 133 feet[15] and a cross-sectional area of 349 ft^2. The average depth of the reach is 2.6 feet and the velocity averages 0.13 feet per second (fps). Increasing the minimum flow to 54 cfs would increase the average stream width by about 20 feet, the wetted perimeter by 20 feet, and the cross-sectional area by about 37 ft^2. The average depth of the reach would increase by 0.2 feet and the velocity would increase 0.14 fps. Increasing the minimum flow to 95 cfs would increase the average stream width by about 33 feet, the wetted perimeter by 34 feet, and the cross-sectional area by 62 ft^2. The average depth of the reach would increase by 0.2 feet and the velocity would increase by 0.23 ft/sec. Increasing the minimum flow to 200 cfs would increase the average stream width by about 58 feet, the wetted perimeter by 60 feet, and the cross-sectional area by 108 ft^2. The

[15] Stream width is a straight distance measurement from one bank to the other, while the wetted perimeter is the perimeter of the cross-sectional area that is in contact with water.

average depth of the reach would increase by 0.3 feet and the velocity would increase by 0.46 ft/sec. A minimum flow of 250 cfs would increase the average stream width by about 64 feet, the wetted perimeter by 66 feet, and the cross-sectional area by about 123 ft^2. The average depth of the reach would increase by 0.4 feet and the velocity would increase 0.54 fps. RFH did not collect habitat data or assess flows higher than 400 cfs; therefore, there is no field data or estimated measurement of aquatic habitat characteristics under this flow. The closest flow that can be analyzed quantitatively is 400 cfs. A minimum flow of 400 cfs would increase the average stream width by about 72 feet, the wetted perimeter by 75 feet, and the cross-sectional area by about 172 ft^2. The average depth of the reach would increase by 0.5 feet and the velocity would increase 0.84 fps.

Increasing flow in the bypassed reach also results in changes in area-weighted suitability (AWS) for adult small mouth bass, adult rainbow trout, adult brown trout, and BMI (table 10). RFH reported the habitat changes at different flows averaged across the target species to give an overall aquatic habitat value. Increasing the flow from 21 to 54 cfs would increase the AWS for small mouth bass from 10.6 ft^2/ft to about 24.9 ft^2/ft, the AWS for rainbow trout from 1.1 ft^2/ft to about 5.9 ft^2/ft, the AWS for brown trout from 2.6 ft^2/ft to about 4.5 ft^2/ft, and the AWS for benthic invertebrates from 5.4 ft^2/ft to about 16.1 ft/ft^2. AWS averaged across all species would increase from 4.9 ft^2/ft to about 12.9 ft^2/ft.

Increasing the flow from 21 to 95 cfs would increase the AWS for small mouth bass from 10.6 ft^2/ft to about 33.6 ft^2/ft, the AWS for rainbow trout from 1.1 ft^2 /ft to about 11.1 ft^2/ft, the AWS for brown trout from 2.6 ft^2/ft to about 5.4 ft^2/ft, and the AWS for benthic invertebrates from 5.4 ft^2/ft to about 23.3 ft^2/ft. AWS averaged across all species would increase from 4.9 ft^2/ft to about 18.3 ft^2/ft.

Increasing the flow in the Middle Dam bypassed reach from 21 to 200 cfs would increase the AWS for small mouth bass from 10.6 ft^2/ft to about 44.2 ft^2/ft, the AWS for rainbow trout from 1.1 ft^2/ft to about 18.7 ft^2/ft, the AWS for brown trout from 2.6 ft/ft^2 to about 6.7 ft/ft^2, and the AWS for benthic invertebrates from 5.4 ft/ft^2 to about 35.2 ft/ft^2. AWS averaged across all species would increase from 4.9 ft^2/ft to about 26.2 ft^2/ft.

Increasing the flow in the Middle Dam bypassed reach from 21 to 250 cfs would increase the AWS for small mouth bass from 10.6 ft^2/ft to about 46.3 ft^2/ft, the AWS for rainbow trout from 1.1 ft^2/ft to about 20.5 ft^2/ft, the AWS for brown trout from 2.6 ft/ft^2 to about 7.1 ft/ft^2, and the AWS for benthic invertebrates from 5.4 ft/ft^2 to about 38.6 ft/ft^2. AWS averaged across all species would increase from 4.9 ft^2/ft to about 28.1 ft^2/ft.

Increasing the flow in the Middle Dam bypassed reach from 21 to 400 cfs would increase the AWS for small mouth bass from 10.6 ft^2/ft to about 51.5 ft^2/ft, the AWS for rainbow trout from 1.1 ft^2/ft to about 26.8 ft^2/ft, the AWS for brown trout from 2.6 ft/ft^2 to about 8.1 ft/ft^2, and the AWS for benthic invertebrates from 5.4 ft/ft^2 to about 47.8 ft/ft^2. AWS averaged across all species would increase from 4.9 ft^2/ft to about 33.5 ft^2/ft. Again, we are not able to extrapolate the habitat values at flows above 400 cfs, but we can conclude that they would be higher than those modeled at 400 cfs.

Seasonality of Minimum Flows

RFH proposes to provide a minimum flow into the Middle Dam bypassed reach of 95 cfs from May 1 to October 31 and 54 cfs from November 1 to April 30 annually. RFH states that "water temperatures dictate to a large degree the type of microhabitats trout will utilize, and water temperatures through November are expected to be very cold in comparison to spring through fall temperatures." RFH states that "it is our opinion that holdover trout would be occupying winter habitat in November; therefore, extending higher flows to December is not justified".

Maine DIFW states that "the spring-fall minimum flow should be extended to December 1 due to Maine DIFW fall stocking programs and the river's year-round angling regulations. In 2023, Maine DIFW stocked brown, brook, and rainbow trout into locations in Bethel, Gilead, Rumford, and Mexico between September 26, 2023, and December 2, 2023.

Staff Analysis

A review of Maine DIFW annual stocking reports for 2021, 2022, and 2023[16] indicates that the state stocks rainbow trout in the Androscoggin River at Rumford and Mexico in the spring and brook and brown trout in the fall. The state stocked 125 brook and 125 brown trout at Rumford on October 5 and 21, 2021, October 5 and 11, 2022, and September 26 and October 11, 2023. The state stocked 125 brook and 125 brown trout at Mexico on October 15 and October 12, 2021, October 5 and October 11, 2022, and September 26 and October 11, 2023. Extending minimum flows to December 1 would increase the amount of aquatic habitat available to stocked brook and brown trout as discussed above. However, during the Angler Creel Study (discussed in section 3.3.4.1), RFH counted 99 anglers fishing in the lower bypassed reach from April through November of 2022. Only two of these observations took place in November representing 2% of the annual count. In October, RFH only observed three anglers in the lower bypassed reach representing 3% of the annual count. With 95% of the angling in the lower bypassed reach taking place from April through September and current annual stocking efforts ending in mid-October, there would be little benefit from providing higher flows and more aquatic habitat for the stocked trout to December 1 for the purposes of improving angling. Further, these stocked trout and smallmouth bass present in the lower bypassed reach are like to be seeking over-wintering habitat downstream of the lower bypass reach as the temperatures drop in November.

Operations Compliance Management Plan

[16] See Fish Stocking Report: Fishing: Fishing & Boating: Maine Dept of Inland Fisheries and Wildlife.

RFH proposes to develop and implement an Operations Compliance Management Plan to confirm that the project is operated in compliance with a new FERC license. RFH did not provide additional details as to the content of the plan.

Staff Analysis

It is essential that a licensee be able to demonstrate compliance with all operational requirements of a project. Compliance with the proposed run-of-river operation and proposed minimum flow releases could be achieved through the development and implementation of an operation compliance monitoring plan. This plan would detail how RFH plans to monitor compliance with the operational requirements of any license that may be issued. This plan would also detail how RFH would notify both the Commission and resource agencies of any non-compliance events.

Additional Water Quality and Benthic Macroinvertebrate Sampling

Maine TU again recommends that RFH be required to conduct additional water quality and benthic macroinvertebrate sampling in the Upper Dam bypassed reach, the power canal, and downstream from the project outflow. Maine TU claims that the water quality and benthic macroinvertebrate sampling conducted by RFH is "incomplete and inadequate."

Staff Analysis

Maine TU requested that RFH conduct additional water quality and macroinvertebrate sampling in these same areas in response to the filing of RFH's updated study report. Commission staff issued a study plan determination[17] which found that the water quality and benthic macroinvertebrate study required by the Commission's approved study plan and conducted by RFH adequately characterized the water quality in the project area. As discussed at length in the determination, there would be no benefit to requiring RFH to conduct additional water quality and benthic macroinvertebrate sampling in these areas.

3.3.2 Terrestrial Resources

3.3.2.1 Affected Environment

The project is located in a forested basin lined with mixed evergreen and deciduous trees. The basin is largely undeveloped except for the floodplain where the town of Rumford is located.

Lands within the project boundary are limited predominately to the riparian habitats along the river and developed areas associated with the town of Rumford. Approximately 465 acres of wetlands are present within the project boundary. These lands can support a variety of wildlife common to Maine, including deer and waterfowl. Two known bald eagle nests are present several miles outside the project boundary. Invasive species occur in the region, but no

[17] *See* Commission staff's November 21, 2022, Study Plan Determination.

site-specific information regarding the presence or prevalence of terrestrial invasive plant species is available and there is no evidence that terrestrial invasive species are currently affecting project operation or other environmental resources.

3.3.2.2 Environmental Effects

Flow fluctuations during operation of hydropower projects can affect wetland and riparian habitat by exposing them to periodic water level changes, decreasing the area of such habitat and its wildlife value. The applicant proposes to continue to operate the project in a run-of-river mode with inflow approximating outflow. Mi'kmaq Nation recommends that any wetland restoration involve the planting of black ash trees because of its cultural importance to the Tribe.

Staff Analysis

There is no evidence that project operation adversely affects wildlife habitat or wetlands. The small fluctuations in reservoir levels and downstream flows that result from operating the project in a run-of-river mode are not expected to result in large-scale changes in the composition, structure, or function of existing riparian plant and animal communities. Because there are no effects on wetlands and no proposed wetland restoration, we have no basis for recommending that RFH plant black ash trees. Continuing to operate the project in a run-of-river mode would maintain existing wildlife habitats upstream and downstream of the project.

3.3.3 Threatened and Endangered Species

On November 17, 2023, staff used the FWS's Information for Planning and Consultation (IPaC) database to determine whether any federally listed species could occur in the vicinity of the project.[18] According to the IPaC database, the endangered Atlantic salmon and its critical habitat, the threatened northern long-eared bat (NLEB), and the candidate monarch butterfly may occur within the project boundary or be affected by the project. In addition, FWS proposed on September 14, 2022, to list the tricolored bat as endangered. Based on FWS range information, tricolored bats may also occur within the project boundary or be affected by the project. Effects on threatened and endangered species are discussed in Appendix D, *Biological Assessment* (BA). In the BA, staff conclude that relicensing the project as proposed with staff-recommended measures is not likely to adversely affect the Gulf on Maine Distinct Population Segment (GOM DPS) of Atlantic salmon. We also conclude that relicensing the Rumford Falls Project with tree-cutting restrictions from April 1 through October 31, is not likely to adversely affect the NLEB. Similarly, we conclude that relicensing the Rumford Falls Project with tree-cutting restrictions from April 1 through October 31 is not likely to jeopardize the continued existence of the tricolored bat and is not likely to adversely affect this species. We conclude that the project will have no effect on the monarch butterfly and will not jeopardize its continued existence.

[18] *See* Commission staff's November 17, 2023 Memorandum on FWS's Endangered Species List Update; *see also* FWS, IPaC, https://ecos.fws.gov/ipac/ (last visited November 17, 2023).

3.3.4 Recreation Resources

3.3.4.1 Affected Environment

There are numerous all-season outdoor recreation opportunities located within approximately 50 miles of the project, including opportunities for alpine, nordic, and backcountry ski and snowboarding; snowmobiling and ATV trails; hiking; camping; boating; whitewater boating; and angling. Some of the additional recreation opportunities within a 2-hour drive of the project include the Mahoosuc Public Land Reserve, Umbagog National Wildlife Refuge, Mount Blue State Park, the Bigelow Preserve, and the White Mountain National Forest in Maine and New Hampshire. Commercial whitewater trips are available through a variety of outfitters on the Androscoggin River upstream of the project in New Hampshire.

Project Recreation Facilities and Use

Recreation at the project includes hiking/walking, riding an ATV (all-terrain vehicle), boating, and scenic viewing. The current license requires the operation and maintenance of one recreation facility, a carry-in canoe facility at the Carlton Bridge, which is located on the eastern edge of the Swift River just upstream of its confluence with the Androscoggin River (figure 13 labeled Carry-in Launch). The Carlton Bridge Carry-in Launch is located within the project boundary and provides river and angling access to the Swift and Androscoggin Rivers as well as access to an ATV trail for motorized vehicle use and walking/hiking. The site consists of a concrete carry-in boat launch, signage, eight delineated standard size parking spaces and one ADA parking space. It is unstaffed and open to the public year-round.

There are several recreation facilities located within and adjacent to the project boundary that are on land owned by RFH but are not required by the current license that provide river access, scenic views, and hiking/walking opportunities: Rumford Falls Trail, Logan Brook Access, West Viewing Area, an ATV trail maintained by the local ATV club, Veterans Park maintained by the town of Rumford, and the undeveloped Wheeler Island. Other recreation sites not owned or maintained by RFH that provide water access, picnic tables and benches, hiking, scenic views and information include Hanover Boat Launch, [19] Hastings Boat Launch, Maine Department of Agriculture, Conservation and Forestry (Maine DACF) Boat Launches in Rumford and Mexico, J. Eugene Boivin Park, Rumford Information Center, and Chisholm Park and Trail.

Recreation Studies

RFH conducted an Angler Creel study, a Whitewater Boating study, and a Recreation study in 2022.

Angler Creel Study

[19] This site was required under Article 408 of the existing license, but was sold by RFH to the MDIFW and the Town of Hanover in 1999-2000.

The angler creel survey consisted of instantaneous counts and angler interviews at 12 sites upstream and downstream of the project: 6 sites at the Upper Dam impoundment, 3 sites at the Middle Dam bypass reach, and 3 sites along the Androscoggin River downstream of the project (Figure 21). Instantaneous counts and interviews occurred across all sites over 26 days from April through November 2022. Counts were conducted to derive an estimate of angler use, while the 101 angler interviews were conducted to: (1) derive estimates of angler success (harvest, catch rates, etc.); (2) collect biometric data on harvested fish; and (3) provide information related to the overall status of the fishery.

Angler use at the project is primarily shore based, with the highest number of angler observations recorded from the Chisholm Overlook Site, followed by the Maine DACF boat launch in Rumford and the Maine DACF boat launch in Mexico. Most of the fish were caught at the Maine DACF boat launch in Rumford (47%) on the Upper Dam impoundment. J. Eugene Boivin Park and Chisholm Overlook also contributed a large of portion of the total reported catch (33%). Smallmouth bass was the predominant fish species captured at all areas. Catch rates for rainbow trout, brown trout, brook trout and smallmouth bass were 0.2, <.01, 0.3, and 0.8, respectively.[20]

Whitewater Boating Study

RFH conducted a whitewater boating study to evaluate the feasibility of whitewater boating in the Androscoggin River between the Middle Dam and the Maine DACF Boat Launch in Mexico using the Whittaker et al. (2005) methodology. The study assessed flows of 800 cfs, 1,500 cfs, and 2,000 cfs.

The Middle Dam bypass reach drops in elevation from 479 feet above mean sea level (msl) to 423 feet above msl over approximately 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 10,534 feet, having an average river gradient of 0.1 percent (6.5 feet per mile). There is little historical information regarding whitewater opportunities or utilization in the Middle Dam bypassed reach.

During the on-land assessment portion of the study, participants agreed that the put-in at J. Eugene Boivin Park and the Middle Dam was too dangerous due to the proximity of Middle Dam and the Class V rapids not visible from Middle Dam; therefore, the put-in location was moved downstream to behind the Rumford Public Library and the Rumford Town Hall (Figure 18).

The Middle Dam bypass reach can be divided into an upper and lower reach. The upper reach provides Class IV and V (figure 16) rapids suitable for experienced to expert boaters using kayaks and closed canoes. The lower reach consists of Class I to III (figure 17) rapids and

[20] Catch rate = number of fish caught per hour of effort.

suitable for a wide range of skill sets and a variety of boats (e.g., kayaks, canoes, stand-up paddleboards). The study participants agreed that 800 cfs was the minimum flow needed to boat the upper reach, and 800 or 1,000 cfs was the minimum acceptable flow, defined as the lowest flow at which you would return to paddle it. The optimal range of flows for the upper reach was between 800 cfs and 1,800 cfs depending on the participants skill level and craft. Most of the participants agreed that 1,200 cfs was the minimum acceptable flow for the lower reach, with one participant noting 1,500 cfs as a minimum acceptable flow. The optimal range of flows for the lower reach varied depending on the participant's skill level and craft. For most participants the optimal range of flows started at 1,200 cfs and went to either 1,500 cfs, 2,500 cfs, or 3,000 cfs. Two participants indicated that most flows would be safe for the lower reach, and two other participants noted 1,800 cfs and 3,000 cfs as the highest safe flow. The study participants reached the consensus that 1,500 cfs was the optimal flow for the entire bypass reach, would be ideal for many skill levels and craft types, and would potentially attract people to the reach.

Study participants also evaluated characteristics of four put-in and two take out locations: the J. Eugene Boivin Park, an informal access trail behind the Rumford Public Library ("Public Library Trail Access"), informal trail access behind Rumford Town Office ("Rumford Town Office Access"), informal trail access adjacent to River St./Hartford St. ("River St./Hartford St. Access"), MDACF Boat Launch - Mexico, and the Carry-In Launch/Carlton St. (figure 18). The Public Library Trail Access and Rumford Town Office Access is the most accessible put-in locations and the MDACF Boat Launch - Mexico is the preferred take-out location.

Recreation Study

The Recreation Study was conducted during the peak recreation season of 2022. The recreation study consisted of: (1) a Recreation Facility and Inventory Assessment, (2) a Stakeholder Site Visit and Focus Group, (3) Recreation Observations, and (4) Visitor Online Surveys. The study objectives were to: (1) inventory the existing recreation facilities; (2) assess the condition of the facilities; (3) characterize recreation use and future recreation demand; and (4) collect user feedback on existing or future recreation needs.

The online survey had 98 participants. The most popular activities at the project are walking (35 participants), relaxing (25 participants), picnicking (20 participants) and hiking (19 participants). Only 6 participants reported fishing using a boat, and even fewer reported shoreline fishing (5 participants). Approximately half (43 participants) have used a hand-carried watercraft at the project area. Of those, only 2 participants reported experiencing difficulty with river access.

The Recreation Facilities and Inventory Assessment assessed the following facilities: The ATV trail, the Carlton Bridge Carry-in Launch, Chisolm Overlook, Rumford Information Center, J. Eugene Boivin Park, Hanover Boat Launch, Logan Brook Access, Rumford Falls Trail, Wheeler Island, and the West Viewing Area. Results of the Recreation Facilities and Inventory Assessment and the Stakeholder Focus Groups indicate that the Logan Brook Access, the West Viewing Area and Rumford Falls Trail need some improvement. The other recreation facilities were determined to be in good condition. Most of the respondents (70%) rated the

surveyed facilities as totally acceptable or acceptable in terms of accessibility, crowding, available amenities, parking, condition of recreation facilities, and overall experience.

Based on the results of the recreation survey, the most visited recreation facility in the past year was the Rumford Information Center and J. Eugene Boivin Park, followed by the Rumford Falls Trail. Less than 10 survey respondents visited Logan Brook Access in the past year. The West Viewing Area is currently closed to the public and therefore does not have visitation information. Focus group participants noted that the low visitation at the West Viewing Area and Logan Brook Access are due to the closure of the West Viewing Area and insufficient amenities at the Logan Brook Access. The overall experience at the project vicinity was generally rated as acceptable or totally acceptable at all recreation facilities surveyed.

The survey also showed that most (60%) of the visitors resided locally in Rumford, Mexico, or Bethel, Maine—all towns within Oxford County. The study concluded that given the current utilization of the existing recreational facilities within the project boundary and vicinity coupled with the estimated steady population decrease in Oxford County, the recreational facilities meet current demand and are expected to meet future demands.

3.3.4.2 Environmental Effects

Recreation Facility Enhancements

RFH proposes to develop a Recreation Management Plan (Recreation Plan) within 6 months of license issuance that includes continued maintenance of the Carlton Bridge access and improvements to the West Viewing Area, Rumford Falls Trail, and access to the Middle Dam bypass reach for boating and angling. Maine TU and others support the proposed improvements but also recommend improvements to the Logan Brook and Carlton Bridge access as discussed below.

West Viewing Area

RFH proposes to reopen the west viewing area by removing the existing chain link fencing and gates from around the perimeter of the viewing area; repair the concrete deck and railing; provide a dedicated public gravel parking area for four vehicles with an ADA parking space; install an ADA-compliant, approximately 4-foot-wide and 195-foot-long path of crushed shale or other comparable material from the parking area to the overlook; and install a project/history kiosk, two picnic tables, and a bench. To ensure public safety, RFH proposes to move the flood lights that illuminate the falls during certain flow conditions from their current position on top of the concrete banister to below the banister; install chain link security fencing below the West Viewing Area deck below the line of site from the viewing area to the falls and Middle Dam impoundment; install an ornate 8-feet-high black aluminum fencing from an area adjacent to the West Viewing Area along the top of the steep river embankment; install wooden guard rails in front of the public parking and employee parking areas; and provide a painted pedestrian walkway along the existing Upper Station powerhouse driveway from the public sidewalk on Route 2 to the viewing area. A stop sign would be installed at either end of the Upper Station powerhouse driveway, creating a one-lane traffic flow (Figure 19). RFH would

allow public access to the viewing area from April 15 to October 31, dawn to dusk, consistent with the hours of operation at the Town of Rumford's J. Eugene Boivin Park.

The Maine BPL and the Town of Rumford support most of RFH's proposal. However, the Town of Rumford recommends that RFH install a grade separated sidewalk instead of a painted walking zone along the existing Upper Station powerhouse driveway. A resident of Rumford, Ms. Wiseman, recommends installing a pergola in the broad expanse of grass leading to the river. Ms. Wiseman maintains that with some tree thinning, it would provide scenic and photographic opportunities, and would extend the time spent in Rumford potentially generating additional economic activity. She adds that, in the early 1900s Rumford had a pergola near Chisolm Overlook, which is located in the Middle Dam bypass reach with views of the Androscoggin River approximately 400 feet from the Rumford Public Library; therefore, this would maintain the historic character of the town of Rumford.

Staff Analysis

The West Viewing Area is an overlook located at the Upper Dam powerhouse that provides views of the falls, Middle Dam impoundment, downtown Rumford, and Black Mountain. RFH closed the site in 2014 for security reasons. Input provided during the recreation study indicated a strong desire to reopen the viewing area which is close to the J. Eugene Boivin Park, one of the more popular recreating areas at the project. As part of the recreation study, RFH reconsidered its security requirements and determined that the site could be safely reopened by moving the chain link fencing to below the viewing area and installing a more aesthetically pleasing fence along the steep embankment above the tailrace.

Reopening the West Viewing Area would provide the public with close views of the falls, particularly during the proposed aesthetic flow releases (discussed later). The concrete deck, railing, and wooden staircase need repair and better maintenance. Repairing and maintaining these facilities would enhance public access, safety, and enjoyment of the site.

Relocating the flood lights that currently illuminate the falls from their current position on top of the concrete banister to the inside of the banister would eliminate a public safety hazard related to electrical conduits and the lighting equipment and would be more aesthetically pleasing because in their current position the fixtures slightly block the view of the falls.

The addition of a history kiosk, two picnic tables, a bench, and dedicated public parking with ADA access are consistent with needs identified during the recreation study and would enhance public access and enjoyment of the site. Currently, parking is limited to eight employee/contractor parking spaces, none of which are ADA accessible.

The addition of pergola would provide shaded seating for visitors and a public meeting location. However, RFH proposal to install two picnic tables and a bench at the West Viewing Area would also provide seating and a public meeting location. Additionally, Veteran's Park, located nearby, hosts a pavilion that would meet the needs of residents or visitors seeking such a seating structure.

Pedestrians trying to access the West Viewing Area from J. Eugene Boivin Park and other areas within the Town of Rumford must share the Upper Powerhouse driveway with vehicles servicing the powerhouse, and once the new public parking is complete, visitors parking in the new public parking lot. The paved powerhouse driveway is about 740 feet long, 16 feet wide. RFH's proposed 4-foot-wide dedicated walkway along the eastern side of the driveway and the addition of the two stop signs would create a one-way flow of traffic, which would improve the safety for pedestrians, particularly during busy times or scheduled events. Installing a 4-foot-wide grade separated sidewalk that connects to the existing Town sidewalk would provide safer access for pedestrians and drivers, while achieving the same benefits as the painted pedestrian walkway. However, it would be more expensive and would still likely require one way traffic flow because constructing the sidewalk would occupy part of the relatively narrow road, which would no longer be able to accommodate two passing vehicles easily.

RFH proposes to provide public access to the viewing area from April 15 to October 31, dawn to dusk because these hours are consistent with the hours of operation at the Town of Rumford's J. Eugene Boivin Park, it reduces maintenance requirements which can be difficult in the winter during heavy snowstorms and icing created by the mist from the project tailrace, and it reduces security concerns at night. No one has suggested that the proposed operating hours are not appropriate. Views of the falls at night and during the winter are available from nearby J. Eugene Boivin Park. RFH's proposed operating hours are reasonable given RFH's noted concerns with maintenance and security.

RFH did not provide a schedule for completing the proposed improvements or for maintaining the site. Including these elements in the recreation plan would facilitate Commission administration of the license and ensure timely construction of improvements to meet project recreation needs.

Rumford Falls Trail

RFH proposes to maintain the portion of Rumford Falls Trail from Route 108 to South Rumford Road[21] and to implement the following improvements to the alternate trail segment constructed by RFH in 2021: (1) make the trail bed firmer and add wood crib steps to steep portions where appropriate; (2) install a removable bollard or swing gate to prohibit unauthorized vehicles from driving on the elevated trail segment; (3) install a bench and kiosk with information about the history of the project at the falls overlook; and (4) add signage at both entrances that includes a trail map (Figure 20). RFH proposes to provide access year-round,

[21] Rumford Falls Trail is a 1.6-mile loop consisting of sidewalks and a gravel road. The trail begins at the visitor center off of Bridge Street in downtown Rumford near the Middle Dam impoundment. Heading in a counterclockwise direction from the visitor center, the route follows the sidewalk along U.S. Route 2, then onto South Rumford Road where it crosses the Androscoggin River. On the opposite side of the bridge, a gated gravel road heads northwards (downstream) parallel to the river for about 0.7 mile where it intersects Bridge Street (ME Route 108). The trail heads left on the sidewalk and continues over two additional bridges and past Veteran's Park before returning to the visitor center parking lot (Maine Trail Finder 2019).

dawn to dusk, with snow removal or snow management limited to the service road from route 108 and South Rumford Road that is needed for RFH employee access and project operations. A portion of the alternate trail route is owned by ND Paper with deeded access to RFH for 5 years. The current agreement expires in 2026. RFH proposes to obtain a new easement for that section of the trail.

Staff Analysis

The Rumford Falls Trail is a popular trail through the project that offers views of the falls. Access to a portion of the trail on RFH property was closed in 2021 due to public safety concerns. However, RFH completed an alternate trail in spring 2022 that parallels the closed portion of the existing trail, but higher up on the hillside. RFH created a new overlook on the trail that provides views of the falls.

The enhancements proposed by RFH would improve the public's recreation experience by improving footing along the alternate trail, controlling erosion, providing a resting spot to enjoy the falls, and educating the public of the amenities provided by the project. The proposed bollard or swing gate would allow for pedestrian and bicycle use of the trail while preventing motorized vehicle access that could accelerate erosion and would be incompatible with the purposes of the trail.

The ability of RFH to maintain some sections of Rumford Falls Trail is contingent upon an access agreement with ND Paper which expires in 2026. Because the trail would provide project-related recreation it should be included in the project boundary and RFH would need the necessary rights to maintain the trail for term of any license that is issued. Any new license issued for the project would include a standard license article that would require the licensee to obtain all the necessary rights to operate the project within 5 years, which would include those necessary to operate and maintain the trail.

RFH does not provide a schedule for completing the recreation improvements or routine maintenance of the trail. This information is needed to facilitate Commission oversight of the license and to ensure timely construction of improvements to meet project recreation needs.

River Access Enhancements at the Middle Dam Bypassed Reach

To enhance river access for boating and angling, RFH proposes to "build and maintain access and/or steps from behind the Rumford Public Library to the ledges and cascades near the middle of the bypassed reach." Because the improvements would be on lands owned by the Town of Rumford, RFH proposes to develop the details of the access improvements in consultation with the Town of Rumford. The existing trail is approximately 150 feet long, has an estimated slope of 14 percent, and is made up of a combination of soil, sand and gravel, cobble, and then small boulders and exposed bedrock outcrops as you approach the river embankment. RFH states that the proposed access trail may include "a combination of limited natural trail access near the upper portion of the access trail adjacent to the [library] parking lot, wood crib and gravel and possibly stone steps, all comporting with the current landscape as much as

feasible." RFH also states that for cost purposes it assumed "that railings will be included where needed or feasible, and likely made of wood materials."

Citing Maine DIFW concerns for increased access for angling, the Maine BPL states that the proposed improvements do not appear sufficient to meet the need for angling access. Therefore, Maine BPL recommends additional access improvements in the Middle Dam Bypassed Reach and canal areas that could include the addition of stairways and/or safety railings to enhance access to existing and potentially improved fishing areas. Maine TU recommends the restoration of the traditional 'fisherman's trail' to access the tail of the lower falls during favorable flow conditions. Without elaboration, American Whitewater recommends RFH improve access around project facilities and provide access to the river both above and below whitewater boating features.

Staff Analysis

RFH's proposed access improvements would enhance whitewater boating and angling opportunities. Neither Maine BPL, Maine DFW, nor Maine TU identify what access improvements would be necessary to further increase angling access, other than Maine BPL suggesting the need for stairways or safety railings. RFH's proposal includes the need for stairways and safety railings if appropriate, which would be determined during the final design of the trail. It is unclear where Maine TU recommends trail restoration should occur. There is no information in the record that describes the traditional 'fishman's trail."

The Angler Creel Survey identified 12 locations used for boat or shoreline fishing access, with Chisholm Overlook being amongst the most popular in the Middle Dam Bypassed Reach, yet it has very little use overall (1% of use across sites). In the Recreation Study, Chisholm Overlook was considered in good condition with little need for improvement and is located approximately 400 feet from the Rumford Public Library. Coupled with the proposed access at Rumford Public Library, there is nothing in the record to indicate that these two access points would not be sufficient to meet current demand for angling access. Higher minimum flows could improve the fishery in the lower dam bypass reach increasing future demands on angling access. Periodic monitoring of recreation and angling would help determine if additional improvements for angling access are warranted.

Although RFH proposes to work with the Town of Rumford on access improvements, it does not provide a schedule for doing so, what the improvements would consist of, or when such improvements would be made. One year from license issuance should be sufficient to consult with the Town of Rumford, Maine BPL and Maine DIFW to identify the needed improvements and develop a plan for installing the access improvements. Constructing the improvements within two years of license issuance would ensure that access for whitewater boating and angling are available to use the proposed flow releases.

Maine BPL and American Whitewater do not provide sufficient information to assess the benefits or costs of their recommended measures.

Logan Brook Carry-in Access and Portage

Maine TU recommends that "the Logan Brook Access be relocated to the Upper Impoundment above the Upper Falls". Maine BPL recommends a formal river access point be provided closer to the boat barrier or further upstream on the inlet on the same RFH-owned parcel as the current Logan Brook Access. Maine BPL states that there appears to be sufficient space for the development of a new facility, including space for limited designated parking. Maine BPL adds that this would provide a shorter portage around the dams than the present route and relocates a portion of the portage route off of roadsides and sidewalks. Maine BPL states that with the formalization and possible relocation of the Logan Brook carry-in access, it would shorten the portage by over a mile. Maine BPL recommends that recreation enhancements include the installation of signage and other necessary marking of the portage route/trail.

Staff Analysis

The Logan Brook Access is an informal, unmaintained carry-in launch located on Logan Brook, a tributary to the Androscoggin that enters the upper reservoir about 0.2 miles above the upper development boat barrier. The access is located about 300 feet upstream of the tributary confluence with the upper dam reservoir (Figure 15). The take-out is a short walk to roadside parking along South Rumford Road via sand/gravel pathway. Currently, boaters portaging around the upper and lower developments exit the river at the Maine DACF boat launch in Rumford, nearly 2 miles upriver from the boat-barrier. Boaters then put in either at the Carlton Bridge Carry-In Launch or the Maine DACF Boat Launch in Mexico, resulting in a 3.6-mile portage around the project, much of which is boatable. Much of the portage includes roads and public sidewalks.

The Logan Brook Access was the least used of all the recreation facilities inventoried. Participants in the Recreation Study found the Logan Brook Access to be poor (no amenities as it is an informal site) and dangerous given the proximity to the road and lack of parking, forcing visitors to park on the shoulder of the road.

RFH owns all of the shoreline in the upper impoundment, including a large tract between the Logan Brook access and the boat barrier. Developing a take-out closer to where the tributary joins the upper impoundment and adding signage directing boaters to the portage trail would improve visibility of the take-out. This would enhance public enjoyment and safety by shortening the portage route and limiting time spent on public roadways and sidewalks.

Carlton Bridge Carry in Launch

RFH proposes to continue maintaining the carry-in boat launch under the Carlton Bridge. Maine TU recommends that the Carlton Bridge carry-in launch and parking be improved to continue to provide access to the trout fishing opportunities downstream at the confluence of the Swift River and the Androscoggin River as well as upstream in the Swift River.

Staff Analysis

The Carlton Bridge Boat Launch is used for angling and carry-in boat access. By floating downstream to its confluence with the Androscoggin River, boaters can access the lower dam tailwaters. The facility has low use and focus group discussions noted that due to low flows in the Swift River, users tend to access the river using the Maine DACF Boat Launch in Mexico instead. Maine TU does not describe what improvements to the launch and parking are needed. Therefore, we cannot determine the costs and benefits of their recommendation. However, given the consistent low use of the site and the availability and popularity of the nearby Mexico launch, continued operation of the site is warranted, but we have no basis for recommending any improvements.

Whitewater Boating

Project operation reduces flows in the Middle Dam bypass reach below those that are considered boatable. To enhance whitewater boating opportunities in the Middle Dam bypass reach, RFH proposes to provide, in addition to exceedance events (i.e., when inflow exceeds the station's hydraulic capacity), scheduled flow releases in the range of 1,200 to 1,500 cfs for three days (total) from June through August from 10:00 a.m. to 3:00 p.m. The release schedule would be determined in consultation with Town of Rumford and American Whitewater. As discussed above, RFH proposes to build and maintain access and/or steps from behind the Rumford Public Library to improve river access for boating and angling and to provide public information regarding flow releases in the Middle Dam bypass reach via SafeWaters (or a comparable system), a publicly accessible website and tollfree phone line operated by RFH. The posted information would include notification of the scheduled whitewater boating flow releases an any cancellations in the event sufficient flow or circumstances arise in which the flow releases cannot be provided.

The Town of Rumford and Maine BPL support RFH's proposed flows but recommends that a total of ten weekend days from June through August be provided from 10:00 a.m. to 3:00 p.m. Maine TU recommends a minimum flow of 1,500 cfs to the Middle Dam bypassed reach from 10:00 a.m. to 5:00 p.m. Friday through Sunday during the months of July, August and September for whitewater boating. American Whitewater recommends that RFH provide weekly scheduled whitewater boating flows in the bypassed reach during the recreational boating season whenever sufficient inflows are present. American Whitewater supports RFH's proposal to provide real-time public whitewater flow information.

Staff Analysis

Whitewater Boating Flows

The whitewater boating study indicates that with sufficient flow, the Middle Dam bypass reach can be boated and could attract boaters. The Middle Dam bypass can be divided into two reaches providing different experiences and requiring different skill levels. A flow of 800 cfs was considered the minimum acceptable flow for the upper reach and 1,200 cfs the minimum acceptable flow for the lower reach. While flows of 800 cfs are considered boatable in the upper reach, it created conditions that might not be safe and were not sufficient to attract boaters. The study participants reached the consensus that 1,500 cfs was the optimal flow for the entire bypass

reach. Flows suitable for angling, which was also evaluated during the study, was rated better in the bypass reach at 800 cfs than at 1,500 cfs.

Based on flow data from 2000 through 2021, the monthly average flows in the Androscoggin River typically exceed the hydraulic capacity of the Lower Station (i.e., 3,100 cfs) in all months except in August and September (See Table 8). However, those exceedances rarely reach levels that result in spills that are considered boatable. Table 12 presents the percentage of time flows in the Middle Dam bypass reach equaled or exceeded the study target flows (800 cfs, 1,500 cfs, and 2,000 cfs) assuming the Lower Station is operating at maximum capacity (3,100 cfs) from 2000 through 2021. During the typical peak whitewater boating months of June, July, August, and September, 800 cfs was available 39.8 percent, 17.4 percent, 10.0 percent, and 6.2 percent of the time, respectively. A flow of 1,500 cfs was available 29.4 percent of the time in June, 12.6 percent in July, 7.6 percent in August, and 3.9 percent in September. A flow of 2,000 cfs is available 24.5 percent, 10.3 percent, 6.0 percent, and 3.3 percent of the time, respectively.

RFH is unlikely to be able to provide boating flows without reducing flow available for generation, particularly if they are to be provided on a given day and for the specified duration of the flow event. RFH's proposal would ensure that 3 days of acceptable to optimal boating flows are provided sometime between June and August but would not improve boating conditions in September when inflow is typically the lowest and whitewater boating demand is still relatively high. RFH could also meet all three required releases early (i.e., during June when inflows are typically higher) such that flows during much of the summer recreating season may not be enhanced. To provide the scheduled boating flow would likely require RFH to reduce flows diverted for generation for 5 hours for 3 days (15 hours total).

Providing flows between 1,200 and 1,500 cfs over 10 weekend days would ensure that acceptable to optimal boating flows are provided during a weekend day when the public is most likely to be able to enjoy the boating flows and if spread out over the summer on about every other weekend during the summer recreating season. It would likely require RFH to prioritize boating flows over generation on the identified weekends. This would require RFH to reduce flows for generation for 50 hours total.

Maine TU's recommended flow release of 1,500 cfs from 10:00 a.m. to 5:00 p.m. Friday through Sunday during the months of July, August and September, would provide optimal boating flows on all weekends during the summer months. The recommended flows would require RFH to reduce flows for generation for 36 days for 7 hours (252 hours) each year.

Providing 1,200 to 1,500 cfs boating flows would create less desirable angling opportunities in the Middle Dam bypassed reach. RFH's proposed flows would conflict less (3 days) flows for anglers than the Town of Rumford and Maine BPL recommended flows (10 days) all of which would be scheduled for the weekend when fishing demand is greatest. The creel survey showed that most (66%) shoreline angling occurs during the weekends. Providing boating flows every weekend (36 days) as recommended by TU would cause greater conflicts with angling opportunities.

American Whitewater recommends that RFH provide weekly scheduled whitewater boating flows in the bypassed reach during the recreational boating season whenever sufficient inflows are present; however, American Whitewater does not recommend a specific boating flow or duration. Without specific flow recommendations, staff cannot evaluate the costs or benefits of this recommendation.

According to the American Whitewater database, there are 59 other documented whitewater opportunities within 60 miles of the project, ranging in skill level from Class I to V+. This includes a 12.3-mile reach of the Swift River, from the town of Roxbury, Maine to the confluence of the Androscoggin River approximately 1,000 feet downstream of the Lower Station powerhouse. This stretch of the Swift River is designated by American Whitewater as Class II-III whitewater.

Boating Access Improvements

There are four boating put-in locations in the bypass reach and two take-out locations. Study participants assessed the conditions of the put-in locations and found them to be good in terms of parking availability and capacity and provided adequate staging areas for boating.

Whitewater Flow Information

Notifying the public of available flows and scheduled flow releases via SafeWaters[22] would allow the public to make an informed decision about available flows and their respective skill levels so that they can take advantage of the flow releases.

Recreation Monitoring

Although RFH proposes a number of improvements to enhance recreation at the project, RFH does not propose to monitor recreation at the project to ensure that facilities continue to meet recreation demand.

Staff Analysis

With the proposed upgrades to recreation facilities and boating flow schedules, new opportunities for recreation at the project area would be created. According to the U.S. Bureau of Economic Analysis, Maine's outdoor recreation economy grew by more than 16% from 2021 to 2022, with 2022 being the biggest year for Maine to date at $3.3 billion. According to the report, fishing contributes the most to Maines overall outdoor recreation economy at $412 million. Similarly, Maine's State Comprehensive Outdoor Recreation Plan (SCORP) released in 2020 shows that fishing license sales to non-residents increased by 2.6% over the last five years. If similar trends continue, it is reasonable to expect that recreation demand at the project may increase over the term of any new license issued. Further, the proposed recreation enhancements

[22] RFH's SafeWaters website can be viewed here: Home | SafeWaters by Brookfield Renewable US.

could increase recreation use at the project. Monitoring would ensure that the improvements would continue to meet future needs, such as parking and angler access. A good monitoring plan would include a schedule and methods for reviewing recreation needs at the project. Including this information in the Recreation Plan would ensure that the monitoring data is captured at reasonable intervals and the data clearly describe recreational use.

3.3.5 Aesthetic Resources

3.3.5.1 Affected Environment

The 650-foot-long bypassed reach below the Upper Dam (i.e., Rumford Falls), consists of exposed bedrock over which water from spillage and leakage flows at a steep gradient. The 2,865-foot-long bypassed reach below the Middle Dam includes pools, bedrock outcroppings, and steep cascades. The natural cascades within the bypassed reaches are the prominent aesthetic resources at the project. Rumford Falls is reported to be once Maine's largest natural waterfall and the largest falls in the United States east of Niagara Falls. As discussed earlier, there are five spotlights installed along the banister of the West Viewing Area, which automatically operate at flows of 7,500 cfs and greater between 8 PM and 12 AM.

In 2021 and 2022, RFH conducted an Aesthetic Flow Study to characterize the aesthetic character and conditions over Rumford Falls, identify key observation points (KOP), and evaluate acceptable aesthetic flows. Study participants evaluated four controlled flow releases (500 cfs, 1,000 cfs, 1,500 cfs, and 2,000 cfs) from three KOPs: West Viewing Area, Rumford Falls Trail, and J. Eugene Boivin Park.

Participants rated the overall aesthetics at each KOP under each flow using the 7-point Likert Scale. The average attribute scores ranged from 5.2 to 6.8 ("slightly appealing" to "very appealing") at all flows and KOPs except at flows of 500 cfs at the Rumford Falls Trail and J. Eugen Boivin Park where the participants found the flow too low to be appealing. The average scores increased with flow at all sites until 2,000 cfs where values declined at all KOPs (Figure 22). All participants indicated that they would like aesthetic flows provided in July and August, followed by June, September, and October with slightly less interest in April and May and very little during the rest of the year. Generally aesthetic flow releases would be preferred on the weekend (i.e., Friday, Saturday, Sunday) and from midday, afternoon, and evening.

3.3.5.2 Environmental Effects

Based on historic flow data, the monthly average flows in the Androscoggin River have been near or below the hydraulic capacity of the Upper Station (i.e., 4,550 cfs), except in the spring, which affects the aesthetic characteristics of flow over the falls. RFH proposes several aesthetic-related measures including aesthetic flow releases, lighting, and communication to improve and maintain public enjoyment of project features.

Aesthetic Flows

RFH proposes to provide aesthetic flow releases in the Upper Dam bypassed reach ranging from 1,200 – 1,500 cfs for three days (total), June through August from 10:00 a.m. – 4:00 p.m. The timing and flow would be determined in consultation with the Town of Rumford.

The Town of Rumford recommends a minimum flow of 1,200 cfs in the Upper Dam bypassed reach for 10 weekend days (total), June through August from 10:00 a.m. to 4 p.m. Maine BPL supports the Town of Rumford's recommendation.

Maine TU recommends an aesthetic flow of 1,000 cfs to both the upper and lower falls from 10:00 a.m. to 8:00 p.m. Friday through Sunday during the months of July, August and September, during the Rumford Pumpkinfest Event held annually in mid-October, and up to two additional events not to exceed three days if/when determined by the Town of Rumford.

Staff Analysis

Overall, the lowest acceptable flow for aesthetic viewing experience during the study was identified as 1,000 cfs by all but two participants, which identified 2,000 cfs and 1,500 cfs as the lowest acceptable flow. The flow identified by participants that would provide the highest quality aesthetic viewing experience ranged from 1,500 cfs to 2,000 cfs, except for one participant who identified a range of 22,000 cfs to 44,000 cfs as the flow providing the highest quality experience. However, these flows were not identified as target flows for the study and occur only during high precipitation events and/or snow and ice melt in the spring.

The project spills all flow above the 4,550 cfs maximum hydrologic capacity of the upper development. The daily average flows in the Androscoggin River have only exceeded the hydraulic capacity in the summer months of July, August, and September 3.9 percent to 12.9 percent of the time. During July, August, and September estimated daily average flows in the Upper Dam bypass reach exceed 500 cfs between 3.3 percent to 10.4 percent of the time; 1,000 cfs between 3.2 and 8.7 percent of the time; 1,500 cfs between 2.0 to 7.9 percent of the time; and 2,000 cfs between 1.5 percent to 6.3 percent of the time (Table 7).

Aesthetically acceptable flows in the upper bypass reach (greater than 1,000 cfs) are rare during the summer. To provide the desired aesthetic flows on a specific date, such as a weekend, and for the proposed duration (10 a.m. to 4 p.m.), would likely require RFH to prioritize aesthetic flows over power generation. RFH's proposal would ensure that 3 days of aesthetic flows are provided during the summer but would not improve aesthetic conditions in September when recreation is still relatively high. RFH could meet all three required releases early (i.e., during June when inflows are typically higher) such that aesthetic flows during much of the summer recreating season may not be enhanced. RFH's proposed flows would reduce flows diverted for generation for 6 hours for 3 days (18 hours total).

Providing an aesthetic flow of 1,200 cfs over 10 weekend days as recommended by the Town of Rumford and Maine BPL would ensure that acceptable aesthetic flows are provided during a weekend day when the public is most likely to be able to enjoy the flows and if spread out over the summer on about every other weekend during the summer recreating season. To do so, would likely require RFH to reduce flows for generation for 60 hours.

To provide an aesthetic flow of 1,000 cfs in the upper bypassed reach without reducing power generation, natural river flows would need to exceed 5,550 cfs. From 2000 through 2021, inflow to the project exceeded 5,550 cfs about 8.7% of July, 5.4% of August, 3.2% of September. (Table 7). An aesthetic flow of 1,000 cfs would provide less acceptable flows than those proposed by RFH and others, but the flows would be available every weekend during the summer and a highly attended local event if the aesthetic flow is prioritized over generation. Maine TU's recommended flows would require RFH to reduce flows for generation for 39 days for 10 hours (390 hours) each year.

Maine TU's recommended aesthetic flow of 1,000 cfs in the lower falls (e.g., Middle Dam bypassed reach) seems to conflict with its request for whitewater boating flows of 1,500 cfs from 10:00 a.m. to 5:00 p.m. Friday through Sunday during the months of July, August and September (see section 3.3.4 *Whitewater Boating Flows).* The aesthetic flow study did not consider the Middle Dam bypass reach because no one requested an aesthetic evaluation of this reach. Therefore, there is no information on aesthetic preferences for the lower bypassed reach. Regardless, the boating flows proposed by RFH and recommended by others would likely enhance the aesthetic qualities of the reach.

Aesthetic Flow Lighting

RFH proposes to provide flood lighting of the falls at the upper station at river flows greater than 6,000 cfs between 8:00 p.m. – 12:00 a.m. year-round. The Town of Rumford supports the floodlighting scheme at 6,000 cfs but requests that the timing of the lighting be modified to begin at evening civil twilight (i.e., dusk) and to remain illuminated until 12am.

Staff Analysis

Currently, RFH turns on the flood lights when flows are 7,500 cfs and greater between 8:00 p.m. and 12:00 a.m. An inflow of 7,500 cfs results in a spill over the falls of 2,950 cfs if the project is operating at its maximum hydraulic capacity. While high flow events can occur throughout the year, a flow of 7,500 cfs is typically only available in April (Table 1).

Turning the flood lights on when inflow exceed 6,000 cfs would increase the frequency that RFH would need to operate the flood lights, but they would still mostly be operated during April (Table 1). At 6,000 cfs, the spill would be 1,450 cfs.

RFH's proposal to illuminate the falls from 8:00 p.m. – 12:00 a.m. year-round would illuminate the falls before evening civil twilight during the summer months and long after evening civil twilight during the winter months. Based on RFH's proposal, in June when civil twilight is latest (9:08 p.m.), the falls would be unnecessarily illuminated one hour and eight minutes before dark. In December when civil twilight is earliest (4:45 p.m.), the falls would be dark for three hours and 15 minutes before being illuminated at 8:00 p.m. The Town of Rumford's proposal to illuminate the falls starting at evening civil twilight and to remain illuminated until 12:00 a.m. accounts for the seasonal fluctuations in daylight hours and ensures that the falls are illuminated at night when they would be most likely to be enjoyed by the public.

Aesthetic Flow Information

RFH proposes to provide public information regarding flow releases in the Upper Dam bypassed reach via SafeWaters, which is a publicly accessible website and tollfree phone line operated by RFH that will include posting notification of the scheduled aesthetic flow events, including any cancellations, in the event sufficient flow or circumstances arise in which these flow releases cannot be provided. American Whitewater commented that RFH should provide real-time and advance flow notifications of flows into the project bypassed reach.

Staff Analysis

RFH's proposal to provide public information regarding flow releases in the Upper Dam bypassed reach via SafeWaters would provide the means for the public to gain information regarding streamflow for the Upper Dam bypassed reach. This information could then be used to determine whether recreational opportunities and desired flow ranges for aesthetic viewing would be available. This would allow the public to take better advantage of opportunities for public recreation use at the project. However, RFH does not identify how often or how far in advance they would update the website and phone-line. The Recreation Plan would be improved by the inclusion of a scheduled flow release communication strategy developed in consultation with interested parties.

3.3.6 Cultural Resources

3.3.6.1 Affected Environment

Section 106 of the NHPA requires that the Commission take into account the effects of its actions on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.[23] Historic properties are those that are listed or eligible for listing in the National Register of Historic Places (National Register). The regulations implementing Section 106 of the NHPA also require that the Commission seek concurrence with the State Historic Preservation Officer (SHPO) on any finding involving effects or no effects on historic properties and consult with interested Indian tribes or Native Hawaiian organizations that attach religious or cultural significance to historic properties that may be affected by an undertaking. In this document, we also use the term "cultural resources" for properties that have not been evaluated for eligibility for listing in the National Register. Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic under the NHPA.

[23] An undertaking means "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval." *See* 36 C.F.R. § 800.16(y) (2022). Here, the undertaking is the potential issuance of a new license for the project.

Area of Potential Effects (APE)

Pursuant to section 106 of the NHPA, the Commission must take into account whether any historic property could be affected by the issuance of a proposed license within a project's area of potential effect (APE). The APE is determined in consultation with the SHPO and is defined as the geographic area or areas within which an undertaking may directly or indirectly cause alternation in the character or use of historic properties, if any such properties exist. The APE consists of all areas within the project boundary, as well as areas outside of the project boundary where cultural resources may be affected by project-related activities that are conducted in accordance with the license. In this case, the APE includes lands enclosed within the project boundary. On July 28, 2020, RFH provided the project APE in the revised study plan to Maine's SHPO (henceforth referred to as the Maine Historic Preservation Commission or MHPC), and MHPC responded via email that it had no comments on the revised study plan, which included the project APE.[24] The project APE covers a total of 60.4 acres.[25]

Archeological Investigations

In 1988 the University of Maine at Farmington, Archaeological Research Center (UMFARC) was contracted by Rumford Falls Water Power Company to perform a Phase I survey of the impoundment behind Rumford Falls dam. UMFARC divided the impoundment shoreline into 123 1-km^2 sampling units, but focused testing in areas that were considered most likely to contain prehistoric sites. Twenty-five prehistoric archaeological sites and six equivocal sites were documented. In 1989 the University of Southern Maine began Phase II testing[26] of the sites identified the previous year. In all, 745 test pits and 42 test units were excavated. According to the reconnaissance survey and the Phase I and II site testing, impoundment erosion was adversely affecting all of the sites at Rumford Falls but to different and varying degrees. Following field work and analysis, each site was then evaluated for possible Phase III mitigation. Eight of the sites were deemed significant enough to warrant mitigation and National Register nomination. These sites included Smith 1 and Smith II (49.9 and 49.10), Town of Rumford (49.20), and Rumford Falls I, II, III, IV, and V (49.24, 49.25, 49.26, 49.27 and 49.28).

[24] Because the MHPC stated that it had no comments on the revised study plan that included the project APE, we assume that the Maine SHPO has concurred with the APE.

[25] The project APE includes the battery system pursuant to the June 3, 2021 FERC-issued order amending the license. *See Rumford Falls Hydro LLC*, 175 FERC ¶ 62,137 (2021).

[26] The purpose of the Phase II testing was to demarcate site boundaries at each of the locales, estimate the potential erosional impact to the sites within the 30-year term of the license, identify cultural and natural disturbances, and to determine whether or not any of the sites could contribute significantly to our understanding of northeastern prehistory.

Although access to Smith I and II was denied by the landowners, the other six sites were nominated and listed to the National Register as part of the Phase III archeological study.[27] All of the sites are multi-component, and twenty occupations were identified during the study. Together these occupations represent continuous prehistoric use of the project area from the early Archaic to the late Woodland periods. Tens of thousands of artifactual remains were recovered during the fieldwork, including ground stone tools, diagnostic flaked-stone bifaces, stone debitage, pottery fragments, and calcined bone (Hamilton & Mosher, 2000).

Phase III data recovery excavations, as requested by MHPC, were completed in October of 2023, which further investigated the previously identified National Register-eligible archeological sites (specifically sites 49.24, 49.28, 49.20, 49.27, and 49.25). Two reports produced from the study were filed with the Commission on November 2, 2023. In a letter dated October 18, 2023, and filed with the Commission November 2, 2023, MHPC reported that the archaeological Phase III data recovery excavations for the project were complete and acknowledged that RFH fulfilled its obligations for archeological mitigation.

Annual monitoring has been conducted on both sides of the Upper Dam impoundment over the last decade as part of the Cultural Contingency Plan[28] to determine whether erosion was affecting the National Register-eligible archeological sites. The lack of documented erosion permitted the MHPC to agree to a change in archeological site erosion monitoring from an annual to biennial cycle.[29] According to RFH, the shoreline of the Upper Dam impoundment is well vegetated, and they have found no evidence of shoreline erosion over a decade of monitoring.

Historic Architectural Investigations

RFH completed a Historic Architectural Survey of the agreed upon APE in October 2020. The associated study report was sent to the MHPC for review on October 25, 2021. The APE includes twenty-one resources that are 45 years of age or older. Nine were previously recorded, and twelve were newly recorded for the project. Of the nine previously recorded resources, seven were previously determined to be eligible for National Register listing, and two were determined to be ineligible. As a result of the survey, five of the previously recorded resources were recommended as contributing resources to the Rumford Falls Hydro and Canal District, and four are non-contributing. All nine resources have been determined or are recommended NRHP eligible, either individually or as contributing resources. Of the twelve newly recorded resources, four are recommended as not National Register eligible and eight are recommended as eligible either individually or as contributing resources to the National Register-eligible Rumford

[27] The study was completed in October of 2000 in consultation with MHPC and the purpose of the study was to understand the patterns, past environments, and material culture remains from the six prehistoric sites within the Rumford Falls project.

[28] *See* 79 FERC ¶ 62,082 (1997).

[29] A notice amending license Article 406 was issued on March 27, 2019.

Falls Hydro and Canal District. In total, seventeen resources in the APE have either been determined to be individually eligible or are recommended as eligible (individually or as contributing resources). According to a letter dated November 10, 2021, MHPC concluded that the proposed undertaking will have no adverse effect upon historic properties – contingent on the development of a historic properties management plan (HPMP) for the project.

Tribal Consultation

On October 3, 2019, Commission staff invited the Penobscot Nation to meet and discuss any issues or concerns they may have about the Rumford Falls Project. Because there was no response from the Tribe, Commission staff made contact by phone with the Tribal Historic Preservation Officer (THPO) on November 19, 2019, inviting them to participate in the relicensing process. Staff made additional attempts to see if the Tribe wanted a government-to-government consultation meeting on December 4, 2019, December 11, 2019, and January 7, 2019. To date, no members of the Tribe have requested a meeting with Commission staff.[30]

RFH received a letter dated August 15, 2022, from the THPO of the Mi'kmaq Nation (*see* Appendix E.1 of the final license application filed September 29, 2022).[31] The THPO specified that they did not have knowledge of any specific sites or cultural features that exist at the project location but that the geographic area was historically utilized by members of the Mi'kmaq Nation and the other Wabanaki Tribes and requested the following of RFH: (1) if during the course of excavation/construction activities, human remains, artifacts, or any other evidence of Native American presence is discovered, that site activities in the vicinity of the discovery immediately cease, pending notification to the Mi'kmaq Nation; (2) if human remains, artifacts, or any other evidence of Native American presence is discovered, that the (a) human remains be reburied with the appropriate respect for the remains that is required at a distinctive and respectable site; (b) artifacts and other evidence of Native American discovery will be documented with appropriate detail; and (c) items will be analyzed for the precise period of the items' distinctive period and will be documented by the THPO for the Mi'kmaq Nation; and (3) if the project results in wetland disturbances requiring mitigation, that RFH utilize the black ash (*Fraginus nigra*) as the principal wetland species for wetland restoration activities.

Commission staff invited the Mi'kmaq Nation (formerly known as the Aroostook Band of Micmacs)[32] to participate in the relicensing process on November 7, 2023. A follow-up email

[30] *See* telephone memo issued January 10, 2020, that summarizes consultation efforts with the Penobscot Nation's THPO, as well as the tribal consultation letter to the Tribe issued October 3, 2019, inviting the Tribe to participate in the relicensing process.

[31] On December 11, 2023, the THPO of the Mi'kmaq Nation filed the same comments to the record as the letter received by RFH.

[32] Our methods used to identify federally recognized Tribes with potential interest in projects now includes the Tribal Directory Assessment Tool (TDAT), which was used in November 2023 to identify the Mi'kmaq Nation.

was sent to the Tribe on December 11, 2023. No response was received until the Mi'Kmaq Nation filed a letter on December 11, 2023, containing the same information provided to RFH on August 15, 2022.

3.3.6.2 Environmental Effects

RFH proposes to develop and implement a HPMP, as requested by MHPC, to provide for the management of historic properties throughout the term of the license, that includes consulting with the MHPC on future work in the eligible historic district that has the potential to affect historic properties. RFH proposes to conduct biennial monitoring for erosion of the National Register-eligible sites in the Upper Dam impoundment. RFH also proposes to consult with the Mi'kmaq Nation as requested if human remains, artifacts, or any other evidence of Native American presence is discovered.

No recommendations were provided in response to the Commission's ready for environmental analysis notice.

Staff Analysis

No land-disturbing activities are proposed or contemplated in the area of the archeological or architectural sites that would result in adverse effects. Because the project operates as run-of-river and limits reservoir fluctuations, shoreline erosion in the upper dam impoundment is likely the result of high river flows rather than project operation. While erosion in the upper impoundment historically threatened these sites, recent monitoring indicates that erosion is becoming less of a concern. RFH's continued biennial erosion monitoring would determine if protection measures may be warranted in the future.

Continued operation of the project would ensure that the project continues its historical function of generating electricity, which would be considered a beneficial effect. However, operating and maintaining the project throughout the term of any license could result in unanticipated adverse effects to the project facilities, including repairs and modifications that, while necessary for the continued safe and efficient operation, are not in keeping with the project's historic character. The HPMP, which would be developed in consultation with the MHPC, would contain measures to avoid, lessen, or mitigate for any adverse effects to historic properties during the term of any license, if issued. It would also contain treatment and mitigation measures for unavoidable and unanticipated adverse effects, and a procedure for consulting with the parties. Therefore, any potential adverse effects of project operation and maintenance on project facilities would be addressed by the HPMP. An executed PA would implement the staff recommended HPMP.

As discussed previously, because there are no effects of continued project operation on wetlands and no proposed wetland restoration measures, we have no basis for recommending that RFH plant black ash trees.

3.3.7 Environmental Justice

In conducting NEPA review of proposed hydropower projects, the Commission follows Executive Order 12898 and Executive Order 14096, which direct federal agencies to identify and address "disproportionate and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[33] Executive Order 14008 also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[34] Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[35] The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution.[36]

Commission staff used *Promising Practices for EJ Methodologies in NEPA Reviews* (*Promising Practices*) [37] which provides methodologies for conducting environmental justice analyses throughout the NEPA process for this project.

Additionally, consistent with EPA recommendations, Commission staff used EPA's Environmental Justice Screening and Mapping Tool (EJScreen) as an initial screening tool to

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[33] Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 11, 1994); Exec. Order No. 14,096, 88 Fed. Reg. 25,251 (April 21, 2023).

[34] Exec. Order No. 14,008, 86 Fed. Reg. 7619, 7629 (Jan. 27, 2021).

[35] EPA, *Learn About Environmental Justice*, https://www.epa.gov/environmentaljustice/learn-about-environmental-justice (last updated Aug. 16, 2023). Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. *Id.* Meaningful involvement of potentially affected environmental justice community residents means: (1) people have an appropriate opportunity to participate in decisions about a proposed activity that may affect their environment and/or health; (2) the public's contributions can influence the regulatory agency's decision; (3) community concerns will be considered in the decision-making process; and (4) decision makers will seek out and facilitate the involvement of those potentially affected. *Id.*

[36] Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples. *See* EPA, *EJ 2020 Glossary* (Aug. 18, 2022), https://www.epa.gov/environmentaljustice/ej-2020-glossary.

[37] Federal Interagency Working Group on Environmental Justice & NEPA Committee, Promising Practices for EJ Methodologies in NEPA Reviews (Mar. 2016) (*Promising Practices*), https://www.epa.gov/sites/default/-files /2016-08/documents/nepa_promising_practices_document_2016.pdf.

better understand locations that require further review or additional information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors.[38]

3.3.7.1 Meaningful Engagement and Public Involvement

The Council on Environmental Quality's (CEQ) *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ Environmental Justice Guidance) [39] and *Promising Practices* recommend that federal agencies provide opportunities for effective community participation in the NEPA decision-making process by, identifying potential effects and mitigation measures in consultation with affected communities; improving accessibility of public meetings, crucial documents, and notices; and using adaptive approaches to overcome potential barriers to effective participation. In addition, Executive Order 13985 and Executive Order 14096, strongly encourage independent agencies to "consult with members of communities that have been historically underrepresented in the federal government and underserved by, or subject to discrimination in, federal policies and programs, [40] and "provide opportunities for the meaningful engagement of persons and communities with environmental justice concerns who are potentially affected by Federal activities." [41]

There have been opportunities for public involvement during the Commission's environmental review processes. The Commission's communication and involvement with the surrounding communities began on November 19, 2019, with the public notice of the pre-application document and issuance of the *Notice Soliciting Scoping Comments* which opened a 60-day scoping period to identify issues, concerns, and opportunities for enhancement or mitigation associated with the proposed action. Public scoping meetings were held December 17, 2019. We issued a *Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions* on June 26, 2023, which established a 60-day comment period and intervention deadline. Finally, we issued a *Notice of Intent to Prepare an Environmental Assessment* on September 12, 2023. Each of these notices were published in the *Federal Register* and local newspapers.

All documents that form the administrative record for this proceeding, with the exclusion of privileged or critical energy infrastructure information, are available to the public on FERC's

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[38] EPA recommends that screening tools, such as EJScreen, be used for a "screening-level" look and a useful first step in understanding or highlighting locations that may require further review.

[39] CEQ, *Environmental Justice: Guidance Under the National Environmental Policy Act* 4 (Dec. 1997) (CEQ's *Environmental Justice Guidance*), https://ceq.doe.gov/docs/ceq-regulations-and-guidance/regs/ej/justice.pdf.

[40] Exec. Order No. 13985, 86 Fed. Reg. 7009 (Jan. 20. 2021).

[41] Exec. Order No. 14,096, 88, Fed. Reg. 25,254 (Apr. 21, 2023).

e-library website (https://elibrary.ferc.gov/eLibrary/search). We recognize that not everyone has internet access or is able to file electronic comments. Anyone may comment about the project, either in writing or electronically. [42]

3.3.7.2 Identification of Environmental Justice Communities

According to CEQ's *Environmental Justice Guidance* and *Promising Practices*, minority populations are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices*, FERC uses the 50 percent and the meaningfully greater analysis methods to identify minority populations.

Using this methodology, minority populations are defined in this EA where either: (a) the aggregate minority population of the block groups in the affected area exceeds 50 percent; or (b) the aggregate minority population in the block group affected is 10 percent higher than the aggregate minority population percentage in the county. The guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using *Promising Practices'* low-income threshold criteria method, low-income populations are identified as block groups where the percent low-income population in the identified block group is equal to or greater than that of the county. Here, Commission staff selected Oxford County, Maine, in which the project action is located, as the comparable reference community to ensure that affected environmental justice communities are properly identified. A reference community may vary according to the characteristics of the particular project and the surrounding communities.

Table 11 identifies the minority populations by race and ethnicity and low-income populations within Maine, the county affected by the relicense application (Oxford County, Maine), and U.S. census block groups[43] within the vicinity of the project site. For this project, staff chose a 1-mile radius around the project boundary (figure 14). Staff determined that a 1-mile radius is sufficient to encompass and address any potential impacts that may arise from the proposed action given the limited scope of the proposed relicensing, including the concentration of project-related effects within the project boundary. To ensure we are using the most recent

[42] The Office of Public Participation (OPP) provides members of the public, including environmental justice communities, landowners, Tribal citizens, and consumer advocates, with assistance in FERC proceedings—including navigating Commission processes and activities relating to the Project. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6595 or OPP@ferc.gov for further information.

[43] Census block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people. U.S. Census Bureau. 2023. Glossary: Block Group. Available online at: https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4. Accessed February 2023.

available data, we used U.S. Census American Community Survey as the source for race and ethnicity data and poverty data at the census block group level.[44]

Within the study area, staff identified four census block groups in which the populations qualify as environmental justice community. One of the four identified environmental justice communities met the threshold for the low-income criteria, and another identified environmental justice community met the threshold for minority population. The two remaining environmental justice communities met the threshold for both low-income and minority population criteria.

3.3.7.3 Impacts on Environmental Justice Communities

Consistent with *Promising Practices*, Executive Order 12898, and Executive Order 14096, we reviewed the project to determine if its resulting impacts would be disproportionate and adverse on minority and low-income populations and also whether impacts would be significant.[45] *Promising Practices* provides that agencies can consider any of a number of conditions. In this determination and the presence of any of these factors could indicate a potential disproportionate and adverse impact. For this project, a disproportionate and adverse effect on an environmental justice community means the adverse effect is predominantly borne by such population.

Relevant considerations include the location and natural physical environment of project facilities and the project's human health and environmental impacts, including associated social, economic, or cultural direct, indirect and cumulative impacts, on identified environmental justice communities.

As described in section 2.2.1, *Proposed Operation and Environmental Measures*, RFH proposes to continue operating the project in a run-of-river mode. No entity provided comments or recommendations regarding the effects of the project on environmental justice communities in response to the Commission's notice that the application was ready for environmental analysis.

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[44] U.S. Census Bureau, American Community Survey 2022 ACS 5-Year Estimates Detailed Tables, File# B17017, *Poverty Status in the Past 12 Months by Household Type by Age of Householder*, https://data.census.gov/cedsci/table?q=B17017; File #B03002 *Hispanic or Latino Origin By Race*, https://data.census.gov/cedsci/table?q=b03002.

[45] *See Promising Practices* at 33 (stating that "an agency may determine that impacts are disproportionately high and adverse, but not significant within the meaning of NEPA" and in other circumstances "an agency may determine that an impact is both disproportionately high and adverse and significant within the meaning of NEPA"); see also Promising Practices at 45-46 (explaining that there are various approaches to determining whether an impact will cause a disproportionately high and adverse impact). We recognize that CEQ and EPA are in the process of updating their guidance regarding environmental justice and we will review and incorporate that anticipated guidance in our future analysis, as appropriate.

3.3.7.4 Determination of Disproportionate and Adverse Impacts on Environmental Justice Communities

Staff evaluated the effects of continued project operation on aquatic resources, terrestrial resources, threatened and endangered species, land use, recreation, aesthetics, and cultural resources in sections 3.3.1 through 3.3.6 above. RFH's proposed continued project operation as a run-of-river facility would not adversely affect environmental resources, including water supply, water quality, recreation, or fisheries. Enhancements to recreation sites would not involve any heavy construction equipment, additional traffic, or major land-disturbing activities that would create noise or other disturbances to environmental justice communities. Increased flows for aesthetic resources and whitewater boating would enhance conditions for members of the environmental justice communities as well as others. Therefore, we conclude that licensing the Rumford Falls Project would not adversely affect residents of the identified environmental justice communities. In consideration of the limited scope of the proposed project, and the staff-recommended environmental protection and enhancement measures, the project would not result in a disproportionate and adverse impact on environmental justice communities present within the project area.

4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the project's use of the Androscoggin River for hydropower generation to see what effect various proposed or recommended environmental measures would have on the cost to operate and maintain the project and on the project's power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp*.,[46] the Commission compares the current cost to produce project power to an estimate of the cost to provide the same amount of energy and capacity[47] for the region using the most likely alternative source of power (cost of alternative power). In keeping with the policy described in *Mead Corp.*, our economic analysis is based on current electric power cost conditions and does not anticipate or estimate changes in fuel costs that could occur during a project's license term.

For each of the licensing alternatives, our analysis includes an estimate of: (1) the annualized cost of providing the individual measures considered in the DEA; (2) the cost of the most likely alternative source of project power; (3) the total annual project cost (i.e., for construction, operation, maintenance, and environmental measures); and (4) the difference

[46] *See Mead Corp.*, 72 FERC ¶ 61,027 (1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.

[47] We use the term "capacity benefit" to describe the benefit a project receives for providing capacity to the grid, which may be in the form of a dependable capacity credit or credit for monthly capacity provided.

between the cost of the current alternative source of project power and the total annual project cost.

If the difference between the cost to produce an equivalent amount of power from an alternative source and the total annual project cost is positive, the project produces power at a cost less than the cost of producing power from the most likely least-cost source of alternative power. If the difference between the alternative source of power's annual cost and the total annual project cost is negative, the project costs more to produce power than the cost to produce an equivalent amount of power from the most likely least-cost source of alternative power. This estimate helps support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license. Power and developmental costs for the Rumford Falls Project can be found in Table 14. A comparison of alternatives can be found in Appendix E.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. This section contains the basis for, and a summary of, our recommendations for licensing the Rumford Falls Project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

Based on our independent review of agency and public comments filed on this project and our evaluation of the environmental and economic effects of the proposed action and its alternatives, we selected the staff alternative as the preferred alternative for the Rumford Falls Project. We recommend this alternative because: (1) issuing a new license for the project would allow RFH to operate the project as a beneficial and dependable source of electric energy; (2) generation from the Rumford Falls Project, with an installed electric capacity of 44.5 MW, comes from a renewable resource that does not contribute to atmospheric pollution; (3) the public benefits of this alternative would exceed those of the no-action alternative; and (4) the recommended measures would protect and enhance aquatic, recreational, aesthetic, and cultural resources at the project.

Below, we make recommendations as to which environmental measures proposed by RFH, or recommended by agencies or other entities, should be included in any license issued for the project. We also discuss measures we do not recommend including in any new license.

5.1.1 Measures Proposed by Rumford Falls Hydro

Based on our environmental analysis of RFH's proposal, as discussed in section 3.0, *Environmental Analysis*, and the costs presented in section 4.0, *Developmental Analysis*, we conclude the following operation and environmental measures proposed by RFH would protect and enhance environmental resources and would be worth the cost. Therefore, we recommend including the following measures in any new license issued for the Rumford Falls Project:

- Operate the project in a run-of-river mode where the Upper Dam and Middle Dam impoundments are maintained within 1 foot of full pond elevation (elevation 601.13 feet at the Upper Dam impoundment and elevation 502.63 feet at the Middle Dam impoundment) and flows immediately downstream from the project tailraces approximate the sum of the inflows to the project reservoirs.
- Release a minimum flow of 1 cfs into the Upper Dam bypassed reach.
- Increase the minimum flow in the Middle Dam bypassed reach from 21 cfs year-round to 95 cfs from May 1 to October 31 and 54 cfs from November 1 to April 30 primarily via notched flashboards. Maintain the current minimum flow of 21 cfs during flashboard maintenance or other work that requires the Middle Dam impoundment to be drawn down temporarily below the dam crest.
- Develop an Operations Compliance Management Plan to confirm the project is operated in compliance with a new FERC license.
- Develop a Recreation Plan that includes: (1) continuing to maintain the existing carry-in canoe facility at the Carlton Bridge; (2) building a new whitewater boating and angler access and or steps from behind the Rumford Public Library to the river in consultation with the town of Rumford; (3) providing flood lighting of the falls at the Upper Dam station between 8 PM and 12 AM when flows are greater than 6,000 cfs; (4) reopening the West Viewing Area and operating the recreation site from dawn to dusk from April 15 to October 31, patching and repairing concrete surfaces at the facility, relocating security fencing, adding a public gravel parking area for four cars, relocating the flood lights used to light the falls from the top of the banister to below the banister to improve public safety and viewing opportunities, and installing a project/history kiosk, two picnic tables and a bench; and (5) providing year-round daytime access to the Rumford Falls Trail and improving the trail by firming the trail bed and adding wood crib steps where appropriate, installing a removable bollard or swing gate to prohibit unauthorized vehicle access, installing a bench and kiosk at the falls overlook, adding signage at the trail entrances with maps of the trail, and obtaining an easement from ND Paper for a portion of the trail that crosses their land.
- Develop a Historic Properties Management Plan that includes a framework for consultation if work is proposed within the National Register-eligible Rumford Falls Hydro and Canal District, a provision to consult with the Mi'kmaq Nation if human remains, artifacts, or any other evidence of Native American presence is discovered, and continue biennial monitoring for erosion of the National Register-eligible archaeological sites in the upper dam impoundment.

5.1.2 Additional Measures Recommended by Staff

Under the staff alternative, the project would be operated with RFH's proposed measures, as identified above, and the following additions or modifications listed below. In Appendix F, we discuss the basis for the staff-recommended measures and the basis for those measures we do not recommend.

- Develop a Whitewater Boating and Aesthetic Flow Plan, that includes: (a) providing whitewater boating flows of 1,200 to 1,500 cfs from 10:00 a.m. to 3:00 p.m to the Middle Dam bypassed reach for ten days (total) per year during the months of June, July, and August (instead of three days total); (b) providing aesthetic flows of at least 1,200 cfs from 10:00 a.m. to 4:00 p.m to the Upper Dam bypassed reach for ten weekend days (total) in June, July, and August (instead of 3 weekend days); (c) lighting the falls from the Upper Station between evening civil twilight (i.e, sunset) and 12 AM (instead of 8 PM to 12 AM) when flows exceed 6,000 cfs; and (d) protocols and schedule for determining which days boating and aesthetic flows would be released and for communicating the flows to the public.
- Include in the proposed Recreation Management Plan provisions to (1) install a grade separated sidewalk along the Upper Station powerhouse driveway within two years of license issuance (instead of providing a painted walkway); (2) include a conceptual plan and schedule for improving the river access to the Middle Dam bypassed reach from the Rumford Falls Public library that includes installing the access within two years of license issuance; (3) include a plan and schedule to the relocate Logan Brook Access closer to the boat barrier and Rumford Falls Trail that includes a conceptual plan and drawings showing: (a) the proposed access site; (b) proposed improvements (ramp, stairs, railings, and signage directing boaters to the portage trail); and (c) a schedule for constructing the facility within two years of license issuance; (4) include a recreation monitoring plan to determine if recreation needs are changing in response to the enhancements over time; and (5) include a plan and schedule for ongoing maintenance of project recreation facilities (e.g., weekly trash removal, mowing, snow removal).
- Avoid any tree-cutting and trimming from April 15 through October 31 to protect the Northern long-eared bat, unless the trees represent a public safety hazard.

5.2 UNAVOIDABLE ADVERSE EFFECTS

Impoundment fluctuations associated with project operation could affect near-shore aquatic habitat; however, RFH's proposal to continue to operate in a run-of-river mode with limited impoundment fluctuations would result in infrequent and minimal disturbances to aquatic and riparian habitat. Project operation would continue to result in some unavoidable injury or mortality to resident fish species entrained through the project turbines.

5.3 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA, 16 U.S.C. § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We

reviewed 19 comprehensive plans that are applicable to the Rumford Falls Project, which can be found in Appendix H. No inconsistencies were found.

6.0 FINDING OF NO SIGNIFICANT IMPACT

If the Rumford Falls Project is relicensed with our recommended measures, the project would operate while providing enhancements and protective measures for aquatic, recreational, aesthetic, and cultural resources in the project area.

Based on our independent analysis, issuance of a new license for the Rumford Falls Project with additional staff-recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

7.0 LITERATURE CITED

The literature cited is in Appendix I.

8.0 LIST OF PREPARERS

The list of preparers of this DEA is in Appendix J.

APPENDIX A- STATUTORY AND REGULATORY REQUIREMENTS

Federal Power Act

Section 18 Fishway Prescription

Section 18 of the FPA, 16 U.S.C. § 811, states that the Commission is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of the U.S. Department of Commerce (Commerce) or the U.S. Department of the Interior (Interior). Interior, by a letter filed with the Commission on August 18, 2023, requests that a reservation of authority to prescribe fishways under section 18 be included in any license issued for the project.

Section 10(j) Recommendations

Under section 10(j) of the FPA, 16 U.S.C. § 803(j), each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency. No agencies filed 10(j) recommendations for the Rumford Falls Project.

Clean Water Act

Under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), a license applicant must obtain either a water quality certification (certification) from the appropriate certifying authority verifying that any discharge from a project would comply with applicable provisions of the Clean Water Act, or a waiver of the certification by the appropriate certifying authority. A waiver occurs if the certifying authority does not act on a request for certification within a reasonable period of time, not to exceed one year, after receipt of such request.

On August 22, 2023, RFH applied to the Maine Department of Environmental Protection (Maine DEP) for certification for the Rumford Falls Project. Maine DEP received the application on the same day.[48] Maine DEP has not yet acted on the certification request. The certification is due by August 22, 2024.

Endangered Species Act

Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of

[48] RFH filed a copy of the receipt of delivery of the application to Maine DEP on August 22, 2023.

endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species. On November 2, 2023, Commission staff requested an official species list for the project through the U.S. Fish and Wildlife Service's (FWS) Information for Planning and Conservation (IPaC) system, which indicated that three federally listed species, the endangered Atlantic salmon and the threatened northern long-eared bat (*Myotis septentrionalis*) and tri-colored bat (*Perimytosis subflavus*), have the potential to occur within the project boundary, as well as the candidate monarch butterfly. No critical habitat has been designated for any of the species.

Our analysis of project effects on the Atlantic salmon, northern long-eared bat, and tri-colored bat is presented in Appendix D, and our recommendations are included in Appendix F. Based on the available information, we conclude that relicensing the project as proposed with staff-recommended measures is not likely to adversely affect the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon because no Atlantic salmon have been seen upstream of Lewiston Falls since 1815. We will seek NMFS's concurrence with our determination.

We conclude that relicensing the project, may affect, but is not likely to adversely affect the northern long-eared bat because we recommend avoiding the removal of trees with diameters that are equal to or greater than 3 inches at breast height from April 15 through October 31. Project maintenance activities that may affect the tricolored bat are the same as those for the northern-long eared bat; therefore, we conclude that relicensing the project is not likely to adversely affect the tricolored bat or jeopardize its continued existence. We will seek FWS's concurrence with our determinations.

Project effects to the monarch butterfly and its habitat would likely be minimal, and continued operation of the project will have no effect on the species and will not jeopardize the monarch's continued existence.

Magnuson-Stevens Fishery Conservation and Management Act

Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1855(b)(2), requires federal agencies to consult with NMFS on all actions that may adversely affect Essential Fish Habitat (EFH). EFH for Atlantic salmon has been defined as, "all waters currently or historically accessible to Atlantic salmon within the streams, rivers, lakes, ponds, wetlands, and other water bodies of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut," which includes the project area.

EFH for Atlantic salmon is present downstream from the project's Upper Dam. Our analysis of project effects on Atlantic salmon EFH is presented in Appendix D. We conclude that the measures included in the staff alternative would provide an overall net benefit to salmon EFH over the long term and would not adversely affect EFH. Therefore, no consultation is required with NMFS.

Coastal Zone Management Act

Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. §1456(3)(A), the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state's coastal zone management agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification.

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.[49]

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, requires that a federal agency "take into account" how its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

RFH proposes to not only conduct biennial monitoring for erosion of the National Register-eligible archaeological sites in the Upper Dam impoundment, but also develop a Historic Properties Management Plan to protect historic properties from the effects of operating the Rumford Falls Project, which will include a framework for consultation. MHPC filed a letter on November 10, 2021, stating that the proposed undertaking will have no adverse effect upon historic properties contingent on the development of the HPMP. We intend to execute a Programmatic Agreement to develop and implement the HPMP. We conclude that relicensing the project under the staff alternative would not adversely affect the historic properties within the APE.

Executive Orders 12898 and 14008

The Commission follows Executive Order 12898, which directs federal agencies to identify and address "disproportionately high and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[50] Executive Order 14008 also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the

[49] *See* RFH September 27, 2019, PAD at Appendix A.

[50] Exec. Order No. 12,898, 59 Fed. Reg. 7,629 (Feb. 16, 1994). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless addresses environmental justice in its analysis, in accordance with our statutory duties.

accompanying economic challenges of such impacts."[51] Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2021b).

Staff identified four census block groups within a 1-mile radius of the project boundary in which the populations qualify as environmental justice communities and considered how the communities may be affected by the operation and maintenance of the Rumford Falls project. Our analysis of the project's impacts on these communities are presented in section 3.3.7, *Environmental Justice*. We conclude that relicensing the project, as proposed with staff's recommended modifications, would not result in disproportionately high and adverse impacts on the identified environmental justice populations.

[51] Exec. Order No. 14,008, 86 Fed. Reg. 7,619 (Feb. 1, 2021). The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution. Id. § 219, 86 Fed. Reg. 7,619, 7,629. The term also includes, but may not be limited to, minority populations, low-income populations, or indigenous peoples (EPA, 2021a).

APPENDIX B- ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Issuing a Non-power License

A non-power license is a temporary license that the Commission would terminate when it determines that another governmental agency will assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no 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.

Federal Government Takeover

We do not consider federal takeover of the project to be a reasonable alternative. Federal takeover and operation of the Rumford Falls Project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.

Decommissioning the Project

As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing a project in most cases, when appropriate protection, mitigation, and enhancement measures are available.[52] Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs.[53] The Commission does not speculate about possible decommissioning measures at the time of relicensing, but rather waits until an applicant proposes to decommission a project, or there are serious resource concerns that

[52] *See, e.g., Eagle Crest Energy Co.*, 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc.*, 111 FERC ¶ 61,327, at PP 35-38 (2005).

[53] In the unlikely event that the Commission denies relicensing a project or a licensee decides to surrender an existing project, the Commission must approve a surrender "upon such conditions with respect to the disposition of such works as may be determined by the Commission." 18 C.F.R. § 6.2 (2022). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

cannot be addressed with appropriate license measures, making decommissioning a reasonable alternative to relicensing.[54]

RFH does not propose decommissioning, nor does the record to date demonstrate there are serious resource concerns that cannot be mitigated if the project is relicensed; therefore, there is no reason, at this time, to include decommissioning as a reasonable alternative to be evaluated and studied as part of staff's NEPA analysis.

[54] *See generally Project Decommissioning at Relicensing; Policy Statement*, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); *see also City of Tacoma, Washington*, 110 FERC ¶ 61,140 (2005) (finding that unless and until the Commission has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

APPENDIX C- FIGURES AND TABLES

Table 1. Monthly and Annual Minimum, Average, Median, and Maximum Androscoggin River Flows at the Rumford Project 2000-2021. (source: application, as modified by staff)

Month	Minimum flow (cfs)	Average flow (cfs)	Median flow[a]	Maximum flow (cfs)
January	1,110	3,735	3,905	19,500
February	1,390	3,518	3,487	13,000
March	1,450	4,625	4,554	27,300
April	1,960	9,296	9,395	42,800
May	1,510	6,957	6,372	23,500
June	1,100	4,371	4,020	30,400
July	1,260	3,158	2,509	20,300
August	1,140	2,679	2,226	37,900
September	1,050	2,263	2,099	10,400
October	998	3,715	3,194	34,900
November	925	4,253	3,770	22,800
December	1,210	4,353	4,031	33,400
Annual Average	1,259	4,410	4,130	26,350

[a] Calculated using data from USGS gage #01054500 found at https://waterdata.usgs.gov/monitoring-location/01054500/#parameterCode=00065&period=P7D&showMedian=true

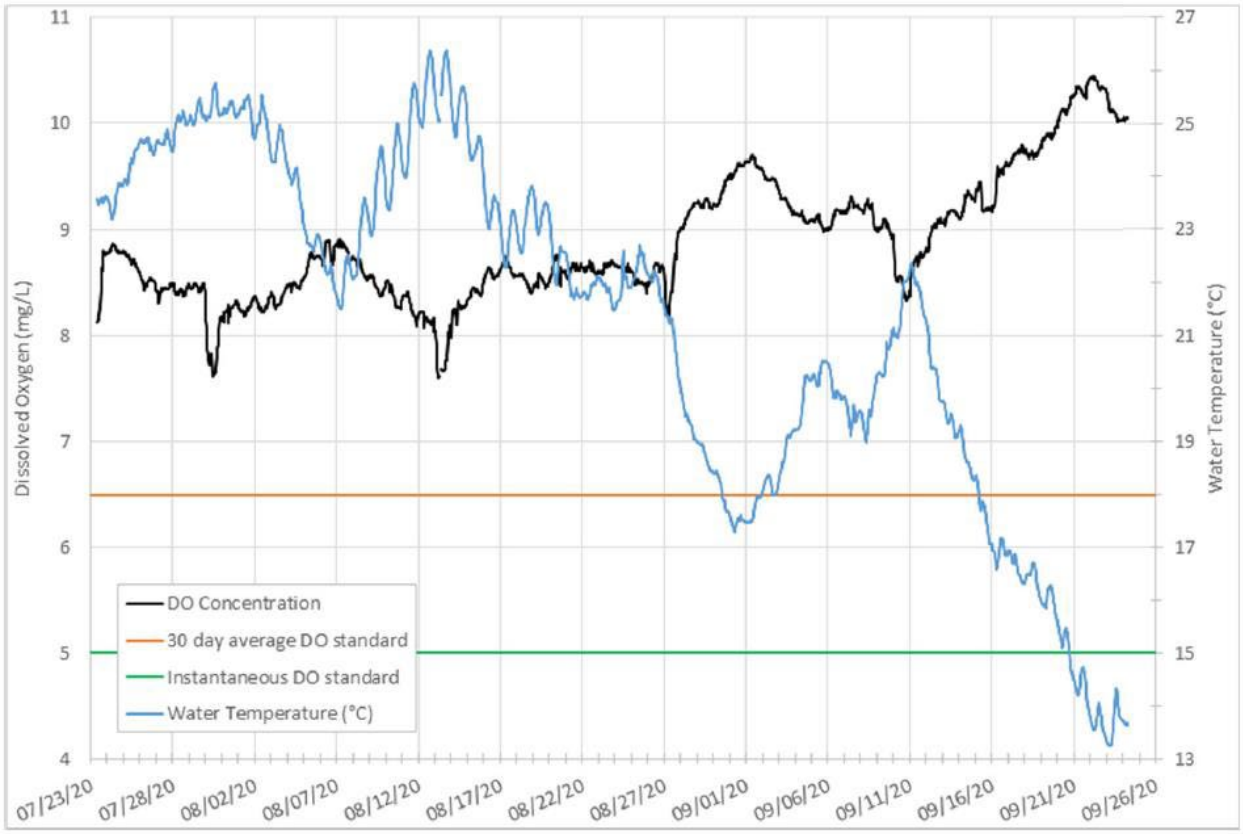


Figure 4. Continuous Water Temperature and Dissolved Oxygen in the Middle Dam Bypassed Reach, July-September 2020 (source: application).

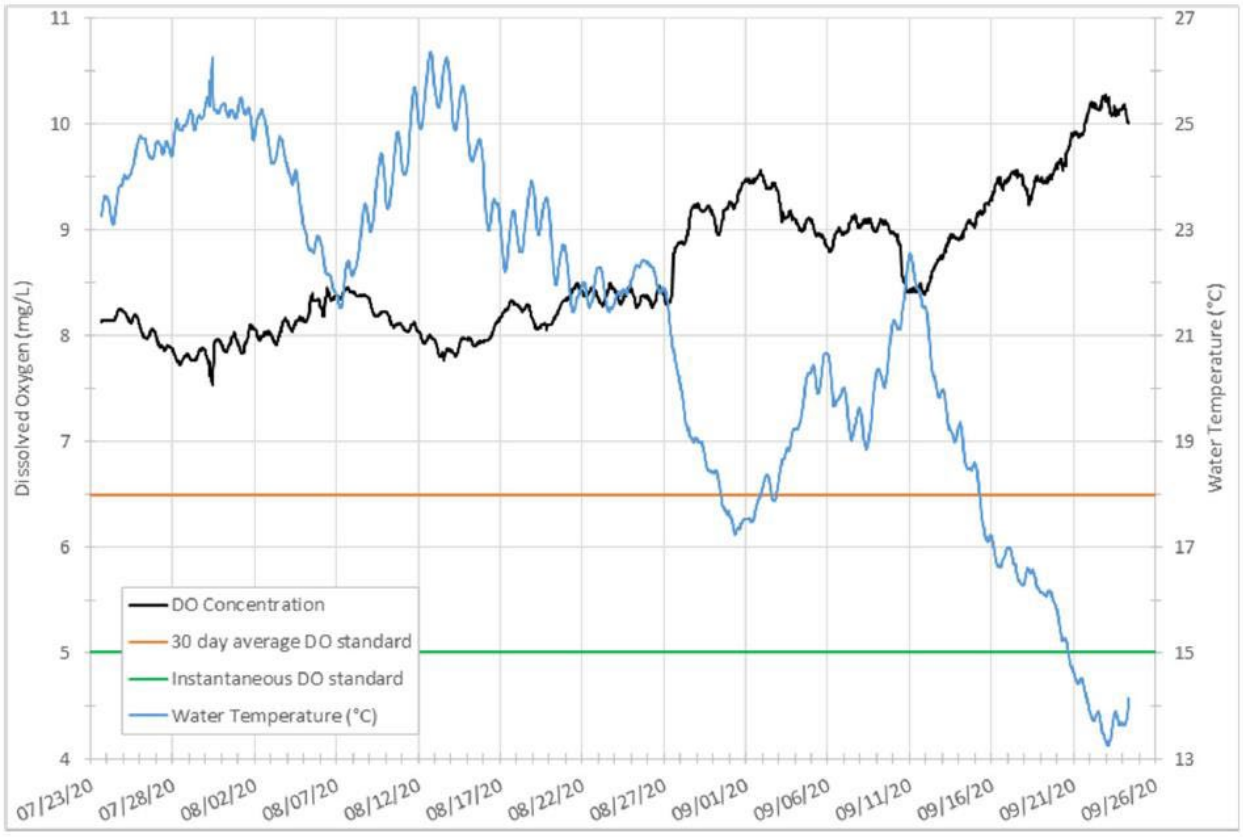


Figure 5. Continuous Water Temperature and Dissolved Oxygen at the Intake of the Lower Powerhouse, July-September 2020 (source: application).

Table 2. Fish Species Collected Upstream of the Rumford Falls Project at River Miles 83.1 and 88.7 in August of 2003 (source: application).

Species	Number of Fish Collected		Percent Composition	
	RM 83.1	RM 88.7	RM 83.1	RM 88.7
Black crappie	1	0	0.2	0
Brown bullhead	3	1	0.6	0.2
Brown trout	0	3	0	0.6
Burbot	2	3	0.4	0.6
Chain Pickerel	14	2	2.9	0.4
Common shiner	2	25	0.4	4.9
Creek chub	0	1	0	0.2
Fallfish	9	192	1.9	37.7
Golden shiner	17	0	3.5	0
Pumpkinseed	28	0	5.8	0
Smallmouth bass	33	107	6.8	21
Spottial shiner	359	5	73.9	1
White sucker	2	125	0.4	24.6
Yellow perch	16	45	3.3	8.8
Totals	486	509	100	100

Table 3. List of Fish Species Collected at River Mile 79.3 and 78.5 Downstream of the Rumford Falls Project in August 2003 (source: application).

Species	Number of Fish Collected		Percent Composition	
	RM 79.3	RM 78.5	RM 79.3	RM 78.5
Brown trout	8	5	1.3	1.3
Burbot	10	3	1.6	0.8
Chain Pickerel	2	0	0.3	0
Fallfish	2	3	0.3	0.8
Golden shiner	0	3	0	0.8
Longnose dace	5	2	0.8	0.5
Rainbow trout	2	1	0.3	0.3
Smallmouth bass	570	290	90.5	74.6
White perch	0	1	0	0.3
White sucker	27	75	4.3	19.3
Yellow perch	4	5	0.6	1.3
Totals	630	388	100	100

Table 4. Fish Species Collected During 2008 Surveys Between Rumford Falls and the Riley Impoundment (source: application).

Species	Number of Fish Caught	Percent Hatchery Origin
Smallmouth bass	95	NA
Rainbow trout	6	100
Brown trout	3	100
Fallfish	37	NA

Table 5. Maine DIFW Fish Stocking in the Mainstem of the Androscoggin River in Gilead, Bethel, Hanover, and Mexico, Maine, 2017-2021 (source: application updated by staff).

City	Species	Number of Fish Stocked Each Year				
		2019	2020	2021	2022	2023
Gilead	Brook trout	1,075	1,075	1,075	1,075	1,075
Gilead	Brown trout	750	750	750	750	750
Gilead	Rainbow trout	1,000	1,300	1,300	1,300	1,375
Bethel	Brook trout	675	675	675	675	675
Bethel	Brown trout	1,600	1,600	1,600	1,600	1,600
Bethel	Rainbow trout	500	700	700	700	700
Hanover	Brook trout	1,000	1,000	1,000	1,000	1,000
Hanover	Brown trout	2,000	2,000	2,000	2,000	2,000
Mexico	Brook trout	250	250	125	125	125
Mexico	Brown trout	250	250	125	125	125
Mexico	Rainbow trout	940	1,350	1,350	675	675
Rumford	Brook trout	0	0	125	125	125
Rumford	Brown trout	0	0	125	125	125
Rumford	Rainbow trout	0	0	0	675	675

Table 6. Rumford Falls Project – Percent of Time Androscoggin River Flows Historically Were Greater Than the Hydraulic Capacity of the Upper Station (4,550 cfs), Monthly From 2000 Through 2021 (source: Updated Study Report filed 8/5/22).

Month	Percent of Time
January	15.1
February	12.4
March	35.5
April	78.9
May	64.2
June	30.0
July	12.9
August	7.6
September	3.9
October	18.6

November	28.5
December	25.8
Annual	27.8

Table 7. Rumford Falls Project – Percent of Time Flows in the Upper Dam Bypassed Reach Were Greater Than the Target Flows, Monthly from 2000 through 2021(source: Updated Study Report filed 8/5/22).

Month	**Percent of Time**			
	500 cfs	**1,000 cfs**	**1,500 cfs**	**2,000 cfs**
January	10.6	7.6	5.9	4.5
February	8.7	4.3	3.1	2.6
March	26.1	19.6	15.2	12.5
April	72.6	65.0	60.5	55.0
May	57.0	50.4	43.8	40.3
June	25.2	21.1	19.4	17.4
July	10.4	8.7	7.9	6.3
August	6.0	5.4	5.0	4.4
September	3.3	3.2	2.0	1.5
October	16.0	13.5	11.7	10.7
November	24.4	21.2	18.3	15.9
December	20.7	18.5	15.0	12.6

Figure 6. Upper bypassed reach with approximately 1,000 cfs of flow (source: Updated Study Report filed 8/5/22).

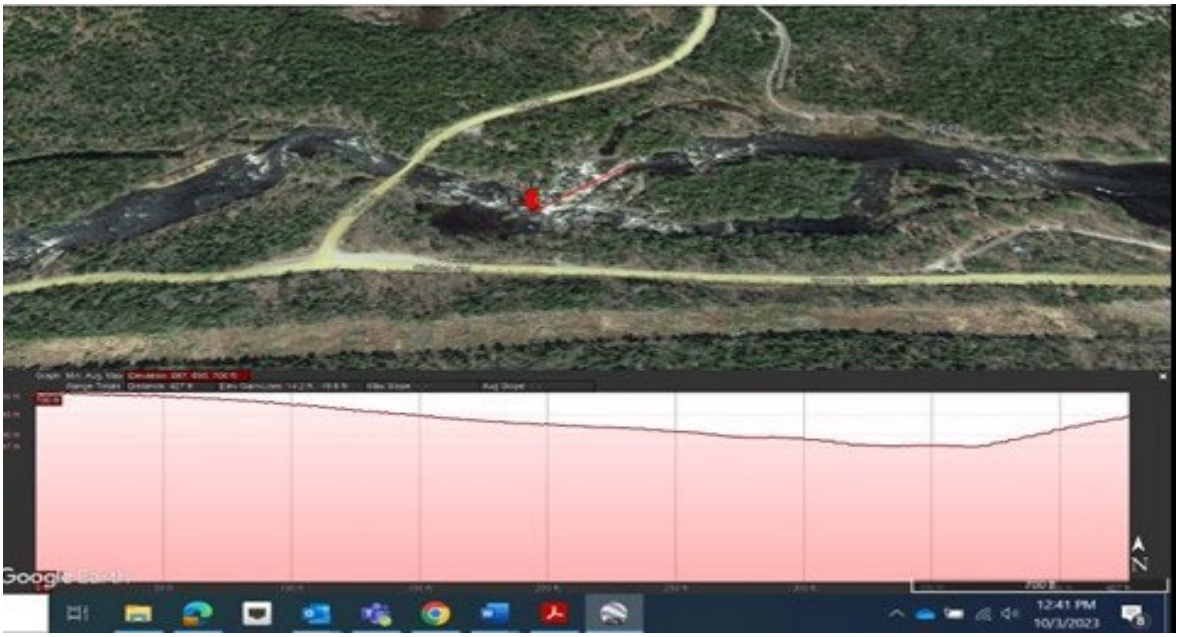


Figure 7. Elevation profile of the cribworks downstream of the McKay Station (source: staff).

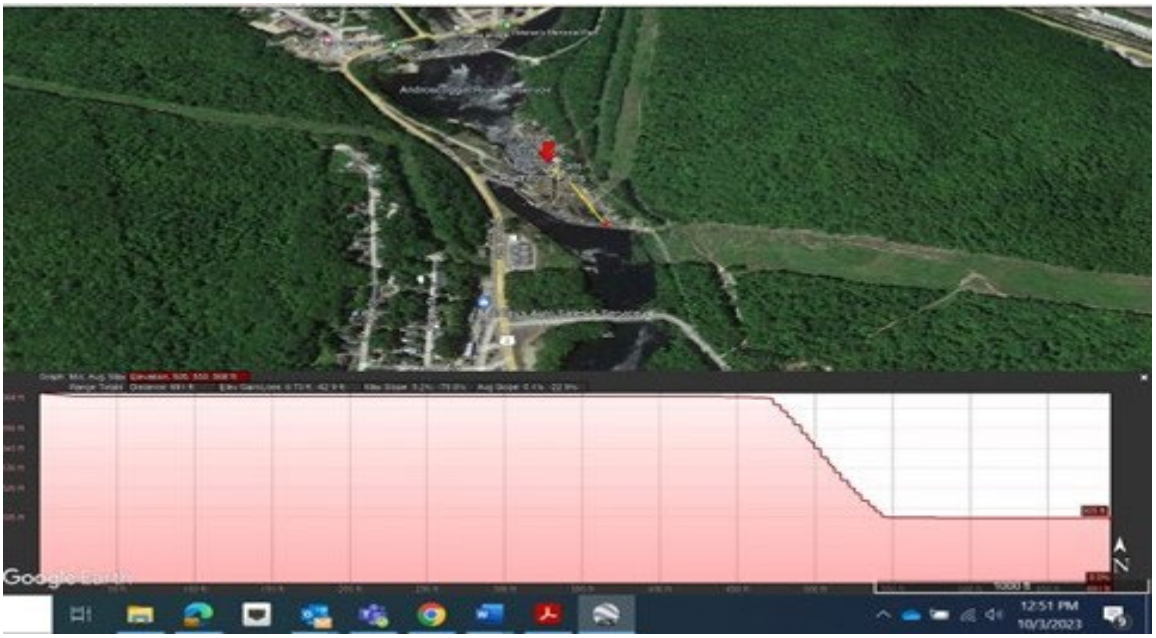


Figure 8. Elevation profile of Rumford Falls upper bypassed reach (source: staff).

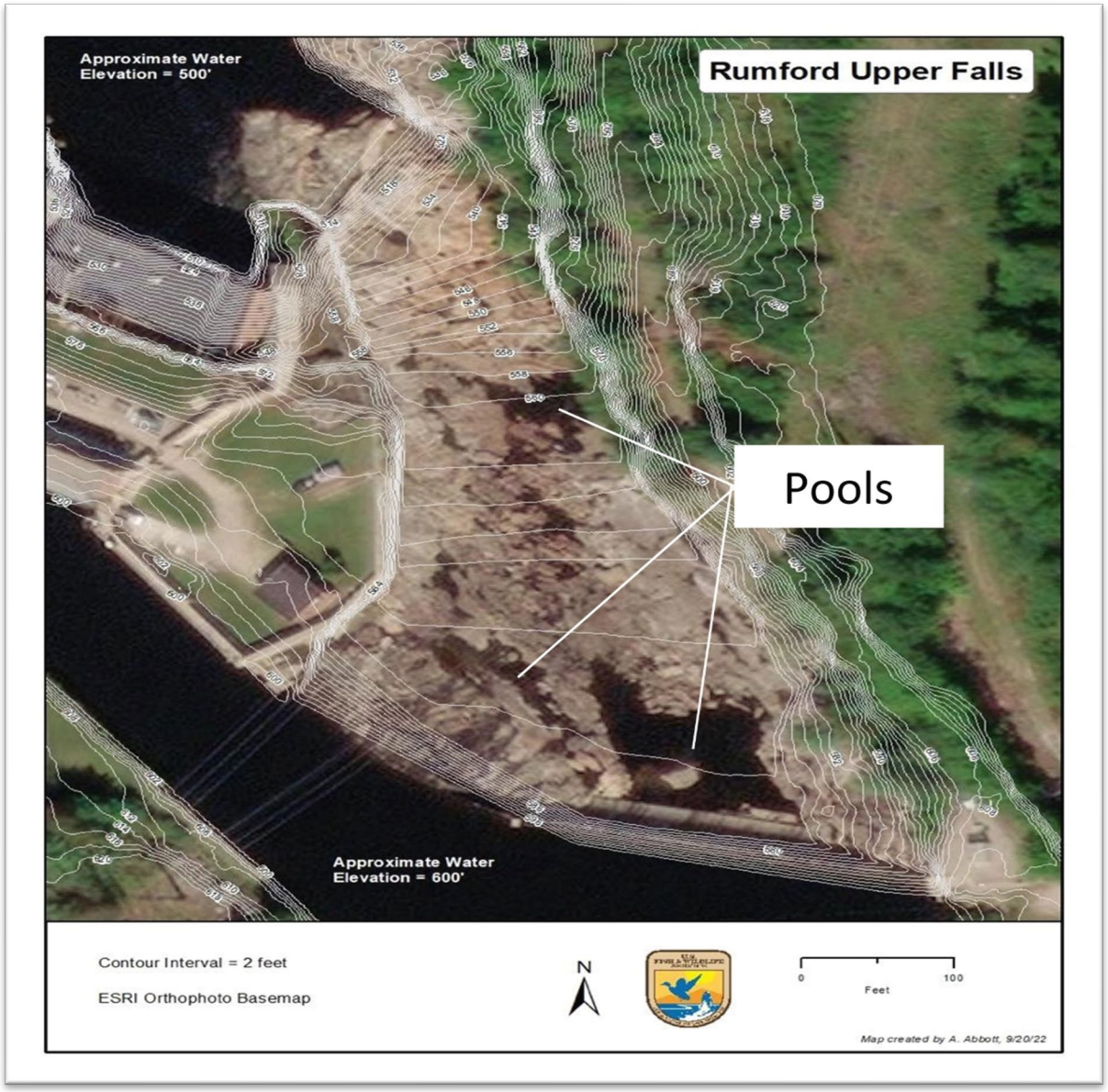


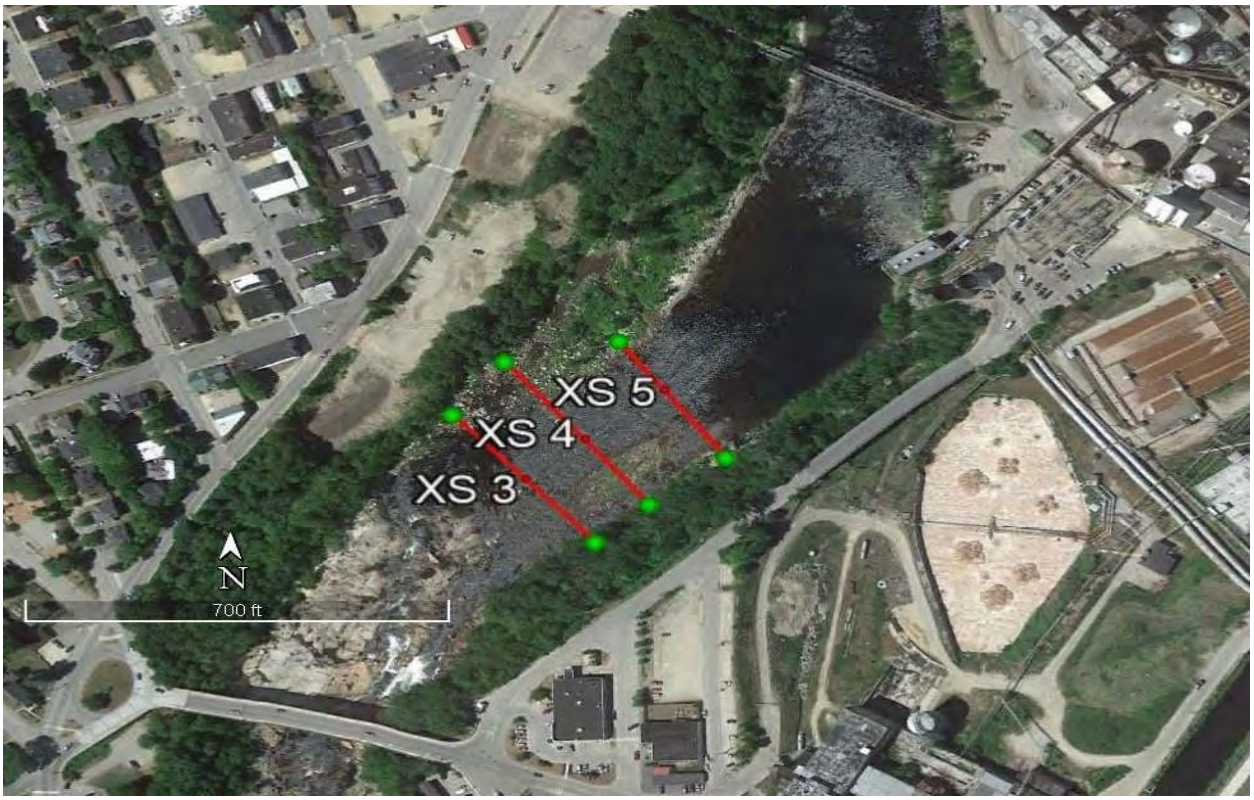
Figure 9. Pools in the upper bypassed reach under low flow (source: Maine TU's comments on the USR filed 9/29/22, as modified by staff).

Table 8. Rumford Falls Project – Historical Monthly and Annual Minimum, Average, and Maximum Flows in the Androscoggin River, 2000 through 2021 (source: Updated Study Report filed 8/5/22, as modified by staff).

Month	Minimum Flow (cfs)	Average Flow (cfs)	Minimum 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
Annual	**925**	**4,410**	**42,800**	**8,375**	**1,720**

[a] Data for period January 1, 2000 to December 31, 2021

[b] Based on daily average discharge data from USGS Androscoggin Gage.



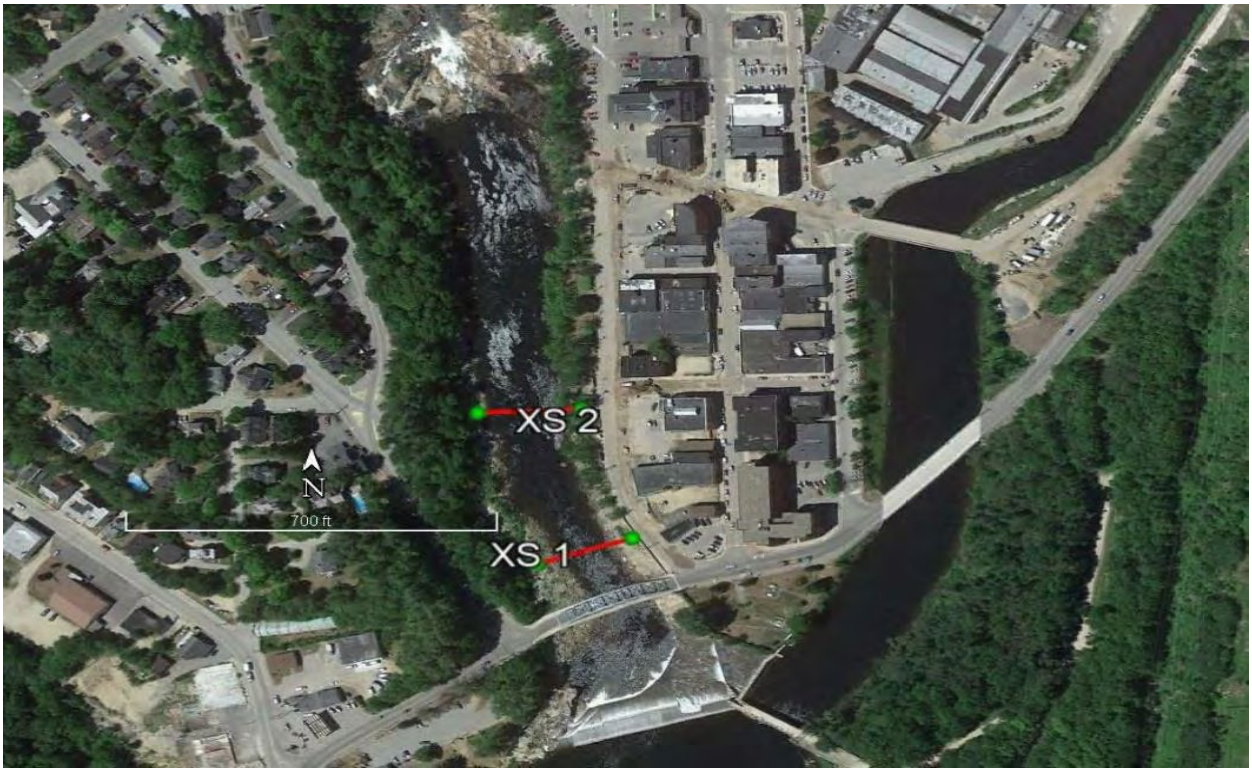


Figure 10. Middle Dam bypassed reach cross-sectional transects 1 and 2 in the upstream end of the reach (bottom image) and 3, 4, and 5 in the downstream end of the reach (top image) (source: Updated Study Report filed 8/5/22).

Table 9. Physical habitat characteristics of the Middle Dam bypassed reach averaged across transects according to flow (source: Updated Study Report filed 8/5/22).

Flow (cfs)	Width (ft)	Cross-Sectional Area (ft^2)	Wetted Perimeter (ft)	Depth (ft)	Velocity (fps)
20	124	349	133	2.6	0.13
40	135	370	144	2.7	0.21
60	144	386	153	2.8	0.27
80	150	399	160	2.8	0.33
100	157	411	167	2.8	0.36
120	163	421	173	2.9	0.41
140	168	431	179	2.9	0.45
160	175	440	186	2.9	0.49
180	179	448	190	2.9	0.54
200	182	457	193	2.9	0.59
220	184	464	195	2.9	0.63
240	186	472	197	3.0	0.67
260	188	479	199	3.0	0.71
280	191	486	202	3.0	0.74
300	192	492	203	3.0	0.78

320	193	498	205	3.1	0.82
340	194	504	206	3.1	0.86
360	195	510	206	3.1	0.89
380	195	516	207	3.1	0.93
400	196	521	208	3.1	0.97

Table 10. Area-weighted suitability (ft^2/ft) according to flow for adult smallmouth bass, adult rainbow trout, adult brown trout, benthic macroinvertebrates, and all species combined (mean value) (source: Updated Study Report filed 8/5/22).

Flow (cfs)	Adult small mouth bass	Adult rainbow trout	Adult brown trout	Benthic macroinvertebrates	Average all species
20	10.6	1.1	2.6	5.4	4.9
40	19.1	3.6	3.8	11.3	9.4
60	24.9	5.9	4.5	16.1	12.9
80	29.6	8.6	5.0	20.0	15.8
100	33.6	11.1	5.4	23.3	18.3
120	36.7	13.4	5.7	26.3	20.5
140	39.3	15.2	6.0	28.8	22.3
160	41.4	16.5	6.3	31.2	23.8
180	42.9	17.7	6.5	33.2	25.1
200	44.2	18.7	6.7	35.2	26.2
220	45.3	19.7	6.9	37.0	27.2
240	46.3	20.5	7.1	38.6	28.1
260	47.2	21.4	7.3	40.1	29.0
280	48.1	22.3	7.4	41.5	29.8
300	48.8	23.2	7.6	42.7	30.6
320	49.5	24.0	7.7	43.9	31.3
340	50.1	24.8	7.8	45.0	31.9
360	50.6	25.5	7.9	46.0	32.5
380	51.0	26.2	8.0	46.9	33.0
400	51.5	26.8	8.1	47.8	33.5

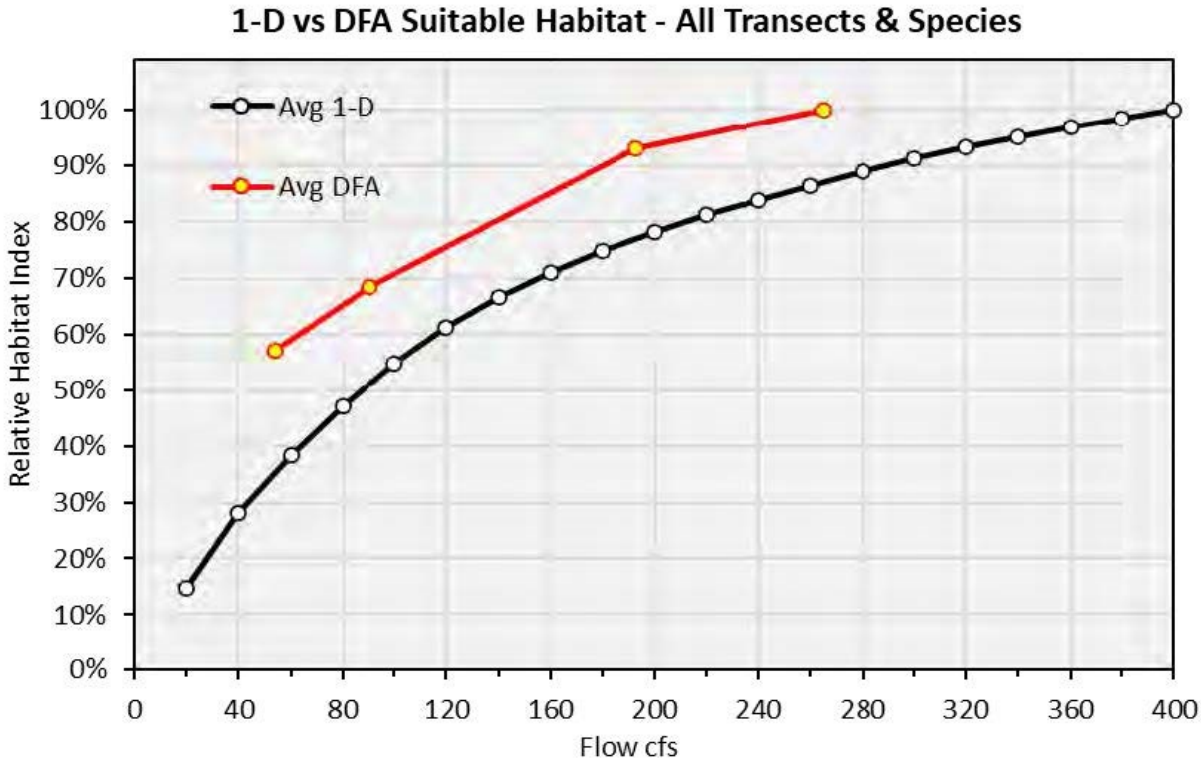
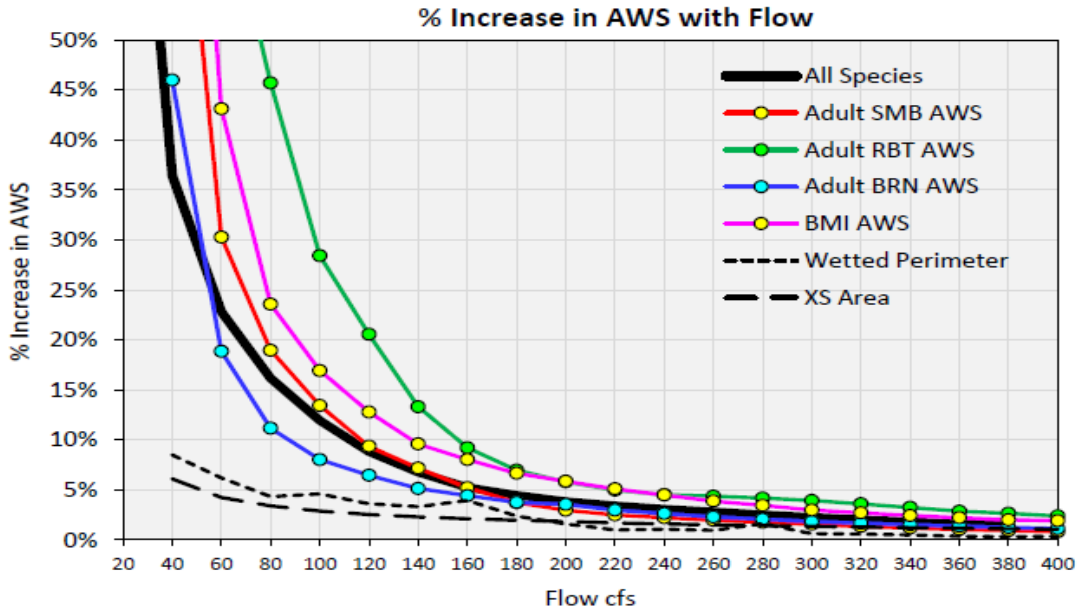


Figure 11. Habitat index values by flow in the Middle Dam bypassed reach averaged for all transects and species (source: Updated Study Report filed 8/5/22).



Note: SMB=smallmouth bass, RBT=rainbow trout, BRN=brown trout, BMI=benthic macroinvertebrates. Also shown is percent change in cross-sectional area and wetted perimeter with flow.

Figure 12. Percent increase of area-weighted suitability with increasing flow in the Middle Dam bypassed reach (source: application).

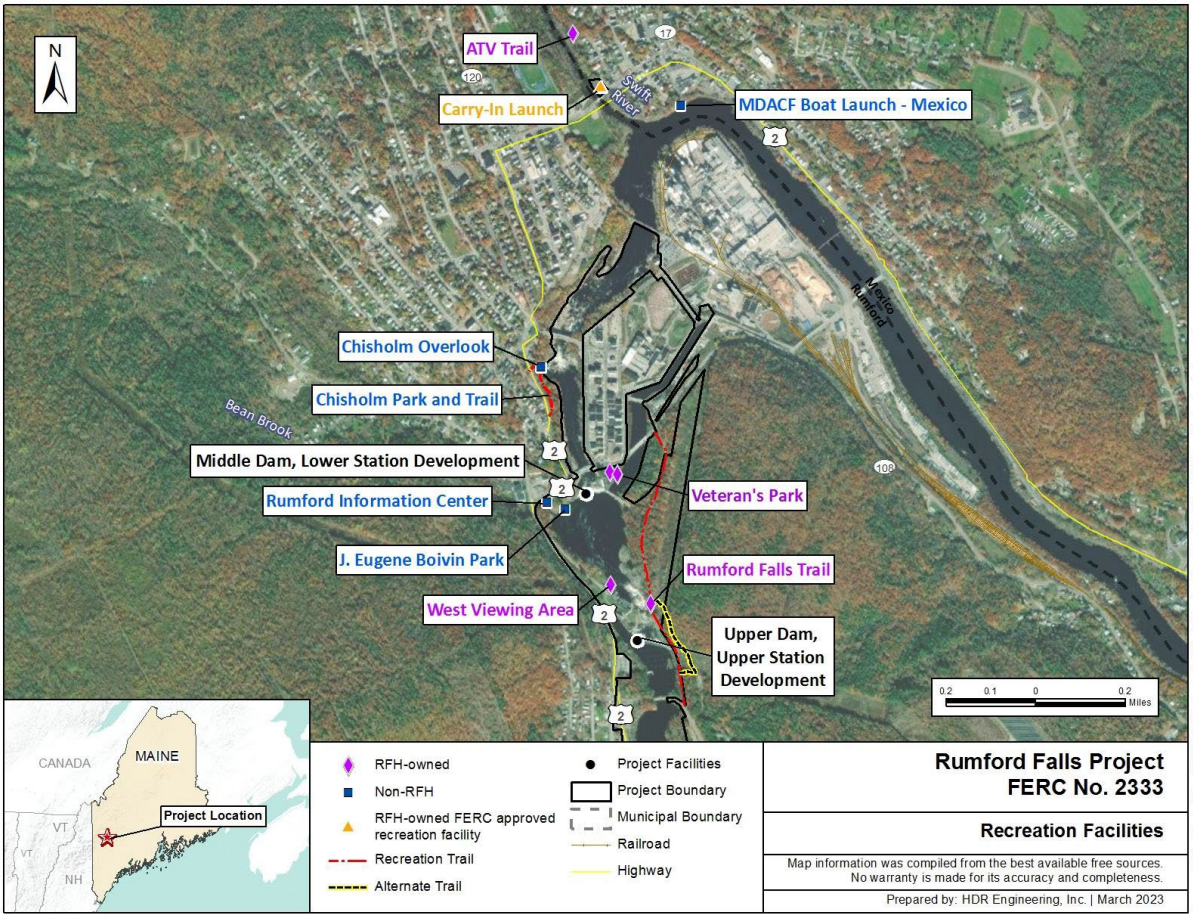


Figure 13. Location of the project recreation facilities at the Rumford Falls Project (source: Applicant 6/9/23 AIR response).

Table 11. Minority and low-income populations within one mile of the project boundary (source: U.S. Census Bureau, as modified by staff).

Geographic Area	Total Population	White (%) [a]	African American/ Black (%) [a]	American Indian/ Alaska Native (%) [a]	Asian (%) [a]	Native HI & Other Pacific Islander (%) [a]	Some Other Race (%) [a]	Two or More Races (%)[a]	Hispanic Origin (any race) (%) [a]	Total Minority Population (%) [a]	Households in Poverty (%) [b]
MAINE	1,366,949	91.4%	1.5%	0.4%	1.1%	>0.1%	0.3%	3.3%	1.9%	8.6%	11.6%
Oxford County*	58,276	93.4%	0.3%	0.2%	0.5%	>0.1%	0.3%	3.7%	1.6%	6.6%	14.5%
Census Tract 965600, Block Group 3	1,361	88.2%	0.0%	0.0%	0.0%	0.0%	0.0%	9.8%	2.1%	11.8%	13.8%
Census Tract 965400, Block Group 2	1,604	94.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	4.0%	5.7%	12.6%
Census Tract 965400, Block Group 1	1,388	96.1%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	3.9%	11.4%
Census Tract 965900, Block Group 3	1,161	81.5%	0.0%	0.0%	0.0%	0.0%	10.2%	8.4%	0.0%	18.5%	25.6%
Census Tract 965500, Block Group 1	1,506	96.5%	0.0%	0.0%	1.2%	0.0%	0.0%	0.9%	1.3%	3.5%	4.6%
Census Tract 965400, Block Group 3	512	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.2%
Census Tract 965600, Block Group 2	1,132	98.1%	0.0%	0.0%	>0.1%	0.0%	0.0%	1.8%	0.0%	1.9%	12.0%
Census Tract 965600, Block Group 1	999	97.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	2.5%	19.3%

Census Tract 965500, Block Group 2	873	87.5%	1.7%	0.0%	1.9%	0.0%	0.0%	8.8%	0.0%	12.5%	53.5%

* Reference Community

[a] Percent of Total Population (Table B03002 – Hispanic or Latino Origin by Race. 2022 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates. Accessed December 11, 2023. https://data.census.gov/table?d=ACS+5-Year+Estimates+Detailed+Tables&tid=ACSDT5Y2022.B03002).

[b] Percent of Households (Table B17017 – Poverty Status in the Past 12 Months by Household Type and Age of Householder. 2022 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates. Accessed December 11, 2023. https://data.census.gov/cedsci/table?d=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2022.B17017).

Gray shading denotes an Environmental Justice community.

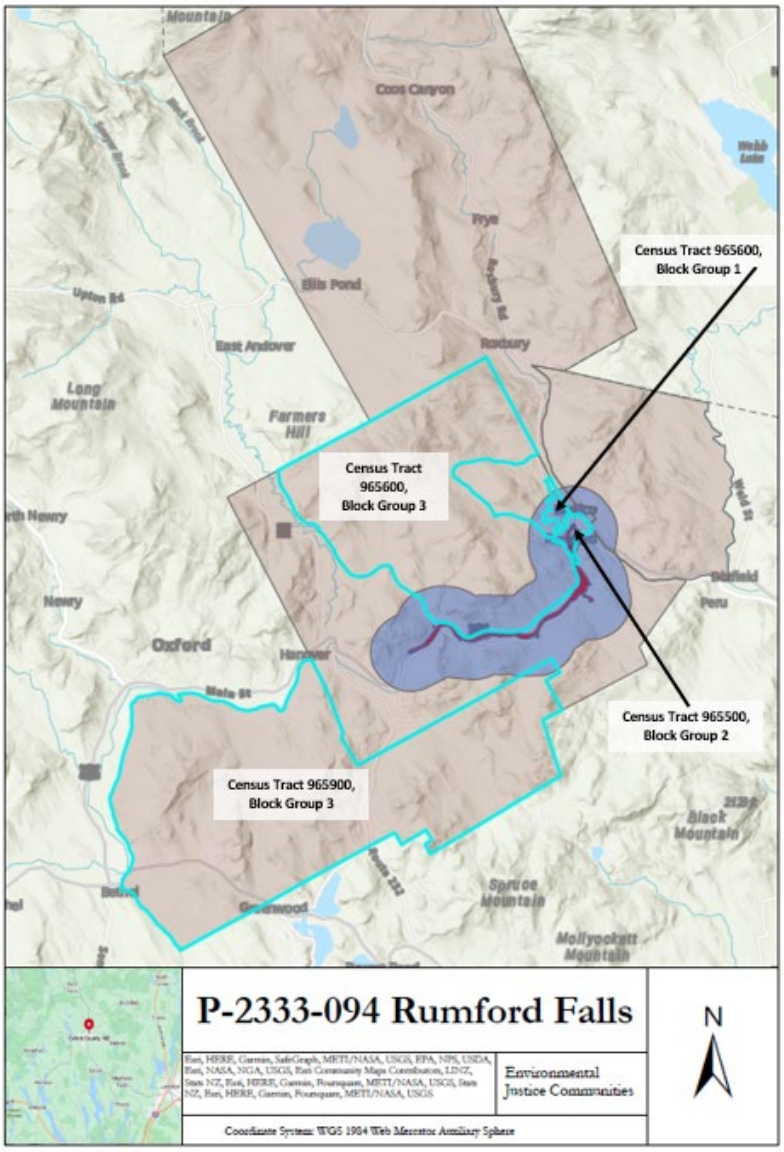


Figure 14. Identified Environmental Justice Communities (Census Tract 965600, Block Group 3; Census Tract 965600, Block Group 1; Census Tract 965900, Block Group 3; and Census Tract 965500, Block Group 2) located within the one-mile radius of the project boundary (source: staff).

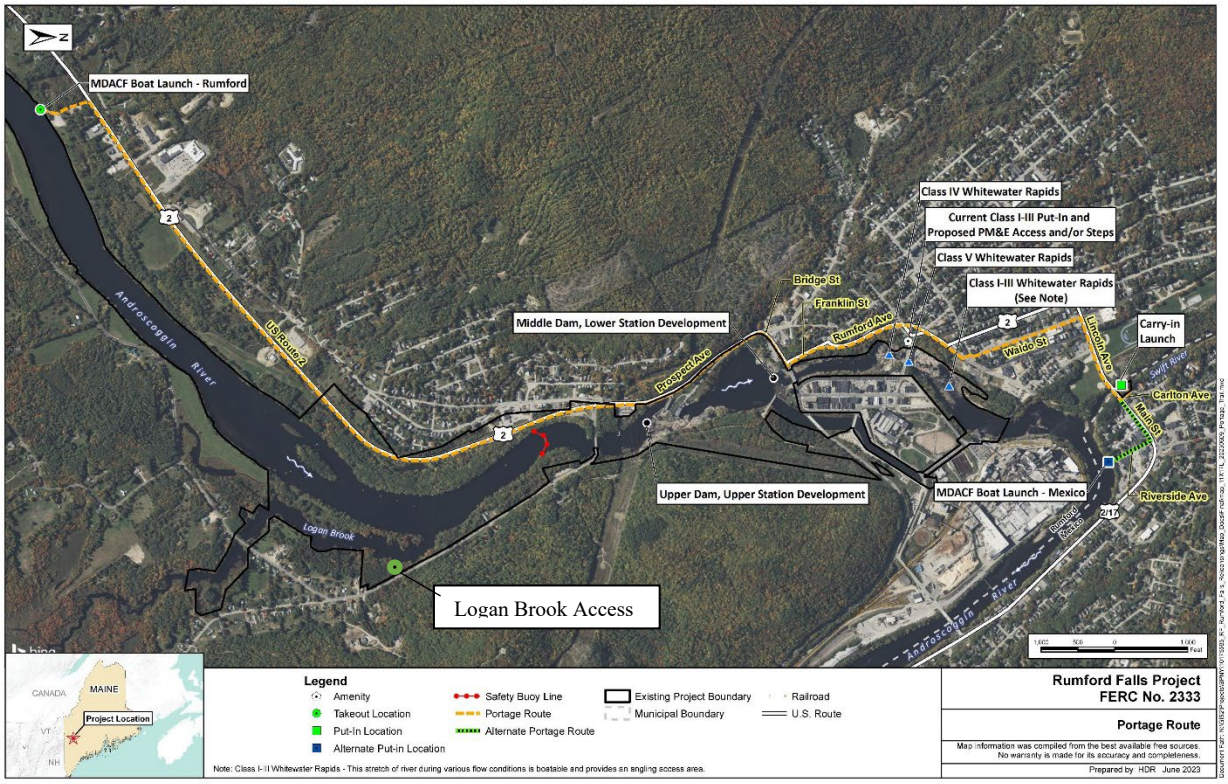


Figure 15. Location of the current Portage Trail and the current Logan Brook Access Location. (source: Applicant 6/9/23 AIR response and modified by staff to include Logan Brook Access).

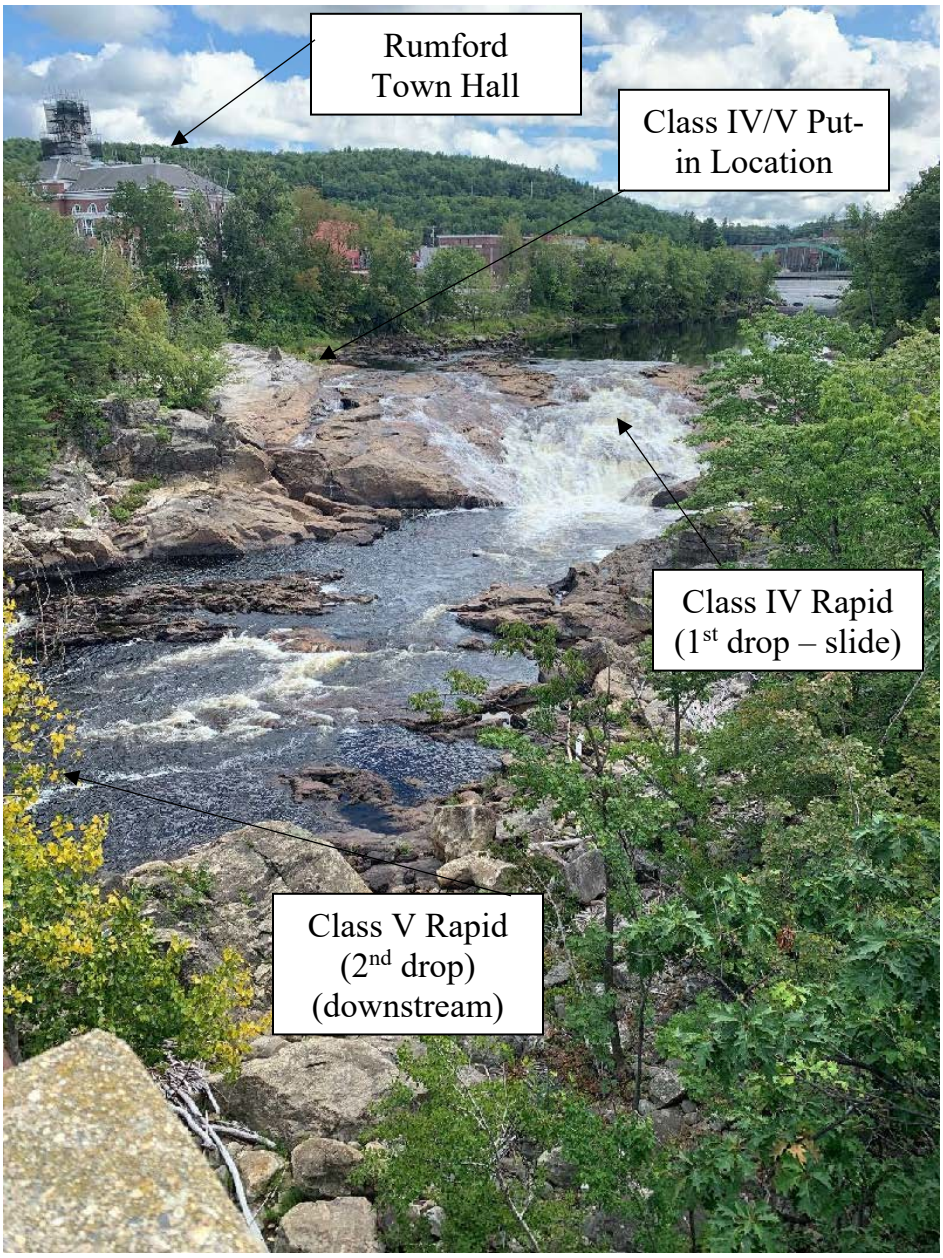


Figure 16. Location of Class IV/V Rapids (source: application, modified by staff)

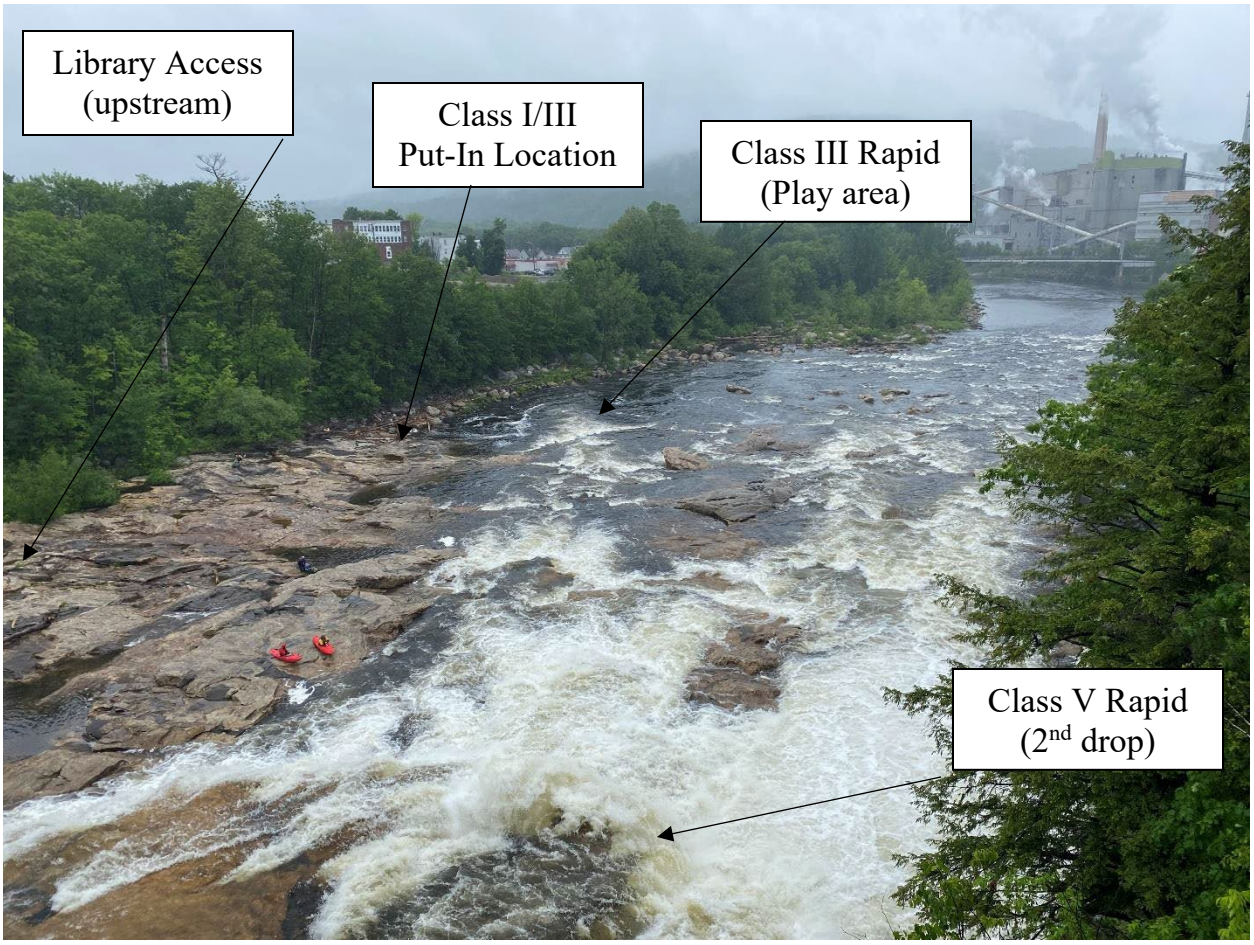


Figure 17. Location of Class I/III Rapids (source: application, modified by staff)

Figure 18. Reach Evaluated for Whitewater Boating Study (source: 8/5/22 USR)

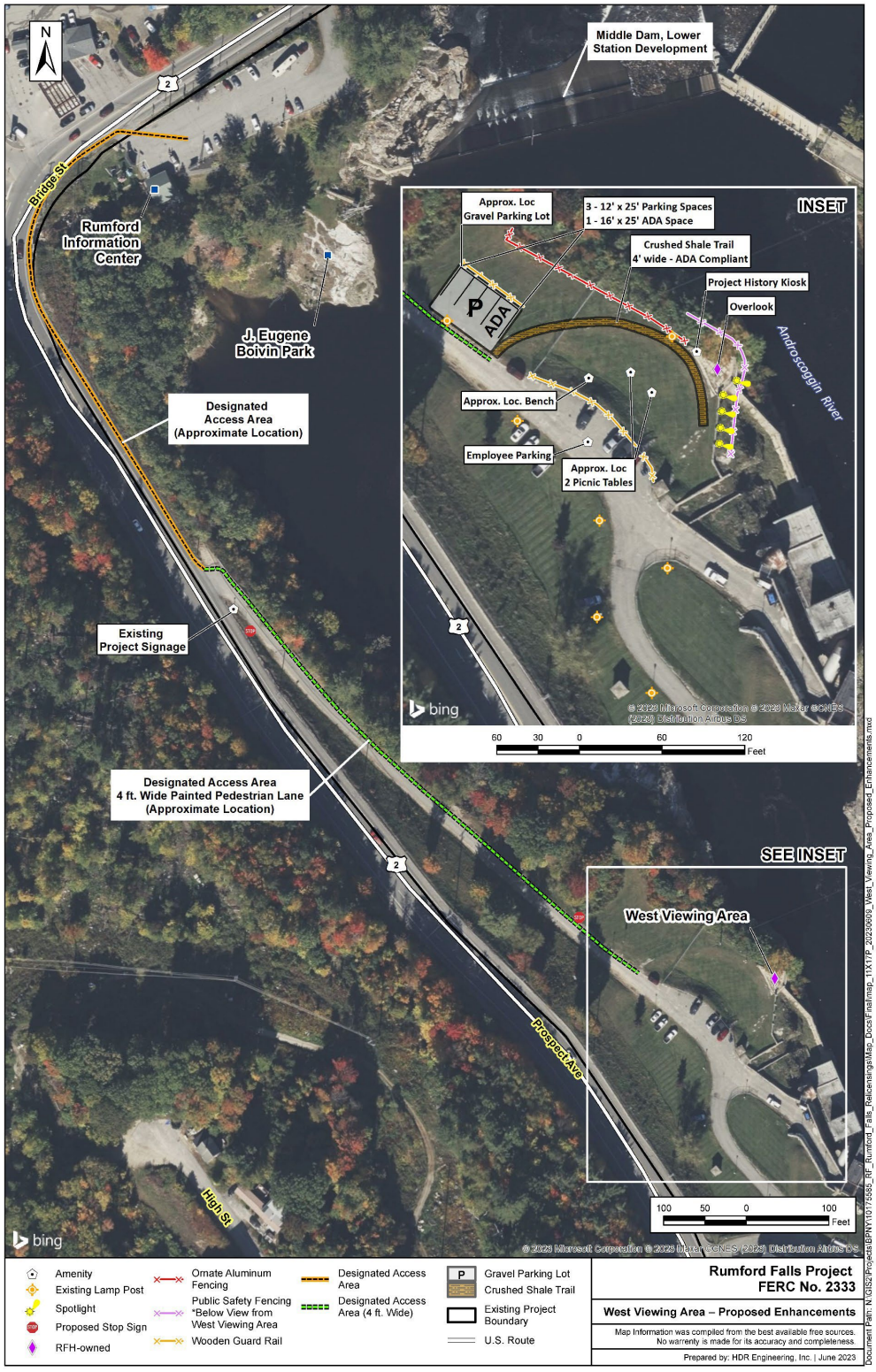


Figure 19. West Viewing Area – Proposed Enhancements (source: 6/9/23 AIR).

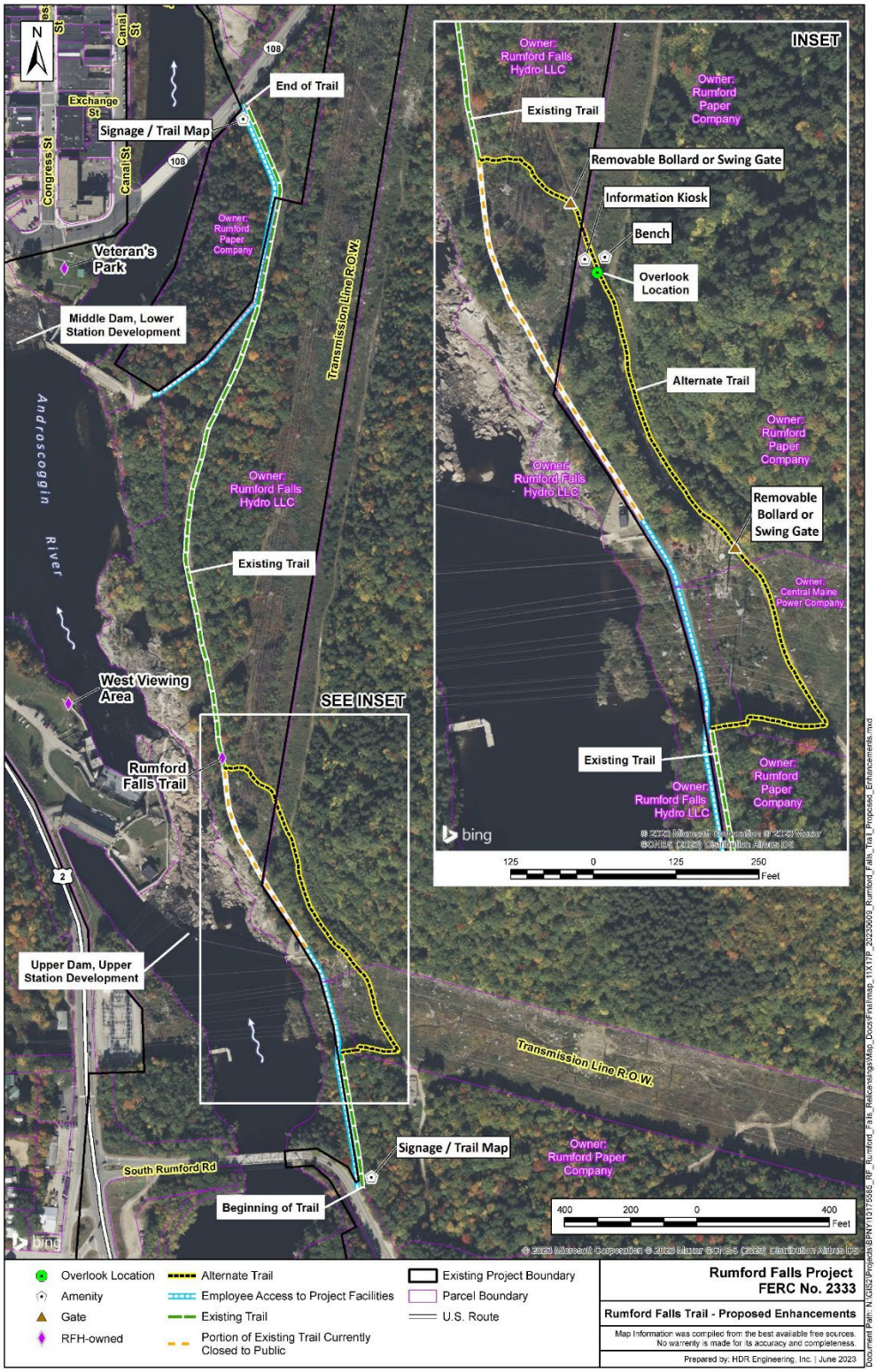


Figure 20. Rumford Falls Trail – Proposed Enhancements (source: 6/9/23 AIR).

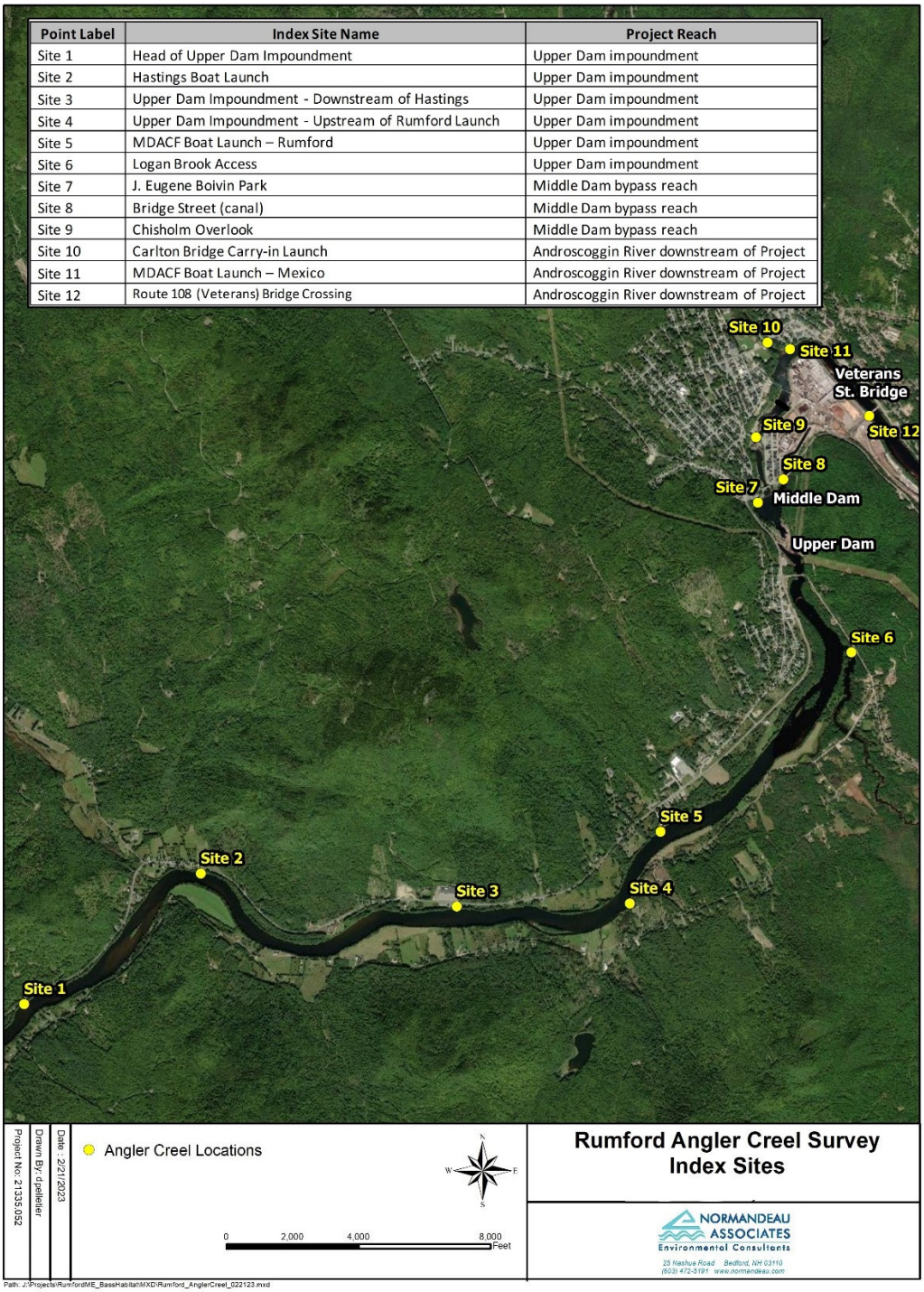


Figure 21. Rumford Angler Creel Survey Index Sites (source: applicant, Angler Creel Survey)

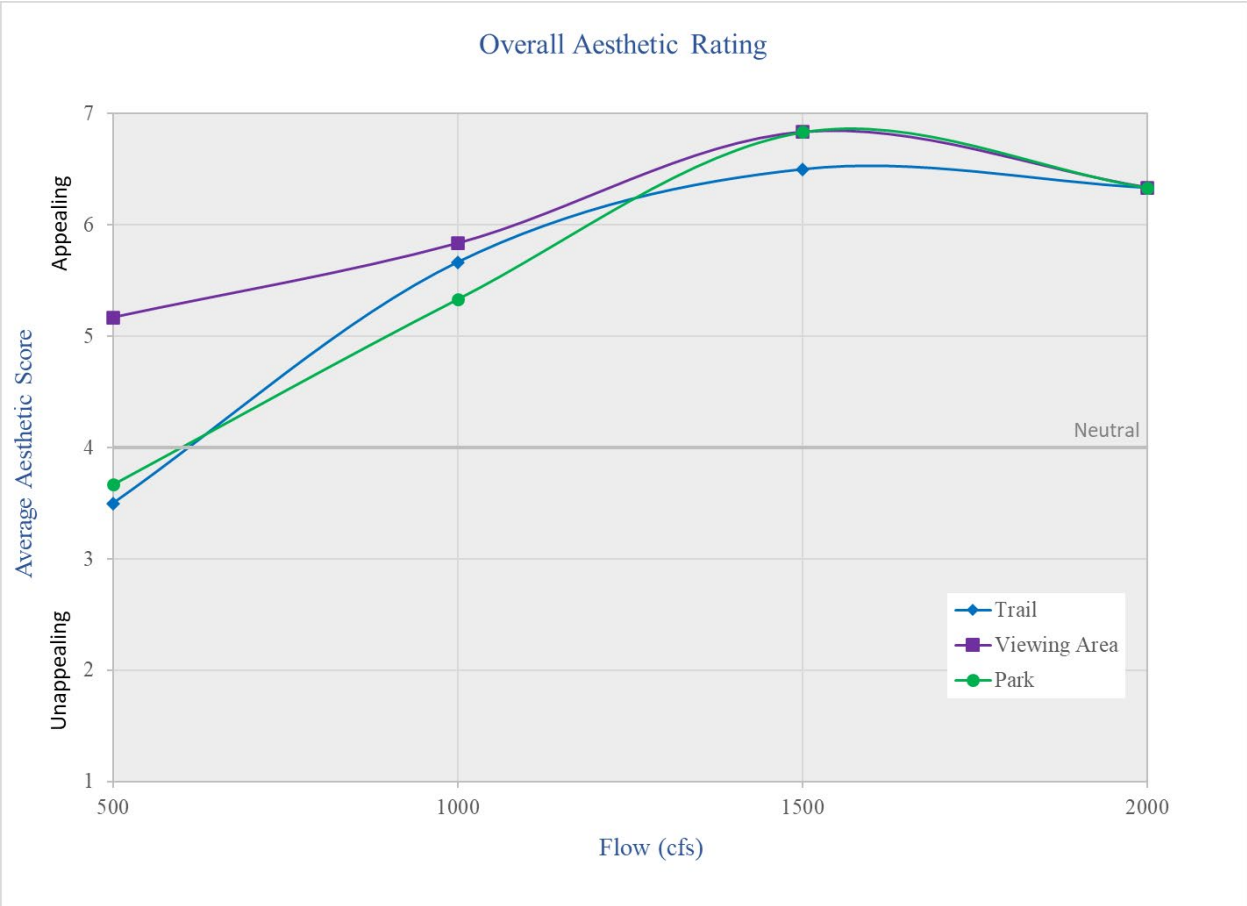


Figure 22. Overall Aesthetic Rating of Target Flows at Key Observation Points (source: applicant, Aesthetic Flow Study)

Table 12. Rumford Falls Project – Percent of Time Flows in the Middle Dam Bypass Reach were Greater than the Target Flows, Monthly from 2000 through 2021 (source: applicant, Whitewater Boating Study Report)

Month	Percent of Time[a,b,c]		
	800 cfs	1,500 cfs	2,000 cfs
January	32.6%	14.5%	10.3%
February	20.6%	12.4%	7.9%
March	54.8%	34.8%	25.1%
April	88.8%	78.5%	72.1%
May	72.9%	63.8%	56.6%
June	39.8%	29.4%	24.5%
July	17.4%	12.6%	10.3%
August	10.0%	7.6%	6.0%
September	6.2%	3.9%	3.3%
October	26.2%	18.2%	16.0%
November	38.3%	27.7%	23.8%
December	37.0%	25.1%	20.4%
Annual	37.1%	27.4%	23.0%

[a] Data for period January 1, 2000 to December 31, 2021

[b] Based on daily average discharge data from USGS Androscoggin Gage.

[c] Assumes Lower Station is operating at max capacity of 3,1000 cfs (i.e., 3,100 cfs was subtracted from daily average).

Table 13. Cost of environmental measures considered in assessing the environmental effects of operating the Rumford Falls Project (source: RFH and staff).

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
Aquatic Resources				
1. Operate the project in a run-of-river mode	RFH Staff	$0	$0	$0
2. Maintain both impoundments within 1 foot of full pond at elevations of 601.13 for the Upper Dam impoundment and 502.63 for the Middle Dam impoundment	RFH Staff	$0	$0	$0
3. Release a minimum flow of 1 cfs into the Upper Dam bypassed reach at all times	RFH Staff	$0	$0	$0
4a. Release a minimum flow of 95 cfs into the Middle Dam bypassed reach from May 1 through October 31 and 54 cfs from November 1 through April 30	RFH, Staff	$0	$109,987[c]	$109,987
4b. Release a minimum flow of 250-500 cfs into the Middle Dam bypassed reach from May 1 through	Maine DIFW	$0	$289,395-$578,860[d]	$289,395-$578,860

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
November 30 and 54 cfs from December 1 through April 30				
4c. Release a minimum flow of 250 to 500 cfs from both the Upper Dam and Middle Dam at all times	Maine TU	$0	$447,232-$894,536[e]	$447,232-$894,536
5. Maintain a minimum flow of 21 cfs or greater at all times when the Middle Dam impoundment is lowered for maintenance	RFH Staff	$0	$0	$0
6. Develop and implement an Operations Compliance Management Plan	RFH Staff	$5,000	$2,500	$2,944
7. Perform additional water quality and benthic macroinvertebrate sampling in the Upper Dam bypassed reach, the power canal, and downstream from the project outflow	Maine TU	$20,000	$0	$1,777
8. Increase minimum flows in the project bypassed reach to support aquatic, recreational, and aesthetic values	American Whitewater	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
Threatened and Endangered Species				
9. Avoid tree-trimming and the removal of trees with diameters that are equal to or greater than 3 inches at breast height within the project boundary between April 15 and October 31 to protect federally-threatened Northern long-eared bats.	Staff	$0	$0	$0
Recreation Resources				
10a. Provide whitewater boating flows within of 1,200 cfs to 1,500 cfs in the Middle Dam bypassed reach for three days (total) June through August from 10 am to 3 pm if sufficient inflow is available. Timing to be determined in consultation with the Town of Rumford and American Whitewater.	RFH	$0	$4,571[f]	$4,571
10b. Provide a minimum flow of 1,500 cfs to the Middle Dam bypassed reach from 10:00 a.m. to 5:00 p.m. Friday through Sunday during the months of July,	Maine TU	$0	$76,777[g]	$76,777

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
August and September for whitewater boating				
10c. Provide whitewater boating flows within of 1,200 cfs to 1,500 cfs in the Middle Dam bypassed reach for 10 weekend days (total) June through August from 10 am to 3 pm. Timing to be determined in consultation with the Town of Rumford.	Town of Rumford Maine BPL Staff	$0	$15,212[h]	$15,212
10d. Provide weekly scheduled whitewater boating flows in the bypassed reach during the recreational boating season whenever sufficient inflows are present	American Whitewater	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost
11. Provide public information regarding whitewater flow releases in the Middle Dam bypassed reach via SafeWaters, a publicly accessible website and tollfree phone line operated by RFH.	RFH American Whitewater Staff	$6,000	$1,500	$2,033
12. Develop a Recreation	RFH	$15,000	$2,000	$3,332

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
Management Plan within 6 months of license issuance that includes proposed recreation site enhancements and maintenance activities.	Staff			
13. Build and maintain access and/or steps from behind the Rumford Public Library for river access in consultation with the Town of Rumford	RFH Maine TU Staff	$75,000	$2,500	$9,162
14. Build and maintain access improvements in the Middle Dam bypassed reach, including improved accessibility measures such as stairways and/or safety railings.	Maine BPL	Unknown – measure lacks specificity to determine a cost	Unknown - measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost
15. Restore the traditional 'fisherman's trail' to access the tail of the lower falls during favorable flow conditions.	Maine TU	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost
16. Relocate the Logan Brook Access closer to reservoir, and add signage directing boaters to the	Maine TU Maine BPL Staff	$30,000	$2,000	$4,665

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
portage				
17. Maintain Rumford Falls trail and enhance the alternate trail segment by: (1) making the trail bed firmer and adding wood crib steps to steep portions; (2) installing a removable bollard or swing gate; (3) installing a bench and kiosk at the falls overlook; and (4) adding signage at both entrances that includes a trail map.	RFH Maine TU Staff	$65,000	$4,000	$9,774
18. Build a classic style pergola at the West Viewing Area.	Brie Weisman	$5,000	$1,000	$1,444
19. Enhance and maintain West Viewing Area and provide public access from April 15th to October 31st, dawn to dusk. Enhancements include: (1) removing the existing chain link fencing and gates from around the perimeter of the viewing area; (2) repairing the concrete deck and	RFH	$175,000	$2,000	$17,545

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
railing; (3) providing a dedicated public gravel parking area for four vehicles with an ADA parking space; (4) installing an ADA-compliant path of crushed shale or comparable material from the parking area to the overlook; (5) installing a project/history kiosk, two picnic tables, and a bench; (6) moving the flood lights that illuminate the falls from their current position on top of the concrete banister to below the banister; (7) installing chain link security fencing below the deck; (8) installing an ornate 8-feet-high black aluminum fencing along the top of the steep river embankment; (9) installing wooden guard rails in front of the parking areas; (10) providing a painted pedestrian walkway along the existing Upper Station powerhouse driveway; (11)				

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
providing a stop sign at either end of the Upper Station powerhouse driveway, to create one-lane traffic flow				
20. Implement the enhancements identified above in 19 except install a concrete sidewalk along the lower development driveway to the West Viewing area instead of a painted pathway.	Town of Rumford Staff	$205,000	$3,000	$21,210
21. Maintain the carry-in canoe facility at the Carlton Bridge	RFH Staff	$0	$2,000	$2,000
22. Improve the carry-in launch and parking below U.S. Route 2 in Mexico	Maine TU	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost
23. Include a conceptual plan and schedule for proposed improvements and maintenance of at Rumford Public Library Access and Logan Brook Access.	Staff	$10,000	$2,000	$2,888
24. Develop a Recreation Monitoring plan to evaluate	Staff	$5,000	$5,000	$5,444

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
recreation needs and revise the Recreation Management Plan as needed every 10 years.				
Aesthetic Resources				
25a. Provide aesthetic flow releases in the Upper Dam bypassed reach from 1,200 – 1,500 cfs for three days (total), June through August from 10 am to 4 pm, to be determined based on consultation with the Town of Rumford if sufficient inflow is available	RFH	$0	$11,784[i]	$11,784
25b. Provide aesthetic flows of 1,000 cfs to both the Upper and Middle Dam bypassed reaches from 10 am to 8 pm Friday through Sunday during the months of July, August and September, during the Rumford Pumpkinfest Event held annually in mid-October, and up to two additional events not to exceed three days if/when determined by the	Maine TU	$0	$173,194[j]	$173,194

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
Town of Rumford				
25c. Provide aesthetic flow releases of 1,200 – 1,500 cfs from the Upper Dam from 10am to 4pm for 10 weekend days/year	Town of Rumford Maine BPL Staff	$0	$39,281[k]	$39,281
25d. Provide aesthetic flows over the Upper Falls and Middle Dam	American Whitewater	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost	Unknown – measure lacks specificity to determine a cost
26a. Provide flood lighting of the falls at the upper station at river flow greater than 6,000 cfs between 8 pm and 12:00 a.m. year-round	RFH	$250	$250	$272
26b. Provide flood lighting of the falls at the upper station at river flow greater than 6,000 cfs between evening civil twilight and 12:00 a.m. year-round.	Town of Rumford Staff	$250	$250	$272
27. Provide public information regarding aesthetic flow releases in the Upper Dam bypassed reach via SafeWaters, a publicly accessible website and tollfree phone line operated	RFH American Whitewater Staff	$6,000	$1,500	$2,033

Enhancement / Mitigation Measure	Entity	Capital Cost[a] (2022$)	Annual Cost[a] (2022$)	Levelized Annual Cost[b] (2022$)
by RFH.				
Cultural Resources				
28. Develop and implement a Historic Properties Management Plan that includes a framework for consultation if and when additional work is proposed within the eligible historic district that has potential to affect historic properties, including with the Mi'kmaq Nation if human remains, artifacts, or any other evidence of Native American presence is discovered.	RFH Maine SHPO Staff	$15,000	$2,000	$3,332
29. Conduct biennial monitoring for erosion of the National Register-eligible archaeological sites in the Upper Dam impoundment.	RFH Staff	$0	$10,000[l]	$5,400
Terrestrial Resources				
30. Use black ash trees for wetland mitigation	Mi'kmaq Nation	$0	$0	$0

[a] Unless otherwise noted, all cost estimates are from Rumford Falls Hydro. Commission staff reviewed these costs and determined that they are reasonable estimates.

[b] All capital and annual costs are converted to equal costs over a 30-year period to give a uniform basis for comparison.

[c] Staff estimate of the cost for providing the total minimum flow of 95 (opportunity cost) from Middle Dam from May 1 to October 31. The measure would forego 1,540 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 1,540 MWh of foregone generation would be valued at $109,987/year. In addition, there would be an annual foregone capacity benefit of 0.2 MW valued at $22,537/year. It would be no foregone generation loss from November 1 to April 31 since median available flow exceeds maximum hydraulic capacity.

[d] Staff estimate of the cost for providing a flow of 250-500 cfs (opportunity cost) from Middle Dam. The measure would forego 4,052-8,105 MWh/year respectively. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 4,052-8,105 MWh of foregone generation would be valued at $289,394/year to 578,859/year. In addition, there would be an annual foregone capacity benefit of 0.4-0.7 MW valued at $69,444/year to $118,540/year.

[e] Staff estimate of the cost for providing a flow of 250-500 cfs (opportunity cost) from Upper and Middle Dam. The measure would forego 6,262-12,525 MWh/year respectively. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 12,525 MWh of foregone generation would be valued at $447,232/year to $894,536/year. In addition, there would be an annual foregone capacity benefit of 1.7-3.5 MW valued at $308,153/year to $631,453/year.

[f] Staff estimate of the cost for providing a flow of 1,500 cfs (opportunity cost) from Middle Dam for 3 days total. The measure would forego 64 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 64 MWh of foregone generation would be valued at $4,571/year.

[g] Staff estimate of the cost for providing a flow of 1,500 cfs (opportunity cost) from Middle Dam for 39 days. The measure would forego 1,075 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 1,075 MWh of foregone generation would be valued at $76,777/year.

[h] Staff estimate of the cost for providing a flow of 1,500 cfs (opportunity cost) from Middle Dam for 10 days. The measure would forego 213 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 213 MWh of foregone generation would be valued at $15,212/year.

[i] Staff estimate of the cost for providing an aesthetic flow of 1,500cfs (opportunity cost) from Upper Dam for 3 days. The measure would forego 165 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 165 MWh of foregone generation would be valued at $11,784/year.

[j] Staff estimate of the cost for providing an aesthetic flow of 1000 cfs (opportunity cost) from Upper Dam for 39 days. The measure would forego 2,425 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 2,425 MWh of

foregone generation would be valued at $173,194/year. Staff did not include the cost for loss generation from the Middle Dam due to conflicting recommendations and other information necessary to evaluate the flow.

[k] Staff estimate of the cost for providing a flow of 1,500 cfs (opportunity cost) from Upper Dam for 10 days. The measure would forego 550 MWh/year. Using an energy cost of 71.42/MWh from table 13 in Appendix E, 550 MWh of foregone generation would be valued at $39,281/year.

[l] Cost estimated by staff. This cost is for biennial monitoring.

APPENDIX D- BIOLOGICAL ASSESSMENT

Affected Environment

The FWS Information for Planning and Consultation (IPaC) database indicates that the endangered Atlantic salmon, the endangered Northern long-eared bat (NLEB), the threatened tri-color bat, and the candidate monarch butterfly have the potential to occur within the project boundary.[55]

The Gulf of Maine Distinct Population Segment (GOM DPS) of anadromous Atlantic salmon currently occupies the Androscoggin River Basin and could occur within the project area. The project area is also designated critical habitat for Atlantic salmon. The northern long-eared bat could also occur in the project area; critical habitat has not been designated for NLEB, tri-color bat, or the monarch butterfly.

Atlantic Salmon

The GOM DPS of Atlantic salmon were initially listed as endangered on November 17, 2000, in eight coastal Maine watersheds by NMFS and the FWS.[56] NMFS and FWS later expanded the listing to include Atlantic salmon that inhabit large Maine rivers (Androscoggin, Kennebec, and Penobscot) that were partially or wholly excluded in the initial listing.[57] Currently, the GOM DPS includes Atlantic salmon that occupy freshwater from the Androscoggin River to the Dennys River, as well as anywhere Atlantic salmon occur in the estuarine and marine environments. Specifically, in the Androscoggin River, the historical freshwater upstream limit of Atlantic salmon is Rumford Falls; however no Atlantic salmon have been seen upstream of Lewiston Falls (over 40 miles downstream of Rumford) since 1815.

Recovery Plan

The 2019 Final Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon (USFWS and NMFS, 2018) focuses on the three statutory requirements in the ESA, including: (1) site-specific recovery actions; (2) objective, measurable criteria for delisting; and (3) time and cost estimates to achieve recovery and intermediate steps. The main objective of the final recovery plan is to maintain self-sustaining, wild populations with access to sufficient suitable habitat in each salmon habitat recovery unit and ensure that necessary management options for marine survival are in place. In addition, the plan seeks to reduce or eliminate all threats that either individually or in combination might endanger the GOM DPS.

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[55] *See* Commission staff's November 17, 2023 Memorandum on FWS's Endangered Species List Update; *see also* FWS, IPaC, https://ecos.fws.gov/ipac/ (last visited November 17, 2023).

[56] 65 Fed. Reg. 69,459 (Nov. 17, 2000).

[57] 74 Fed. Reg. 29,344 (June 19, 2009).

The final recovery plan recommends the following major actions:

- Improve connections between the ocean and freshwater habitats important for salmon recovery,
- Maintain genetic diversity of Atlantic salmon populations over time,
- Increase the number of reproducing adults through the conservation hatchery program,
- Increase the number of reproducing adults through the freshwater production of smolts,
- Increase Atlantic salmon survival by improving the understanding of marine ecosystems and the factors that affect salmon in the ocean, and
- Collaborate with partners and involve interested parties in recovery efforts.

Essential Fish Habitat

Essential fish habitat (EFH) refers to those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity and covers a species' full life cycle.[58] EFH for Atlantic salmon has been defined as, "all waters currently or historically accessible to Atlantic salmon within the streams, rivers, lakes, ponds, wetlands, and other water bodies of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut." The Rumford Falls Project area constitutes EFH for Atlantic salmon because it was historically accessible to Atlantic salmon.

Northern Long-eared Bat

The Northern long-eared bat (NLEB) was listed as a federally threatened species on May 4, 2015 (FWS, 2015). In January 2016, the FWS finalized the ESA section 4(d) rule for this species, which focuses on preventing effects on bats in hibernacula associated with the spread of white-nose syndrome[59] and effects of tree removal on roosting bats or maternity colonies (FWS, 2016a). As part of the 4(d) rule, take incidental to certain activities conducted in accordance with the following habitat conservation measures, as applicable, would not be prohibited: (1) occurs more than 0.25-mile from a known, occupied hibernacula; (2) avoids cutting or destroying known, occupied maternity roost trees during the pup season (June 1 – July 31);[60] and (3) avoids cutting or destroying any tree within a 150-foot radius of a known, occupied maternity tree during the pup season. On January 5, 2016, FWS developed an optional streamlined consultation framework that allows federal agencies to rely on a programmatic biological

[58] 50 C.F.R. § 600.10.

[59] A hibernaculum is where a bat hibernates over the winter, such as in a cave. White-nose syndrome is a fungal infection that agitates hibernating bats, causing them to rouse prematurely and burn fat supplies. Mortality results from starvation or, in some cases, exposure.

[60] Pup season refers to the period when bats birth their young.

opinion on FWS's final 4(d) rule to fulfill section 7(a)(2) consultation requirements for northern long-eared bat (FWS, 2016b).

On November 30, 2022, FWS reclassified the NLEB from a threatened species to an endangered species, effective January 30, 2023.[61] FWS extended the effective date of the final reclassification by 60 days, from January 30, 2023, to March 31, 2023.[62] The final rule removes the 4(d) rule for this species, because 4(d) rules apply only to species listed as threatened species under the ESA. In March 2023, FWS released a new range-wide Northern Long-eared Bat determination key (Dkey), available through the IPaC website, to streamline the review of routine, predictable projects and receive automatic verification or concurrence for some actions (FWS, 2023b). This Dkey replaces the previous key that was based on the 4(d) rule biological opinion.

Traditional ranges for NLEB include most of the central and eastern U.S., as well as the southern and central provinces of Canada, coinciding with the greatest abundance of forested areas. NLEB, whose habitat includes large tracts of mature, upland forests, typically feeds on moths, flies, and other insects. These bats are flexible in selecting roost sites, choosing roost trees that provide cavities and crevices, and trees with a diameter of 3 inches or greater at breast height.[63] Human-made structures, such as buildings, barns, bridges, and bat houses can be considered potential summer habitat. However, trees found in highly developed urban areas (e.g., street trees, downtown areas) are unlikely to be suitable NLEB habitat (FWS, 2014). NLEB are generally active from April through October (FWS, 2015, FWS, 2016b), and hibernate over the winter season. Winter hibernation typically occurs in caves and areas around them, and hibernacula can also be used for fall-swarming[64] and spring-staging.[65]

[61] 87 Fed. Reg. 73,488 (November 30, 2022).

[62] 88 Fed. Reg. 4,908-4,910 (January 26, 2023).

[63] Diameter at breast height refers to the tree diameter as measured about 4 to 4.5 feet above the ground.

[64] Fall-swarming fills the time between summer and winter hibernation. The purpose of swarming behavior may include: introduction of juveniles to potential hibernacula; copulation; and gathering at stop-over sites on migratory pathways between summer and winter regions.

[65] Spring-staging is the time period between winter hibernation and migration to summer habitat. During this time, bats begin to gradually emerge from hibernation and exit the hibernacula to feed but re-enter the same or alternative hibernacula to resume daily bouts of torpor (i.e., a state of mental or physical inactivity).

The project is located within the white-nose syndrome buffer zone for NLEB and infected bats have been found in Oxford county, within which the project is located.[66] No critical habitat has been designated for NLEB. Although there is no documentation of NLEB use of habitat at or near the project, upland forests near the project boundary may provide suitable habitat for NLEB summer roosting and foraging activities.

Tricolored Bat

FWS proposed on September 14, 2022, to list the tricolored bat as endangered,[67] based upon the range-wide impacts of white-nose syndrome which have caused estimated declines of more than 90 percent in affected colonies. No critical habitat is being designated because current or threatened destruction, modification, or curtailment of the species' habitat or range is not having large range wide effects on the species.

Tricolored bats are known to occur in 39 states, including all of the central and eastern United States.[68]

Male and female tricolored bats converge at cave and mine entrances between mid-August and mid-October to swarm and mate. During the winter, tricolored bats hibernate in caves and mines, although in the southern U.S., where caves are sparse, tricolored bats often hibernate in road-associated culverts and sometimes tree cavities and abandoned water wells.

During the spring, summer, and fall (i.e., non-hibernating seasons), tricolored bats disperse and primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees (FWS, 2021). Female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations. Female tricolored bats form maternity colonies and switch roost trees regularly (e.g., between 1.2 days and 7 days at roost trees). Females typically give birth to two young between May and July. Limited reproductive potential severely limits the ability of bat populations to respond quickly to perturbations. Upland forests within the project boundary contain suitable habitat for tricolored bat summer roosting and foraging activities.

Monarch Butterfly

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[66] The white-nose syndrome buffer zone encompasses counties within 150 miles of a U.S. county or Canadian district in which white-nose syndrome or the fungus that causes white-nose syndrome is known to have infected bat hibernacula.

[67] 87 Fed. Reg. 56,381 (Sep.14, 2022).

[68] FWS. 2021. Species Status Assessment Report for the Tricolored Bat (*Perimyotis subflavus*), Version 1.1. December 2021. Hadley, MA., https://www.fws.gov/sites/default/files/documents/Tricolored_Bat_SSA.pdf.

The monarch butterfly was listed as a candidate species under the ESA on December 17, 2020.[69] The monarch butterfly exclusively uses milkweed (*Asclepias* spp.) as its larval host plant. Adults drink nectar from milkweed and other species' flowers, while trees and shrubs are used for shade and roosting. Monarchs are not known to overwinter near the project area. Common milkweed (a widespread species of milkweed throughout Maine) is present in plant communities along the river on either end of the project, and while undocumented within the project boundary, is likely present (iNaturalist, 2023).

Environmental Effects

The following discussion addresses environmental effects on threatened and endangered species that would result from relicensing the Rumford Falls Project under the staff alternative for the purposes of consultation under section 7 of the ESA. This alternative includes relicensing the project with all staff-recommended environmental measures and modifications to RFH's proposal as outlined in section 2.3 of this draft EA.

The applicant does not propose any measures for the protection of the Atlantic salmon, NLEB, tricolored bat, or monarch butterfly, and no stakeholders filed comments, recommendations, terms or conditions regarding threatened and endangered species.

Atlantic Salmon

In section 3.3.1.2, *Aquatic Resources*, *Environmental Effects*, we evaluate the effects of RFH's proposal.

Atlantic salmon have not been documented in the Androscoggin River upstream of Lewiston Falls since 1815. Although Atlantic salmon are not present, continuing to operate the project in a run-of-river mode where outflow approximates inflow and maintaining stable impoundment levels would minimize unnatural fluctuations in the Androscoggin River downstream of the powerhouses, maintain aquatic habitat, and maintain water quality conditions that may someday support salmon. Increasing the minimum flow from 21 cfs to either 54 cfs or 160 cfs depending on the time of year in the lower bypassed reach would increase the amount of aquatic habitat available and would likely reduce water temperatures in this reach. Overall, the staff alternative would maintain and improve aquatic habitat in the project area over the long term, which could benefit Atlantic salmon in the future and would support the recovery goals for the species.

Given the absence of salmon and the beneficial effects to historical habitat, relicensing of the Rumford Falls Project, as proposed with staff-recommended measures, is not likely to adversely affect the Atlantic salmon.

Essential Fish Habitat

[69] 85 Fed. Reg. 81,813 (December 17, 2020).

For the reasons stated above, the staff alternative would enhance habitat conditions at the project. Overall, these measures would enhance Atlantic salmon EFH over the term of any new license issued for the project; therefore, we conclude that licensing the project under the staff alternative is not likely to adversely affect EFH.

Northern Long-eared Bat

While the license application states there will be no tree clearing within the project boundary, it is conceivable that trimming or removal of hazardous branches may be required to protect human life and property such as transmission infrastructure. In the absence of protocol-level surveys indicating the NLEB is not present in the project area, we assume the species may be present and could be adversely affected by tree clearing during the bats' active summer period. Placing seasonal limits on planned tree-clearing and trimming activity for trees that are equal to or greater than 3 inches at breast height (dbh) would reduce the likelihood of disturbing NLEB and their newly born pups during their active season at the project.

The FWS states that inactive season dates for NLEB in summer habitat in Maine are November 1 to April 14.[70] Limiting non-hazardous tree removal and trimming to the period of November 1 through April 14 (inactive season) would protect the northern long-eared bat in a manner consistent with section 7 of the ESA. With the seasonal restriction on tree removal and trimming in place, we conclude that the project may affect, but is not likely to adversely affect the NLEB.

Tricolored Bat

Project maintenance activities that may affect the tricolored bat are the same as those noted above for the northern-long eared bat. Applying the same seasonal tree trimming and removal restrictions recommended for the NLEB would also protect tricolored bats in the area. Therefore, we conclude that relicensing the project is not likely to adversely affect the tricolored bat or jeopardize its continued existence.

Monarch Butterfly

Current maintenance activities at the project are minor, and there is no information to suggest that these activities would potentially remove or degrade monarch butterfly habitat or impact individual butterflies. Therefore, we conclude that the project will have no effect on the monarch.

[70] FWS. 2023. Available at: https://www.fws.gov/sites/default/files/documents/Inactive%20Season%20Dates%20for%20Areas%20Outside%20of%20Swarming%20and%20Staging%20Areas_0.pdf

APPENDIX E- POWER AND DEVELOPMENT BENEFITS OF THE PROJECT

POWER AND DEVELOPMENTAL BENEFITS OF THE PROJECTS

Table 13 in Appendix C summarizes the assumptions and economic information used in the analysis. Most of this information is provided by the applicant in its license application. Some is developed by Commission staff. The values provided by the applicant are typically reasonable for the purposes of our analysis. If they are not, it is noted below. Cost items common to all alternatives include taxes and insurance; estimated capital investment required to develop the project or major modifications for relicensing; licensing costs; normal operation and maintenance cost; and Commission fees. All costs are adjusted to current year dollars.

Table 14. Parameters for economic analysis of the project (Source: license application; staff).

Parameter	Value
Installed Capacity	44.5 MW
Average annual generation (under no action alternative)	270,800 MWh
Period of analysis	30 years
Federal income tax rate	Included in the O&M cost
Local Tax Rate	Included in the O&M cost
Insurance	Included in the O&M cost
Interest rate	8%
Net Investment	$374,315,783
Application cost	$ 728,283
Operation and maintenance[a]	$5,197,952/year
Estimated Commission annual charges[b]	$160,000
Cost of Alternative Power (2022)[c]	
1) Energy cost (2022)	$71.42/MWh
2) Dependable Capacity Cost (2022)	$179.08/kw-year

[a] Rumford Falls Hydro's value for the project's operation and maintenance cost includes insurance, interim replacements, and administrative and general expenses.

[b] The Commission collects an annual administration charge for all licensed projects which is based on the authorized installed capacity of the project.

[c] The alternative source of power cost is based on the current cost of providing the same amount of generation and capacity from a natural gas-fired combined cycle plant, as reported by the most recent publication of the U.S. Energy Information Administration, Annual Energy Outlook 2023, for the Division 1, New England Region. The total cost of alternative power, reported in table 14, is a combination of the cost of energy and capacity benefit.

Table 15. Summary of the annual cost of alternative power and annual project cost for three alternatives for the Rumford Falls Project (Source: staff).

	No Action	Applicant's Proposal	Staff Alternative
Installed capacity (MW)	44.5	44.5	44.5
Annual generation (MWh)	270,800	269,031	270,037
Capacity benefit[a]	37.1	36.9	36.8
Current alternative source of power cost[b]	25,979,295	25,830,416	25,883,240
Total annual project cost (2023)[c]	33,480,602	33,538,430	33,554,292
Difference between the alternative source of power cost and total annual project cost	(7,501,307)	(7,708,014)	(7,671,052)

[a] Staff estimated the capacity benefit based on the ratio of the mean annual flow available for generation for each of 12 months, and the hydraulic capacity of the project. This ratio is multiplied by the authorized installed capacity to determine the capacity benefit.

[b] The value of power for the Rumford Falls Project is based on the alternative source of power cost in the New England Region, as identified in table 14 above.

[c] Project costs include the cost of environmental measures listed in table 13 in Appendix C, and the costs identified in table 13. All project costs were adjusted to 2023 dollars.

COMPARISON OF ALTERNATIVES

Table 14 summarizes the installed capacity, annual generation, capacity benefit, alternative source of power's cost, estimated total project cost, and difference between the alternative source of power's cost and total project cost for each of the alternatives considered in this EA: no-action, the applicant's proposal, and the staff alternative.

No-Action Alternative

Under the No Action alternative, the project has an installed capacity of 44.5 MW, a capacity benefit of 37.1 MW, and an average annual generation of 270,800 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit is $25,979,295. The total annual project cost is $33,480,602. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity is $7,501,307 more than that of the alternative source of power's cost.

Applicant's Proposal

Under the applicant's proposal, the project would have a total installed capacity of 44.5 MW, a capacity benefit of 36.9 MW, and an average annual generation of 269,031 MWh. When

compared to current conditions, generation would decrease by 1,769 MWh/year. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit would be $25,830,416. The total annual project cost would be $33,538,430. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce 269,031 MWh of power and 36.9 MW of capacity would be $7,708,014 more than that of the alternative source of power's cost.

Staff Alternative

Under the staff alternative, the project would have a total installed capacity of 44.5 MW, a capacity benefit of 36.8 MW, and an average annual generation of 270,037 MWh. When compared to current conditions, generation would decrease by 736 MWh/year. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit would be $25,883,240. The total annual project cost would be $33,554,292. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce 270,037 MWh of power and 36.8 MW of capacity would be $7,671,052 more than that of the alternative source of power's cost.

Cost of Environmental Measures

Table 13 in Appendix C presents the cost of each of the environmental enhancement measures considered in our analysis for the Rumford Falls Project. All costs are in 2023 dollars. We convert all costs to equal annual (levelized) values over a 30-year period of analysis to give a uniform basis for comparing the benefits of a measure to its cost.

APPENDIX F- COMPREHENSIVE DEVELOPMENT

This appendix discusses the basis for the staff-recommended measures presented in section 5.1.2, Additional Measures Recommended by Staff, and the rationale for modifying RFH proposal, as well as the basis for measures that were not recommended by staff.

Additional Measures Recommended by Staff

Time of Year Restrictions for Tree Removal

The NLEB may occur in the project area because project lands and adjacent areas support forests that may provide opportunities for summer roosting and foraging activities. Clearing vegetation for ongoing project maintenance activities and along the transmission line during the term of a new license could require unanticipated tree removal within the project boundary. To protect NLEB, FWS recommends state-specific dates that suggest avoiding tree removal in Maine between April 15 and October 31. Under FWS's recommendation, it states that the time-of-year restriction would not apply under public safety or other emergencies, and in those instances, the applicant should notify FWS within two business days of the unplanned safety/emergency action and provide details of the action and response.

Because maintenance activities at the project during the term of a new license are expected to only require minor trimming, brush clearing, and the removal of downed trees, there is no information to suggest that relicensing would adversely affect NLEB maternity roost habitat. NLEB are not known to use trees less than 3 inches in diameter at breast height; therefore, there would be little benefit to NLEB by prohibiting the removal of trees 3 inches in diameter or less.

The tri-colored bat may also occur in the project area and may use similar hardwood habitats for summer roosting. Prohibiting the removal of trees 3 inches or greater or the trimming of trees between April 15 and October 31 would also protect the tri-colored bat.

Accordingly, we recommend that the license include a requirement that prohibits any clearing of trees equal to or greater than 3 inches in diameter at breast height between April 15 and October 31, unless required for public or project safety. If trees are removed during this time period, we recommend that the licensee notify FWS within two business days of the unplanned safety/emergency action and provide details of the action and response. The costs to prohibit tree removal between April 15 and October 31 should be negligeable or zero.

Modifications to the Recreation Management Plan

RFH proposes to develop a Recreation Management Plan that summarizes recreation site enhancements and maintenance activities to the West Viewing Area, Rumford Falls Trail, and river access improvements. These proposed improvements are supported by Town of Rumford, Maine BPL, the public, and staff except as discussed below.

Pedestrian Sidewalk Along Lower Dam Powerhouse Driveway

The West Viewing Area consists of an open grassy area just downstream of Rumford Falls on the west side of the Androscoggin River. Amenities include: (a) an overlook of Rumford Falls, (b) project signage, (c) a pathway with stairs to the overlook where a bench is located, (d) lighting to illuminate flows under certain flow conditions, and (e) paved parking for facility operators and contractors. The site is currently closed to the public due to safety concerns associated with its proximity to the powerhouse and tailrace.

RFH proposes to re-open the West Viewing Area to the public from April 15th to October 31st, dawn to dusk, after completing several upgrades including adding designated public parking for four vehicles and painting pedestrian walkway along the Upper Station powerhouse driveway from the public sidewalk on Route 2 to the viewing area.

Pedestrians trying to access the West Viewing Area from J. Eugene Boivin Park and other areas within the Town of Rumford must share the Upper Powerhouse driveway with vehicles servicing the powerhouse, and once the new public parking area proposed by RFH is complete, with visitors parking in the new public parking lot. The paved powerhouse driveway is about 740 feet long, 16 feet wide. RFH's proposed 4-foot-wide dedicated walkway along the eastern side of the driveway would create a one-way flow of traffic, which would improve the safety for pedestrians, particularly during busy times or scheduled events. Installing a 4-foot-wide grade separated sidewalk that connects to the existing Town of Rumford sidewalk would provide safer access for pedestrians and drivers. Staff estimates that installing a concrete sidewalk would have a capital cost of about $30,000 ($2,665 annualized) and find that the additional safety benefits to be worth the cost. Therefore, staff recommends installing the concrete sidewalk instead of the painted pedestrian walkway.

River Access Enhancements at to the Middle Dam Bypassed Reach

To enhance river access for boating and angling, RFH proposes to build and maintain access and/or steps behind the Rumford Public Library. Because the improvements would be on lands owned by the Town of Rumford, RFH proposes to develop the details of the access improvements in consultation with the Town of Rumford. Maine BPL states that the improved access and/or steps from the Rumford Public Library lower parking area to the ledges and cascades near the middle of the bypassed reach as proposed by RFH does not appear to the meet the needs for angling access. Therefore, Maine BPL recommends additional access improvements in the Middle Dam Bypassed Reach and canal areas that could include the addition of stairways and/or safety railings to enhance access to existing and potentially improved fishing areas. Maine TU recommends the restoration of the traditional 'fisherman's trail' to access the tail of the lower falls during favorable flow conditions.

Maine BPL did not identify what access improvements would be necessary to increase angling access, other than suggesting the need for stairways or safety railings. RFH's proposal includes the need for stairways and safety railings if appropriate at the proposed Rumford Public Library access, which would be determined during the final design of the trail. Therefore, staff

cannot access the benefits or costs of providing additional access improvements recommended by Maine BPL.

Similarly, there is no information in the record that describes the traditional "fisherman's trail" (i.e, where it is, how long it is) or what would be necessary to restore this trail. Therefore, staff cannot assess the benefits or costs of Maine TU's proposed improvements.

Regardless, the results of the creel survey and recreation study indicate that the Chisholm Overlook site provides anglers access to the Middle Dam bypass reach and its facilities were in good condition. Yet, its use was low. River access improvements at the Rumford Public Library are needed to meet the access demands. Staff estimates that that improving access at the Rumford Public Library would have a capital cost of about $75,000 ($9,162 annualized) and find that the additional recreation benefits would be worth the cost. Together with Chisholm Overlook, the proposed improvements at the Rumford Public Library, would be sufficient for angling and whitewater boating access to the Middle Dam bypass reach.

Although RFH proposes to work with the Town of Rumford on access improvements behind the Rumford Public Library, it does not provide a schedule for doing so. One year from license issuance should be sufficient to consult with the Town of Rumford, Maine BPL and Maine DIFW to develop a plan for installing the access improvements. Constructing the improvements within two years of license issuance would ensure that access for whitewater boating and angling are available to use the proposed flow releases. Therefore, staff recommends that RFH include in the proposed recreation plan, a conceptual plan and schedule for installing the proposed improvements and maintaining the Rumford Public Library Access.

Logan Brook Carry-in Access and Portage

The Logan Brook Access is an informal, unmaintained carry-in launch located on Logan Brook, a tributary to the Androscoggin that enters the upper reservoir about 0.2 miles above the Upper Dam boat barrier. The access is located about 300 feet upstream of the tributary confluence with the upper dam reservoir. The take-out is a short walk to roadside parking along South Rumford Road via sand/gravel pathway.

RFH does not propose any improvements to the access or to maintain the site. Maine TU and Maine BPL recommend relocating the access closer to the boat barrier or further upstream on the inlet on the same RFH-owned parcel as the current Logan Brook Access. Maine BPL states that this would shorten the current portage by over a mile and would relocate a portion of the portage route off of roadsides and sidewalks. Maine BPL recommends that recreation enhancements include the installation of signage and other necessary marking of the portage route/trail.

Currently, boaters portaging around the Upper and Lower Dams exit the river at the Maine DACF boat launch in Rumford, nearly 2 miles upriver from the boat-barrier. Boaters then put in either at the Carlton Bridge Carry-In Launch or the Maine DACF Boat Launch in Mexico, resulting in a 3.6-mile portage around the project, much of which is boatable. Much of the portage includes roads and public sidewalks.

The Logan Brook Access was the least used of all the recreation facilities inventoried. Participants in the Recreation Study found the Logan Brook Access to be poor (no amenities as it is an informal site) and dangerous given the proximity to the road and lack of parking, forcing visitors to park on the shoulder of the road.

RFH owns all of the shoreline in the upper impoundment, including a large tract between the Logan Brook access and the boat barrier. Developing a take-out closer to where the tributary joins the upper impoundment and adding signage directing boaters to the portage trail would improve visibility of the take-out. This would enhance public enjoyment and safety by shortening the portage route and limiting time spent on public roadways and sidewalks. Staff estimate that relocating the access would have a capital cost of $30,000 ($4,665 annualized) and find the benefits to worth the cost. Therefore, staff recommends that RFH include in the Recreation Plan, a conceptual plan and schedule for relocating the access that includes a map showing the proposed location, portage trail, signage, and a schedule for installing the access improvements within two years of license issuance.

Rumford Falls Trail

Portions of the Rumford Falls Trail including most of the alternate route are on ND Paper and Central Maine Power (CMP) property.[71] RFH proposes to obtain an easement for a new license term for the portion of the alternate trail, which is owned by ND Paper, prior to the expiration of the current access agreement which expires November 2026 and may be extended by mutual agreement. A portion of the alternate trail is also on CMP property and would require an easement or mutual agreement to guarantee access. Because Rumford Falls Trail serves to provide project recreation, we recommend that the trail be included in the project boundary and that RFH ensure that it has the necessary rights to maintain and operate the trail.

Recreation Monitoring

RFH proposes to implement several enhancements, including access improvements, providing flows for whitewater boating and aesthetics, and improving aquatic habitat. These enhancements could increase the number of people recreating at the project. Additionally, according to the U.S. Bureau of Economic Analysis, Maine's outdoor recreation economy grew by more than 16% from 2021 to 2022, with 2022 being the biggest year for Maine to date at $3.3 billion. According to the report, fishing contributes the most to Maines overall outdoor recreation economy at $412 million. Similarly, Maine's State Comprehensive Outdoor Recreation Plan (SCORP) released in 2020 shows that fishing license sales to non-residents increased by 2.6% over the last five years. Assuming similar growth trends, we expect that recreation demand could increase at the project over the course of a new license. However, RFH does not propose any monitoring efforts to evaluate future recreation needs. Monitoring would ensure that the improvements would continue to meet future needs, such as parking and angler access. Staff recommends that RFH include the Recreation Plan a schedule and methods for reviewing recreation needs at the project. Including this information in the Recreation Plan

would ensure that the monitoring data is captured at reasonable intervals and the data clearly describe recreational use. Staff estimates this would have an annualized cost of $5,444 and find that the benefits are worth the cost.

Whitewater Boating Flows

With sufficient flow, the Lower Dam bypassed reach would provide whitewater boating opportunities ranging from Class IV to V in the upper portion of the reach to Class I to III in the lower portion of the reach. Currently, flows of 1,500 cfs which are considered optimal for whitewater boating for the bypassed reach are rare during the summer months.

To enhance whitewater boating opportunities in the Middle Dam bypass reach, RFH proposes to provide, in addition to exceedance events (i.e., when inflow exceeds the station's hydraulic capacity), scheduled flow releases in the range of 1,200 to 1,500 cfs for three days (total) from June through August from 10:00 a.m. to 3:00 p.m. RFH would schedule the releases in consultation with the Town of Rumford and would post the schedule and any cancellations on SafeWaters, a publicly accessible website and tollfree-free phone line operated by RFH.

The Town of Rumford and Maine BPL recommends releasing 1,200 cfs for a total of ten weekend days from June through August from 10:00 a.m. to 3:00 p.m. Maine TU recommends a minimum flow of 1,500 cfs to the Middle Dam bypassed reach from 10:00 a.m. to 5:00 p.m. Friday through Sunday during the months of July, August and September for whitewater boating. American Whitewater recommends that RFH provide weekly scheduled whitewater boating flows in the bypassed reach during the recreational boating season whenever sufficient inflows are present. American Whitewater supports RFH's proposal to provide real-time public whitewater flow information

RFH's proposed flow releases would ensure that there are at least 3 days of acceptable to optimal boating flows sometime between June and August but would not improve boating conditions in September when inflow is typically the lowest and whitewater boating demand is still relatively high. RFH could also meet all three required releases early (i.e., during June when inflows are typically higher) such that flows during much of the summer recreating season may not be enhanced. To provide the scheduled boating flows would likely require RFH to reduce flows diverted for generation for 5 hours for 3 days (15 hours total). If the released flows are all at 1,500 cfs, this would result in an annual reduction in generation of 64 MWh resulting in an opportunity cost of $4,571 annually.

Providing 10 days of flows of 1,200-1,500 cfs during the weekend days from 10 am to 3 pm as recommended by the Town of Rumford would ensure that acceptable boating flows are provided during a weekend day when the public is most likely to be able to enjoy the boating flows and if spread out over the summer on about every other weekend during the summer recreating season. Assuming a flow of 1,500 cfs is provided, the town's recommended flow would reduce flows diverted for generation for 50 hours total. If the released flows are all at 1,500 cfs, this would result in an annual reduction in generation of 213 MWh resulting in an opportunity cost of $15,212.

Maine TU's recommended flow release of 1,500 cfs from 10:00 a.m. to 5:00 p.m. Friday through Sunday during the months of July, August and September, would provide optimal boating flows on all weekend days during the summer months. The recommended flows would require RFH to reduce flows for generation for 36 days for 7 hours (252 hours). If the released flows are all at 1,500 cfs, this would result in an annual reduction in generation of 1,075 MWh each year at a lost opportunity cost of $76,777.

Given that there are 59 other documented whitewater opportunities within 60 miles of the project, ranging in skill level from Class I to V+, staff find that providing 10 days of boating flows on weekend days between June and August to be reasonable. Staff estimates that the benefits of providing 10 days of boating flows at 1,500 cfs between June and August outweigh the cost. Therefore, staff recommends that RFH provide scheduled flow releases of 1,200 cfs from June through August from 10:00 a.m. to 3:00 p.m. Staff recommend that RFH schedule the flows in consultation with the Town of Rumford and post the flows to SafeWaters as proposed by RFH and recommended by American Whitewater.

However, RFH does not explain when it would consult with the Town of Rumford, when it would release information on established flow schedules, and when it would update and provide data to SafeWaters. Therefore, staff recommends that RFH develop a Whitewater and Aesthetic Flow Plan outlining the consultation protocols, a schedule for developing the flow release schedules, and a schedule for updating and providing data to SafeWaters.

Aesthetic Flows

Flows over Rumford Falls are limited to days when natural flows exceed the upper stations hydraulic capacity of 4,550 cfs resulting in spill (Table 6). Based on average flows and current operation requirements, spill occurs during the peak recreation season of June through September about 30% (9 days) of the time in June, 12.9% (4 days) in July, 7.6% (2.4 days) in August, and 3.9% (1.1 days) in September (Table 6). However, the lowest acceptable aesthetic flow identified during the aesthetic flow study was 1,000 cfs, with most participants finding that the highest quality aesthetic viewing experience ranged from 1,500 cfs to 2,000 cfs. Flows of 1,500 cfs or more occurred 19.4% (5.8 days) of the time in June, 7.9% in July, 5.0% in August, and 2.0% in September (Table 7).

To enhance aesthetic flows over Rumford Falls, RFH proposes to release flows ranging from 1,200 – 1,500 cfs to the Upper Dam bypassed reach for three days (total), June through August from 10:00 a.m. – 4:00 p.m. The timing and flow would be determined in consultation with the Town of Rumford.

The Town of Rumford recommends a minimum flow of 1,200 cfs in the Upper Dam bypassed reach for 10 weekend days (total), June through August from 10:00 a.m. to 4 p.m. Maine BPL supports the Town of Rumford's recommendation.

Maine TU recommends an aesthetic flow of 1,000 cfs to from 10:00 a.m. to 8:00 p.m. Friday through Sunday during the months of July, August and September, during the Rumford Pumpkinfest Event held annually in mid-October, and up to two additional events not to exceed three days if/when determined by the Town of Rumford.

RFH's proposed flow releases would ensure that there are at least 3 days of high-quality aesthetic flows over the falls sometime between June and August but would not improve aesthetic conditions in September when recreation is still relatively high but inflows the lowest. RFH could also meet all three required releases early (i.e., during June when inflows are typically higher) such that flows during much of the summer recreating season may not be enhanced. To provide 3 days of scheduled aesthetic flows of 1,500 cfs would likely require RFH to reduce flows diverted for generation for 18 hours total. This would result in an annual reduction in generation of 165 MWh at a lost opportunity cost of $11,784 annually.

The Town of Rumford and Maine BPL would ensure that there are 10 days of high-quality flows over the falls during weekend periods when more of the public is likely to be recreating, and if spread out over the summer, would occur on about every other weekend during the summer recreating season. The town's and Maine BPL's recommended flow of 1,200 cfs would reduce flows diverted for generation for 60 hours. This would result in an annual reduction in generation of 550 MWh at a lost opportunity cost of $39,281 annually.

Maine TU's recommended aesthetic flow of 1,000 cfs would provide acceptable aesthetic flows every weekend day for 10 hours throughout the summer recreation season, on a highly attended local event, and two additional days during the summer recreation season. Maine TU's recommended flows would require RFH to reduce flows for generation for 39 days for 10 hours (390 hours) each year. This would result in an annual reduction in generation of 2,425 MWh, at a lost opportunity cost of $173,194.

RFH's proposed aesthetic flows would provide high-quality aesthetic flows over Rumford Falls for 3 days during the recreation season (June through September), or about 2.4% of all the available days. If generation must be reduced to provide the flows, RFH's proposed flows would have a lost opportunity cost of $11,784 annually. The Town of Rumford's and Maine BPL's recommended flows would provide 7 more days of high-quality aesthetic flows compared to RFH's flows (about 8.2% of all the available days), but all the flows would occur on about half of the weekends over most of the summer recreation season when the public is most likely to be able to enjoy the flow. Although the Town of Rumford's proposed flow would cost $27,497 more a year than RFH's proposed flows, we find the benefit to the public of providing 10 days of 1,200 cfs flow over the falls during weekends between June and August to be worth the cost.

In contrast, Maine TU's proposed flows would provide acceptable flows on 36 more days (32% of all available days between June and September) during the summer than RFH's proposed flow, and 29 more days compared to the Town of Rumford's proposed flow. The flows would be provided every weekend day and during special events. However, Maine TU's flow would cost $161,410 more in annual lost opportunity costs than RFH's proposed flow and $133,913 more than the Town of Rumford's and Maine BPL's proposed flow. The benefits of ensuring that a flow of 1,000 cfs over the falls occurs during every summer weekend are not worth the lost opportunity cost.

Therefore, we recommend that RFH release a minimum flow of 1,200 cfs in the Upper Dam bypassed reach for 10 weekend days (total), June through August from 10:00 a.m. to 4 p.m. Of the alternatives considered, this recommended alternative strikes the appropriate balance between using flow for aesthetics and recreational purposes and using flow for project generation.

To ensure that the benefits of the recommended flow release are fully utilized, RFH would need to consult with the Town of Rumford to determine when it would release the flow, when it would release information on established flow schedules, and when it would update and provide data to SafeWaters. Therefore, staff recommends that RFH develop a Whitewater and Aesthetic Flow Plan outlining the consultation protocols, a schedule for developing the flow release schedules, and a schedule for updating and providing data to SafeWaters.

Lighting of Rumford Falls

RFH currently turns on flood lights at the West Viewing Area to illuminate Rumford Falls from 8 pm to mid-night when flows exceed 7.500 cfs. RFH proposes to turn the lights on between 8:00 p.m. and midnight when flows are greater than 6,000 cfs. The Town of Rumford supports RFH's proposal but recommends turning on the lights at evening civil twilight (dusk) instead of 8 pm. The Town's recommendation accounts for the seasonal changes in daylight hours and ensures that the falls are illuminated at night when they would most likely be enjoyed by the public. For example, in June when civil twilight is latest (9:08 p.m.), the falls would be unnecessarily illuminated one hour and eight minutes before dark. In December when civil twilight is earliest (4:45 p.m.), the falls would be dark for three hours and 15 minutes before being illuminated at 8:00 p.m. There would be no difference in the levelized annual operating cost ($272) for operating the lighting scheme as recommended by the Town and that proposed by RFH. Therefore, staff recommends that RFH turn on the flood lights when flows exceed 6,000 cfs and operate them from evening civil twilight (dusk) to mid-night.

Measures Not Recommended by Staff

The following discussion includes the basis for staff's conclusion not to recommend such measures.

Upper Dam Bypass Reach Minimum Flows

Except for 1 cfs from leakage, the project diverts up to 4,550 cfs of the river flow to the Upper Development powerhouse for generation, bypassing 650 feet of the Androscoggin River. The diversion of water can reduce available aquatic habitat and affect water quality in the bypassed reach.

Because of the poor-quality habitat within the Upper Dam bypassed reach, RFH proposes to continue to provide 1 cfs of flow year-round from leakage. Maine TU and American Whitewater recommend that RFH release a minimum flow of 250 to 500 cfs from the Upper Dam at all times to: (1) re-establish a sustainable fisheries and aquatic habitat; (2) reduce aquatic species mortality by providing oxygenating, constant flows through several dewatered pools, and

(3) create a downstream spawning path for American eels and other indigenous aquatic organisms.

In comments on the license application filed on February 17, 2023, Maine DIFW states that "there is limited aquatic habitat potential in the Upper Dam bypass; therefore, from the perspective of aquatic habitat only, MDIFW has no objections to the current and proposed minimum flow of 1 cfs."

Increasing the minimum flow from 1 cfs year-round to 250 or 500 cfs would increase the wetted area within the bypassed reach, provide a more consistent and higher flow to the pools, may improve water temperatures and DO levels within the pools, and increase habitat connectivity between the pools and downstream habitats. However, habitat conditions within the bypassed reach are poor for fish and most aquatic invertebrates at any flow and there is no evidence of fish stranding. Increasing minimum flows would not significantly improve habitat conditions for fish because of the high gradient, rapid velocities, turbulence, shallow depths, and limited refuge areas within the bedrock substrate (Figure 6). Moreover, regardless of the flow amount, the only fish that are expected to inhabit the pools within the bypassed reach would be those passing over the dam during spill events. This is because the pools are located upstream from a large cascade (better known as Rumford Falls) and are unreachable to most fish and other aquatic organisms when swimming upstream.

Providing a year-round minimum flow of 250 or 500 cfs would result in an annual reduction in generation of 4,052 or 8,105 MWh resulting in an opportunity cost of $447,232 or $894,536, respectively. Given the limited aquatic habitat, the benefits of providing a minimum flow of 250 or 500 cfs in the Upper Dam bypass reach are not worth cost. Therefore, we do not recommend increasing the minimum flow as recommended by Maine TU and American Whitewater.

Lower Dam Bypass Reach Minimum Flows

The current license requires RFH to release a minimum flow of 21 cfs year-round into the 2,865-foot-long Lower Dam bypass reach. To enhance aquatic habitat in the bypass reach, RFH proposes to increase the minimum flow to 95 cfs from May 1 to October 31 and 54 cfs from November 1 to April 30. The minimum flow would be provided primarily via notched flashboards. If flashboard maintenance or other work that requires the Middle Dam impoundment to be drawn down for short periods below dam crest, RFH would maintain a minimum flow during this period of 21 cfs using the existing 12-inch-diameter and 18-inch-diameter pipes installed in center of the dam.

Maine TU recommends increasing the year-round minimum flow to 250 to 500 cfs to protect and enhance the habitat for fish and other aquatic organisms, remain reasonably wadable, and improve recreational use and aesthetics. Maine DIFW did not recommend a minimum flow in response to the Commission's ready for environmental analysis notice. But in comments on the license application, Maine DIFW states that based on its site observations and experience with evaluating aquatic habitats, flows between 250 and 500 cfs appear to be appropriate to protect and enhance the habitat for fish and other aquatic organisms and enhance angling. It is not clear whether Maine DIFW's recommendation is for a year-round minimum flow or a

seasonal flow because Maine DIFW adds that "the spring-fall minimum flow should be extended to December 1 due to Maine DIFW fall stocking programs and the river's year-round angling regulations." Therefore, we assumed that Maine DIFW recommends a seasonal minimum flow of 250 to 500 cfs be provided from May 1 to November 30 and 54 cfs from December 1 to April 30.

As discussed in section 3.3.1, RFH's Demonstration Flow Analysis and one-dimensional hydraulic habitat modeling shows that the amount of suitable habitat for adult small mouth bass, adult rainbow trout, adult brown trout, and benthic macroinvertebrates (BMI) increases with increasing flows up to 400 cfs, the maximum flow modeled. 1-D modeling results indicate that increasing flows change wetted permitter, cross-sectional area, and stream width, but average depth and velocity do not change dramatically across flows. Increasing the minimum flow to 54 cfs would increase the average stream width by about 20 feet, the wetted perimeter by 20 feet, and the cross-sectional area by about 37 ft^2. Increasing flows also results in changes in area-weighted suitability (AWS) for adult small mouth bass, adult rainbow trout, adult brown trout, and BMI (table 10). Considering habitat changes averaged across all the target species, a minimum flow of 54 cfs from November 1 to April 30 would increase the AWS for all species from 4.9 ft^2/ft to about 12.9 ft^2/ft. This represents about 35% of the habitat modeled, more than twice as much as that provided by the current 21 cfs minimum flow (15%) (Figure 11). However, the habitat improvements from increased flows during the winter would be limited because flows provided during this period occur when bass and the stocked rainbow and brown trout that occur in the reach are likely seeking deep, slow water which is abundant in the pool above the cascade in the bypass and in pool habitats adjacent to the powerhouse or downstream of the Swift River confluence.

A minimum flow of 95 cfs would increase the average stream width by about 33 feet, the wetted perimeter by 34 feet, and the cross-sectional area by 62 ft^2. The AWS averaged across all species would increase to about 18.3 ft^2/ft, or about 55% of the habitat modeled. A minimum flow of 250 cfs would increase the average stream width by about 64 feet, the wetted perimeter by 66 feet, and the cross-sectional area by about 123 ft^2. The AWS averaged across all species would increase to about 28.1 ft^2/ft or about 75% of the habitat modeled. RFH did not collect habitat data or assess flows higher than 400 cfs; therefore, the closest flow that can be analyzed quantitatively is 400 cfs. A minimum flow of 400 cfs would increase the average stream width by about 72 feet, the wetted perimeter by 75 feet, and the cross-sectional area by about 172 ft^2. The AWS averaged across all species would increase to about 33.5 ft^2/ft or 100% of the modeled habitat.

RFH's proposed seasonal flows would increase the amount of aquatic habitat for stocked trout, smallmouth bass and BMI from about 15% of the habitat modeled under current minimum flow requirements to 35% from May 1 to October 31 and 55% from November 1 to April 30. This would represent a 20% to 40% increase in modeled available habitat relative to current conditions, at annual opportunity cost of $109,987. Maine TU's proposed year-round flows of 250 cfs and 500 cfs would result in an additional 20% to 45% more habitat than the flows proposed by RFH. However, the habitat gain would come at an annual opportunity cost of $447,232 or $894,536, respectively. Maine DIFW's proposed seasonal flows of 250 cfs to 500 cfs would result in the same habitat gains as that proposed by Maine TU between May 1 and December 1, and the same habitat gains as proposed by RFH for the remainder of the year.

However, Maine DIFW's flows would result in an annual opportunity cost of $289,395 and $578,860, respectively.

While extending minimum flows up to the month of December as suggested by Maine DIFW would increase the amount of aquatic habitat available to stocked brook and brown trout, the angler creel survey results indicate that only 2% of the anglers fished in November. Therefore, there would be only a minor benefit of providing additional habitat for the stocked trout through December for the purposes of improving angling opportunities.

We find that RFH's proposed flows would provide a substantial enhancement of aquatic habitat at a reasonable cost. However, the additional habitat improvements provided by Maine TU's or Maine DIFW's proposed flows are not worth the cost. Therefore, we recommend RFH provide a minimum flow of 95 cfs from May 1 to October 31 and 54 cfs from November 1 to April 30. Of the alternatives considered, this staff recommended alternative would strike the appropriate balance between flow used for aquatic habitat improvement and flow used for project generation.

Additional Water Quality and Benthic Macroinvertebrate Sampling

As discussed in section 3.3.1.2, Maine TU requested that RFH conduct additional water quality and macroinvertebrate sampling in the project area. Commission staff issued a study plan determination[72] which found that the water quality and benthic macroinvertebrate study required by the Commission's approved study plan and conducted by RFH adequately characterized the water quality in the project area. This DEA incorporates that data and staff finds that it is sufficient to conduct our analysis and make a licensing recommendation. Staff concludes that there would be no benefit to requiring RFH to conduct additional water quality and benthic macroinvertebrate sampling in these areas at an annual cost of $1,376, and therefore, does not recommend Maine TU's additional sampling.

Additional Studies to Determine the Environmental Effects of Changes to Project Operation

As discussed in section 3.3.1.2, Maine TU recommends additional studies to determine the environmental effects of changes to project operations. Maine TU does not explain how the additional studies would be conducted or what parameters would be evaluated. Regardless, sufficient information exists to assess the effects of project operation and proposed changes in operation. Therefore, no further information is needed.

Additional Modifications to the Recreation Plan

Pergola

[72] *See* Commission staff November 21, 2022 Study Plan Determination.

Brie Wiseman recommends that RFH install a pergola at the West Viewing Area, which would provide shaded seating for visitors and a public meeting location and would maintain the historic integrity of the Town of Rumford. RFH proposes to install two picnic tables and a bench at the West Viewing Area, which would provide seating and a public meeting location. Additionally, Veteran's Park, located nearby, hosts a Pavilion that would meet the needs of residents or visitors seeking such a seating structure. Staff estimates that installing a pergola would have a capital cost of $5,000 and a levelized annual cost of $1,444 and that the recreation benefits do not outweigh the costs. Therefore, staff does not recommend this measure.

Carlton Bridge Carry in Launch

The current license requires the operation and maintenance of the carry-in canoe facility at the Carlton Bridge, which is located on the eastern edge of the Swift River just upstream of its confluence with the Androscoggin River. The launch provides river and angling access to the Swift and Androscoggin Rivers. RFH proposes to continue maintaining the carry-in boat launch. Maine TU recommends that the launch and parking be improved to continue to provide access to the trout fishing opportunities downstream at the confluence of the Swift River and the Androscoggin River as well as upstream in the Swift River.

Maine TU does not describe what improvements to the launch and parking are needed, and there is no information in the project record demonstrating that the facility is functioning poorly. Therefore, we have no justification for recommending that the facility be improved.

Unspecified Recreation Facilities Improvements

Maine TU recommends that RFH improve other recreation facilities currently under study as recommended by the Recreation Facilities Focus Group; however, Maine TU neither specifies the recreation facilities or improvements nor identifies a specific issue that would be addressed by the recommended improvements. Similarly, American Whitewater recommends that RFH improve access around project facilities and provide access to the river both above and below whitewater boating features; however, American Whitewater neither specifies the facilities or improvements to be made nor identifies the specific issue to be addressed. Without specific recommendations, staff cannot evaluate the costs or benefits of these recommendations. Moreover, without identification and explanation of the specific issues to be addressed by the recommended measures, Commission staff has no basis for recommending them.

Black Ash Wetland Restoration

The Mi'kmaq Nation recommends that if any wetland restoration is proposed that it involve black ash trees. Wetland restoration is neither proposed or included as a recommendation under the staff alternative.

APPENDIX G- DRAFT LICENSE CONDITIONS RECOMMENDED BY STAFF

We recommend including the following license articles in any license issued for the project:

Draft Article 001. *Project Modification Resulting from Environmental Requirements*. If environmental requirements under this license require modification that may affect the project works or operations, the licensee must consult with the Division of Dam Safety and Inspections – Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Draft Article 002. *Project Operation*. The licensee must operate the project as follows:

(1) operate the project in a run-of-river mode by maintaining both impoundments within 1 foot of full pond at U.S. Geological Survey Datum elevations of 601.24 feet for the Upper Dam impoundment and 502.74 feet for the Middle Dam impoundment such that, at any point in time, the sum of all outflows from the project approximates the sum of all inflows to the project;

(2) maintain a continuous minimum flow of 1 cubic foot per second (cfs), or inflow, whichever is less to the Upper Dam bypassed reach;
(3) maintain a continuous minimum flow of 160 cfs from May 1st to October 31st and 54 cfs from November 1st to April 30th, or inflow, whichever is less to the Middle Dam bypassed reach; and
(4) maintain a minimum flow of 21 cfs or greater to the lower bypassed reach at all times when the Middle Dam impoundment is lowered for maintenance.

Reporting of Planned Deviations

Run-of-river operation, impoundment level, and minimum flow requirements of this article may be temporarily modified for short periods, of up to 3 weeks, after mutual agreement among the licensee and the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Maine Department of Marine Resources, and Maine Department of Inland Fisheries and Wildlife (collectively, resource agencies). After concurrence from the resource agencies, the licensee must file a report with the Secretary of the Commission as soon as possible, but no later than 14 days after the onset of the planned deviation. Each report must include: (1) the reasons for the deviation and how project operations were modified, (2) the duration and magnitude of the deviation, (3) any observed or reported environmental effects and how potential effects were evaluated, and (4) documentation of consultation with the resource agencies. For planned deviations exceeding 3 weeks, the licensee must file an application for a temporary amendment of the operational requirements and receive Commission approval prior to implementation.

Reporting of Unplanned Deviations

Run-of-river operation and impoundment level requirements may be temporarily modified if required by operating emergencies beyond the control of the licensee (i.e., unplanned deviations). For any unplanned deviation from run-of-river operation or impoundment level and minimum flow requirements that lasts longer than 3 hours or results in visible environmental effects such as a fish kill, the licensee must notify the resource agencies within 24 hours and the Commission within 14 days, and file a report with the Commission as soon as possible, but no later than 30 days after each such incident. The report must include: (1) the cause of the deviation, (2) the duration and magnitude of the deviation, (3) any pertinent operational and/or monitoring data, (4) a timeline of the incident and the licensee's response, (5) any comments or correspondence received from the resource agencies, or confirmation that no comments were received from the resource agencies, (6) documentation of any observed or reported environmental effects and how potential effects were evaluated, and (7) a description of measures implemented to prevent similar deviations in the future.

For unplanned deviations from run-of-river operation or impoundment level and minimum flow requirements lasting 3 hours or less that do not result in visible environmental effects, the licensee must file an annual report, by March 1, describing each incident that occurred during the prior January 1 through December 31 time period. The report must include for each 3 hours or less deviation: (1) the cause of the deviation, (2) the duration and magnitude of the deviation, (3) any pertinent operational and/or monitoring data, (4) a timeline of the incident and the licensee's response to each deviation, (5) any comments or correspondence received from the resource agencies, or confirmation that no comments were received from the resource agencies, and (6) a description of measures implemented to prevent similar deviations in the future.

Draft Article 003. *Operation Compliance Monitoring Plan*. Within six months of license issuance, the licensee must file with the Commission for approval, an Operation Compliance Monitoring Plan. The Operation Compliance Monitoring Plan must include, at a minimum, descriptions of how the licensee will meet the project operation requirements included in Draft Article 002 (*Project Operation*) and the following:

(1) a detailed description of how the licensee will monitor and document compliance with the operational requirements of the license, including: (a) the monitoring and recording frequency for each gage and/or measuring device; and (b) a provision to maintain a log of project operation;

(2) a description of the gages and other measuring devices that will be used to monitor compliance with license requirements, including the locations of the measuring devices;

(3) a description of the procedures for maintaining and calibrating monitoring equipment;

(4) standard operating procedures to be implemented outside of normal operating conditions, including during: (a) scheduled facility shutdowns and maintenance; and (b) emergency conditions such as unscheduled facility shutdowns and maintenance;

(5) a schedule for installing any monitoring equipment needed to document compliance with the operational requirements of the license;

(6) the protocols or methods to be used for reporting monitoring data, including deviations from normal operating conditions to the Commission; and

(7) an implementation schedule.

The licensee must prepare the plan after consultation with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and Maine Department of Marine Resources (collectively, resource agencies). The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the resource agencies, and specific descriptions of how the resource agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the resource agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Draft Article 004. *Exhibit G Drawings*. Within 90 days of the issuance date of this license, the licensee must file, for Commission approval, a revised Exhibit G drawing labeling within the project boundary all project recreation facilities listed in Article 007. The Exhibit G drawing must comply with sections 4.39 and 4.41(h) of the Commission's regulations.

Draft Article 005. *Reservation of Authority to Prescribe Fishways*. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Draft Article 006. *Northern Long-Eared Bat and Tricolored Bat Protection.* The licensee must not remove trees on project lands equal to or greater than 3 inches diameter at breast height or conduct tree-trimming from April 15 to October 31 to protect northern long-eared bats and tricolored bats. Tree removal during this period is not prohibited to ensure public or project safety (e.g., removing dead fall trees). If trees are removed during this period on an emergency basis, the licensee must notify the U.S. Fish and Wildlife Service within two business days of the unplanned safety/emergency action and provide details of the action and response.

Draft Article 007. *Recreation Management Plan.* Within one year of license issuance, the licensee must file with the Commission for approval, a Recreation Management Plan that designates the following as project recreation facilities:

(1) The West Viewing Area.

(2) The Rumford Falls Trail, including the alternate route and existing trail segments which lead to the alternate route from Route 108 and from South Rumford Road totaling approximately 0.7 miles, and an overlook.
(3) The Carlton Bridge canoe carry in location.
(4) The proposed re-located Logan Brook Access.
(5) The proposed Rumford Public Library Access to the Middle Dam bypass reach.

The Recreation Management Plan must also include the following additional measures:

(6) A plan and schedule for completing the following measures at the West Viewing Area: (a) reopening the West Viewing Area, (b) patching and repairing concrete surfaces at the facility, (c) relocating security fencing, (d) adding a public gravel parking area for four cars, (e) relocating the flood lights used to light the falls from the top of the banister to below the banister to improve public safety and viewing opportunities, (f) installing a project/history kiosk, two picnic tables and a bench, and (g) installing a concrete sidewalk along the powerhouse driveway to the West Viewing Area. The West Viewing Area should be operated from dawn to dusk from April 15 to October 31.
(7) A plan and schedule for completing the following improvements to the Rumford Falls Trail: (a) firming the trail bed and adding wood crib steps where appropriate, (b) installing a removable bollard or swing gate to prohibit unauthorized vehicle access, (c) installing a bench and kiosk at the falls overlook, and (d) adding signage at the trail entrances with maps of the trail.
(8) A plan and schedule for completing the following improvements at the Rumford Public Library Access: (a) a detailed description of all proposed improvements, including ramp improvements, stairs, and railings; (b) a schedule for constructing the facility within two years of license issuance; and (c) conceptual drawings and maps identifying parking, signage, and locations of amenities.
(9) A plan and schedule for relocating the Logan Brook Access closer to the boat barrier and Rumford Falls Trail including: (a) a detailed description of the proposed new location and proposed improvements; (b) a schedule for commencing construction of the facility within two years of license issuance; and (c) conceptual drawings and maps identifying the new location, parking, and signage. Signage should include directional signage for boaters to access the new project portage route.
(10) A plan and schedule for maintaining the project recreation sites.
(11) A plan and schedule for monitoring recreation at the project and updating the Recreation Plan every 10 years.

The licensee must prepare the plan after consultation with the Town of Rumford, the Maine Bureau of Parks and Lands, American Whitewater, and Maine Trout Unlimited. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the stakeholder, and specific descriptions of how the stakeholders' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not

adopt a recommendation, the filing must include the licensee's reasons based on project specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Within 90 days of construction completion, the licensee must file with the Commission documentation verifying the facilities have been constructed in conformity with the above provisions and a site plan drawing showing a revised Exhibit G incorporating these facilities into the project boundary. The licensee is responsible for the operation and maintenance of these facilities for the term of the license.

Draft Article 008. *Whitewater Boating and Aesthetic Flow Plan.* Within one year of license issuance, the licensee must file with the Commission for approval, a Whitewater Boat and Aesthetic Flow Plan that includes the following provisions:

(1) whitewater boating flows of 1,200 to 1,500 cfs, as measured at the dam, from 10:00 a.m. to 3:00 p.m to the Middle Dam bypassed reach for ten days (total) each year during the months of June, July, and August.
(2) aesthetic flows of at least 1,200 cfs, as measured at the dam, from 10:00 a.m. to 4:00 p.m to the Upper Dam bypassed reach for ten weekend days (total) in June, July, and August.
(3) lighting the falls from the Upper Station between evening civil twilight (i.e., sunset) and 12 AM when flows exceed 6,000 cfs;
(4) protocols and schedule for determining which days boating and aesthetic flows would be released and for communicating the flows to the public via SafeWaters or other comparable system; and
(5) an implementation schedule for whitewater flows, aesthetic flows and aesthetic flow lighting.

The licensee must prepare the plan after consultation with the Town of Rumford, the Maine Bureau of Parks and Lands, American Whitewater, and Maine Trout Unlimited. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the aforementioned entities, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons based on project specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Draft Article 009. *Programmatic Agreement and Historic Properties Management Plan.* The licensee must implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the Maine State Historic Preservation Officer for Managing Historic Properties that May be Affected by Issuance of a License to Rumford Falls Hydro LLC for the Continued Operation of the Rumford Falls Hydroelectric Project in Oxford County, Maine FERC No. P-2333," executed on (*date*), and including but not limited to the approved Historic Properties Management Plan (HPMP) for the project. In the event that the Programmatic Agreement is terminated, the licensee must continue to implement the provisions of its approved HPMP.

The Commission reserves the authority to require changes to the HPMP at any time during the term of the license.

APPENDIX H- COMPREHENSIVE PLANS

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Document Content(s)