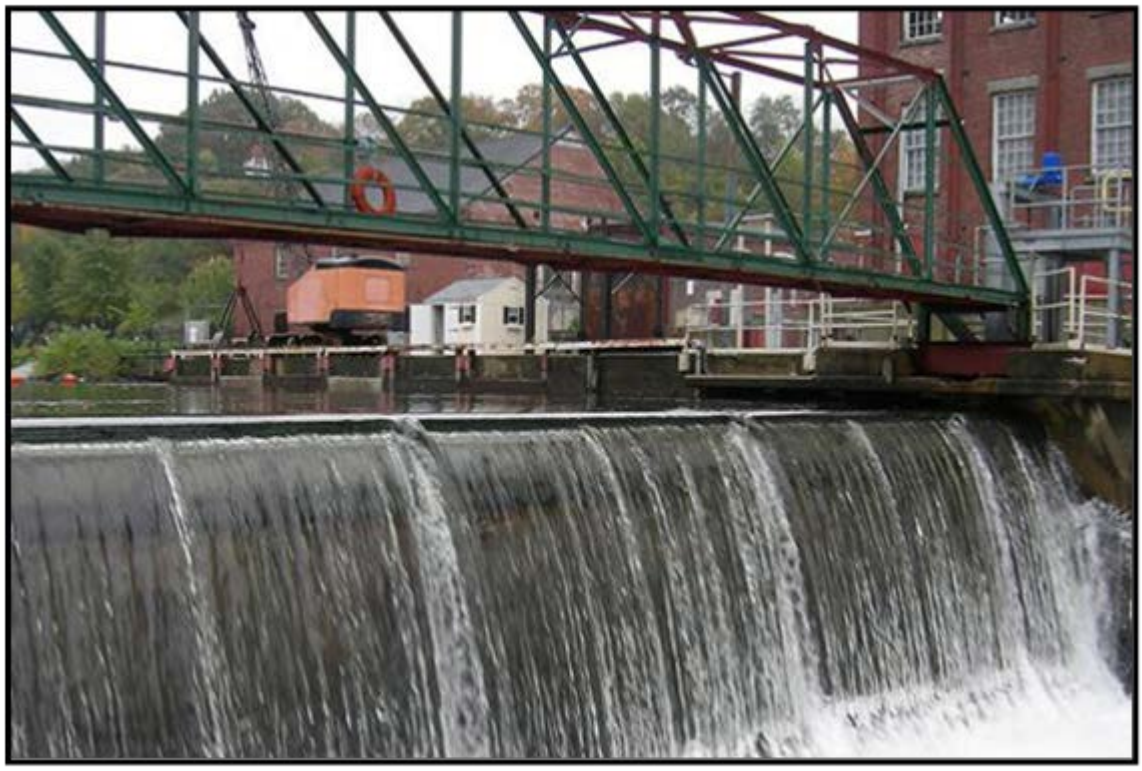
REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE STEVENS MILL HYDROELECTRIC PROJECT, LIHI #123

FERC Project No. 3760, exempt
Winnipesaukee River – Franklin, New Hampshire



July 15, 2020
Maryalice Fischer, Certification Program Director

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FINAL REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE STEVENS MILL HYDROELECTRIC PROJECT, LIHI #123

This report provides final review findings and recommendations related to the recertification application submitted to the Low Impact Hydropower Institute (LIHI) by Franklin Power, LLC, a subsidiary of Eagle Creek Renewable Energy, LLC (Applicant) for recertification of the Stevens Mill Hydroelectric Project, LIHI #123 (Project), a 1.9 MW facility located on the Winnipesaukee River in central New Hampshire. The final recertification application package was filed on May 8, 2020 and is subject to review under the 2nd edition LIHI Handbook.

I. INTRODUCTION

The Project was first certified by LIHI in 2015 for a five-year term that expired on March 5, 2020. The term was extended to July 15, 2020 and again to August 31, 2020 to allow time to complete the recertification process. The original certification included the following five conditions, some of which have been satisfied. The original LIHI certification required the Applicant to enter into a Memorandum of Agreement (MOA) with US Fish and Wildlife Service (FWS) as a condition of certification.

> ***Condition satisfied in 2017. Condition 1.*** *The facility owner shall comply with Section 4.1 of the August 14, 2014, Memorandum of Agreement by implementing appropriately protective bypass conservation flows immediately upon approval by the U.S. Fish and Wildlife Service and the New Hampshire Department of Fish and Game. Since this certification is being granted without the minimum bypass flow having been deemed appropriately protective by the resource agencies, LIHI may withdraw certification if it determines that the facility owner is failing to make a good faith effort to cooperate with the resource agencies in determining a final minimum bypass flow. The owner shall provide LIHI with monthly status updates until this issue is resolved.*

Status: The condition was satisfied in 2017 with implementation of a 100-cfs minimum bypass flow that was approved by resource agencies as being appropriately protective of aquatic habitat based on site evaluations.

> ***Condition 2.*** *The facility owner shall develop a system for producing and maintaining records sufficient to demonstrate compliance with the headpond elevation and flow management limitations for an instantaneous run-of-river operation and bypass conservation flows, including flows as necessary to operate fish passage measures. The facility owner shall comply with Section 4.2 of the August 14, 2014, Memorandum of Agreement. Within three months of the date of issuance of the certification, the facility owner shall provide LIHI with a copy of the operations and flow monitoring plan. Prior to filing the plan, the facility owner shall obtain plan approval from U.S. Fish and Wildlife Service and New Hampshire Department of Environmental Services; written confirmation of the approvals will be filed with the plan. The plan shall be updated as necessary to reflect any future changes in minimum bypass flows and flow releases for fish passage operation.*

Status: The condition was partially satisfied in 2019. An Operations and Flow Monitoring Plan was developed in 2017 and updated in 2019 based on comments received from FWS. The plan may continue to be updated based on the terms of any amendments to the MOA.

> ***Condition 3. Modified 2017:*** *a) The facility owner shall continue to notify LIHI within 30 days if changes in the downstream fish passage are made. b) During the term of this certification, should a resource agency request implementation of upstream passage at the facility, the owner shall notify LIHI within 30 days and provide LIHI with a copy of the request and its response.*

Status: The condition remains active. Downstream fish passage was implemented in 2016 and modifications were made to the downstream passage facility in 2017 and will be reviewed again by resource agencies in 2020. Agencies have not requested upstream passage.

> ***Condition 4.*** *To enable NHDES to make a determination of Project compliance with New Hampshire quantitative water quality standards, the facility owner shall complete water quality sampling during summer 2015 following a study plan approved by NHDES. By December 31, 2015, the facility owner shall provide LIHI with a letter from NHDES documenting NHDES's review and conclusions. If NHDES determines that structural or operational changes are necessary to meet water quality standards, the facility owner will provide LIHI with a proposed implementation schedule at the same time it files the NHDES letter.*

Status: The condition was satisfied in 2018 with NH Department of Environmental Services (NHDES) approval of water quality monitoring results.

> ***Condition 5. Modified 2017:*** *The facility Owner shall report in its annual compliance statement, whether or not any changes or amendments were made in the MOA. If changes were made, the facility owner will provide a brief summary of those changes. The MOA shall be extended, by mutual agreement, in accordance with Section 1.1 of the MOA to keep it in effect throughout the term of the LIHI certification of this facility. Under the unlikely scenario of the US Fish and Wildlife Service having no interest in extending the MOA, the facility owner shall continue to operate Stevens Mill in accordance with the most recent version of the Plans required by the MOA.*

Status: The condition remains active. The original MOA was executed in 2014 and amended in 2017. It was extended in 2019 on an interim basis and is again being extended while 2020 reviews are conducted by resource agencies. The MOA applies to several Eagle Creek facilities in New Hampshire.

II. RECERTIFICATION PROCESS AND MATERIAL CHANGE REVIEW

Under the 2016 LIHI Handbook (rev 2.03, December 20, 2018), reviews are a two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

(1) Is there any missing information from the application?

(2) Has there been a material change in the operation of the certified facility since the previous certificate term?

(3) Has there been a change in LIHI criteria since the Certificate was issued?

In accordance with the Recertification Standards, if the only issue is that there is some missing information, a Stage II review may not be required. These standards also state that "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. If the answer to either question (2) or (3) is “Yes”, a more thorough review of the application using the LIHI criteria in effect at the time of the recertification application, and completion of a Stage II report is required. As a result, all projects currently applying for renewal must go through a full review unless their most recent certification was completed using the 2nd Edition Handbook.

A review of the initial application dated February 27, 2020, resulted in a Stage I report, dated March 31, 2020. The Stage I assessment found no material changes at the Project and determined that only a small amount of additional information was needed. The response to the Stage I report was provided in supplemental information via email and via telephone. The application was posted for public comment on May 12, 2020. This Stage II assessment included review of the application package, supplemental information provided by the Applicant, review of comments received, and review of the annual compliance statements submitted during the past term of Certification.

III. PROJECT LOCATION AND SITE CHARACTERISTICS

The Stevens Mill Hydroelectric Project (Project) is located in the city of Franklin, New Hampshire at approximately river mile (RM) 1.5 on the Winnipesaukee River upstream from its confluence with the Pemigewasset River. The Winnipesaukee River merges with the Pemigewasset River to form the Merrimack River in Franklin. The Merrimack River then flows through southern New Hampshire, northeastern Massachusetts, and into the Atlantic Ocean at Newburyport, Massachusetts (Figure 1).

The Winnipesaukee River is located in the Lakes Region of central New Hampshire and flows in a northeast to southwest direction, with a total contributing drainage area of 488 square miles. The river flows from its headwaters in New Hampshire’s largest lake – Lake Winnipesaukee and is approximately 10.5 miles long to its confluence with the Pemigewasset River. Flows are highly regulated by dams, mainly by the furthest upstream Lakeport Dam. Average annual flows at the Project are approximately 737 cfs, ranging from approximately 430 cfs in summer up to 1,172 in spring. Upstream dams include:

- Lakeport Dam (FERC No. 6440) owned by NH Department of Environmental Services (NHDES) and located at RM 9.5 with downstream eel passage facilities.
- Avery Dam (FERC exempt No. 6752) owned by Dichotomy Capital at RM 7.9. Fish passage status is unknown, but the project is likely to have downstream passage.
- Lochmere Dam (FERC exempt No. 3128) owned by NHDES and located at RM 5.5 with downstream fish passage facilities.
- Clement Dam (FERC No. 2966, LIHI #117) owned by Clement Dam Hydroelectric, LLC (Eagle Creek) and located at RM 4 with downstream fish passage facilities.

The only downstream dam on the Winnipesaukee River is Franklin Falls Dam (FERC No. 6950; formerly LIHI certified #83) owned by Franklin Falls Hydroelectric Corporation (Eagle Creek) and located at RM 0.5. It has downstream passage but no upstream fish passage.

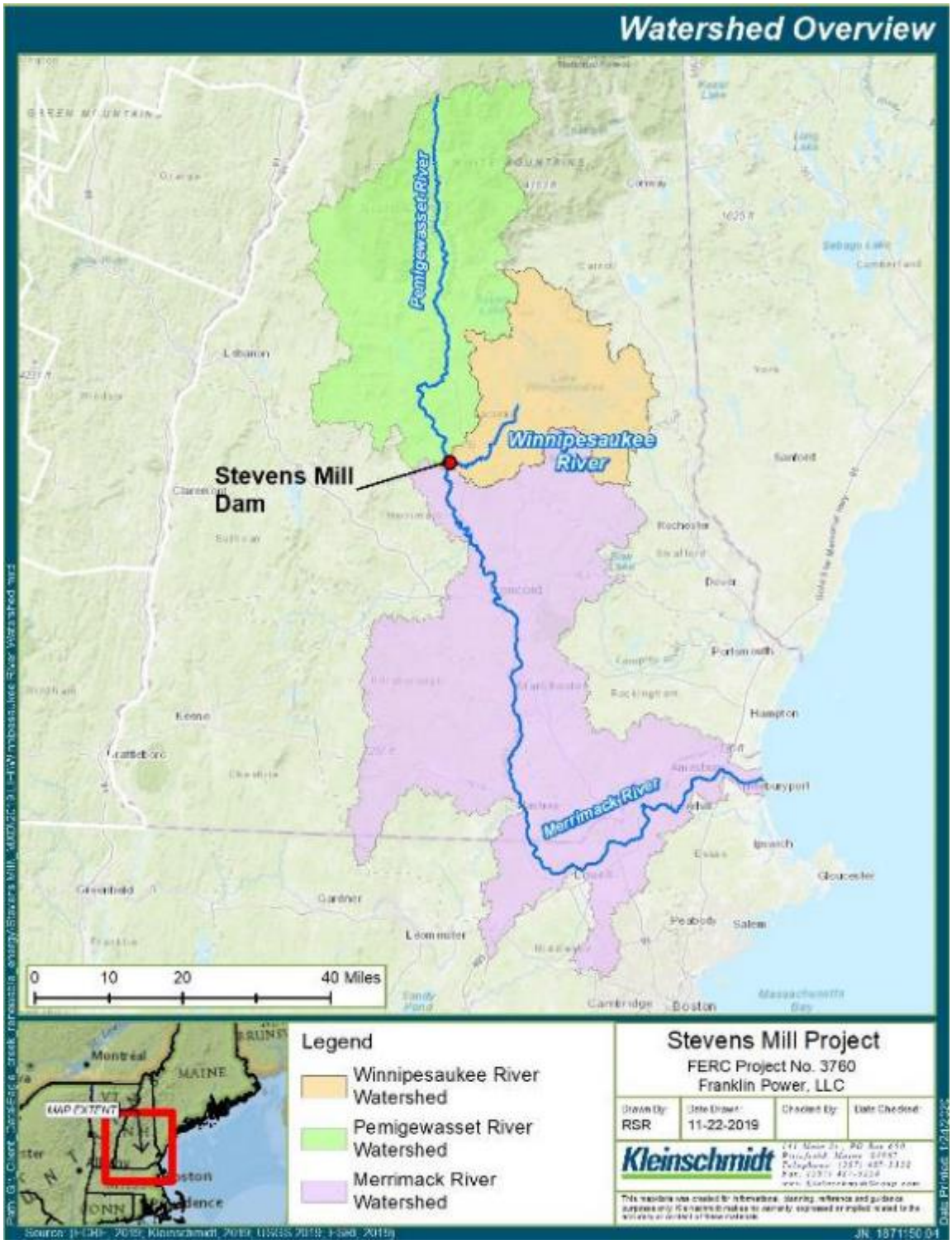

Figure 1. Project Location and Watershed

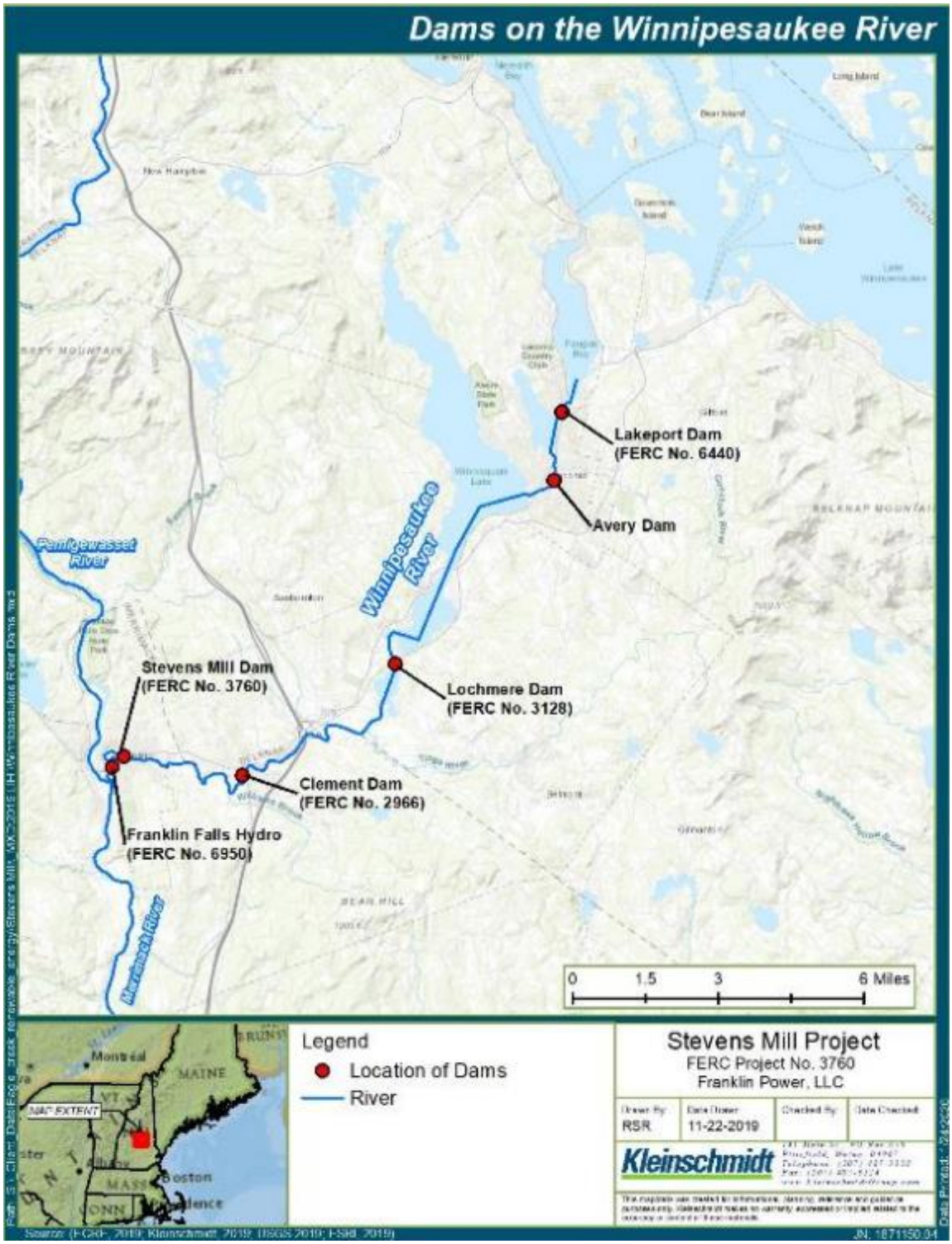

Figure 2. Dams on the Winnipesaukee River

The Project was originally constructed in the early 1900s, as part of a mill producing woolen dress goods. The origins of the company can be traced to J.P. Stevens and Co. which was founded in 1813 in North Andover, Massachusetts by Captain Nathaniel Stevens, originally producing woolen broadcloth. In 1901, Moses T. Stevens incorporated the company, constructed the Stevens Mill Complex and associated hydroelectric facilities and changed the company name to M.T. Stevens Company. Franklin Industrial Complex Inc. purchased the Stevens Mill buildings and hydroelectric generating equipment in August of 1982. Algonquin Power Systems, Inc (Algonquin) purchased the hydroelectric generating assets from Franklin Industrial Complex Inc. in the mid-1980s, including all of the rights and privileges associated with the FERC exemption. The Stevens Mill generating assets were subsequently sold to Eagle Creek Renewable Energy ,LLC in July 2013.

The Project includes two generating units located in separate powerhouses - Bow Street and Riverbend (Figure 3). A 150-foot long penstock connects the dam to the Bow Street powerhouse and a 740-foot long penstock running underneath Canal Street connects the dam to the Riverbend powerhouse. The FERC boundary encompasses approximately 10 acres.

Turbine Unit 1 (236 kW) is located on the north side of the river immediately across from the Stevens Mill Building No. 1 (Bow Street). Unit 1 is a Flygt submersible turbine[1] that was installed in 1985; it is used to maintain conservation flows in the reach of river bypassed by the Riverbend station. A former second unit was installed in 1990 and later removed in 1996. Unit 3 (1,700 kW) is located approximately 900 feet[2] southwest of the dam and adjacent to Stevens Mill Building No. 2 (Riverbend). The Project operates in an instantaneous run-of-river mode with an average annual production of 6,819 MWh.

The dam is a concrete gravity structure approximately 112 feet long and 22 feet high. The crest elevation is reported as 312.2 feet msl with a 2.8-foot high Obermeyer inflatable crest gate that was installed in 2008 and provides an overflow elevation of 315 feet. With the pool maintained at approximately elevation 315 feet, the impoundment covers approximately one acre with an average depth of about seven feet. The downstream Franklin Falls dam backwaters and controls the tailwater elevation, about 281.5 feet NGVD, at the Riverbend facility.

[1] https://www.xylem.com/siteassets/brand/flygt/brochures/flygt-hydroturbine-brochure.pdf
[2] A Public Safety Plan filed with FERC stated 984.5 feet.

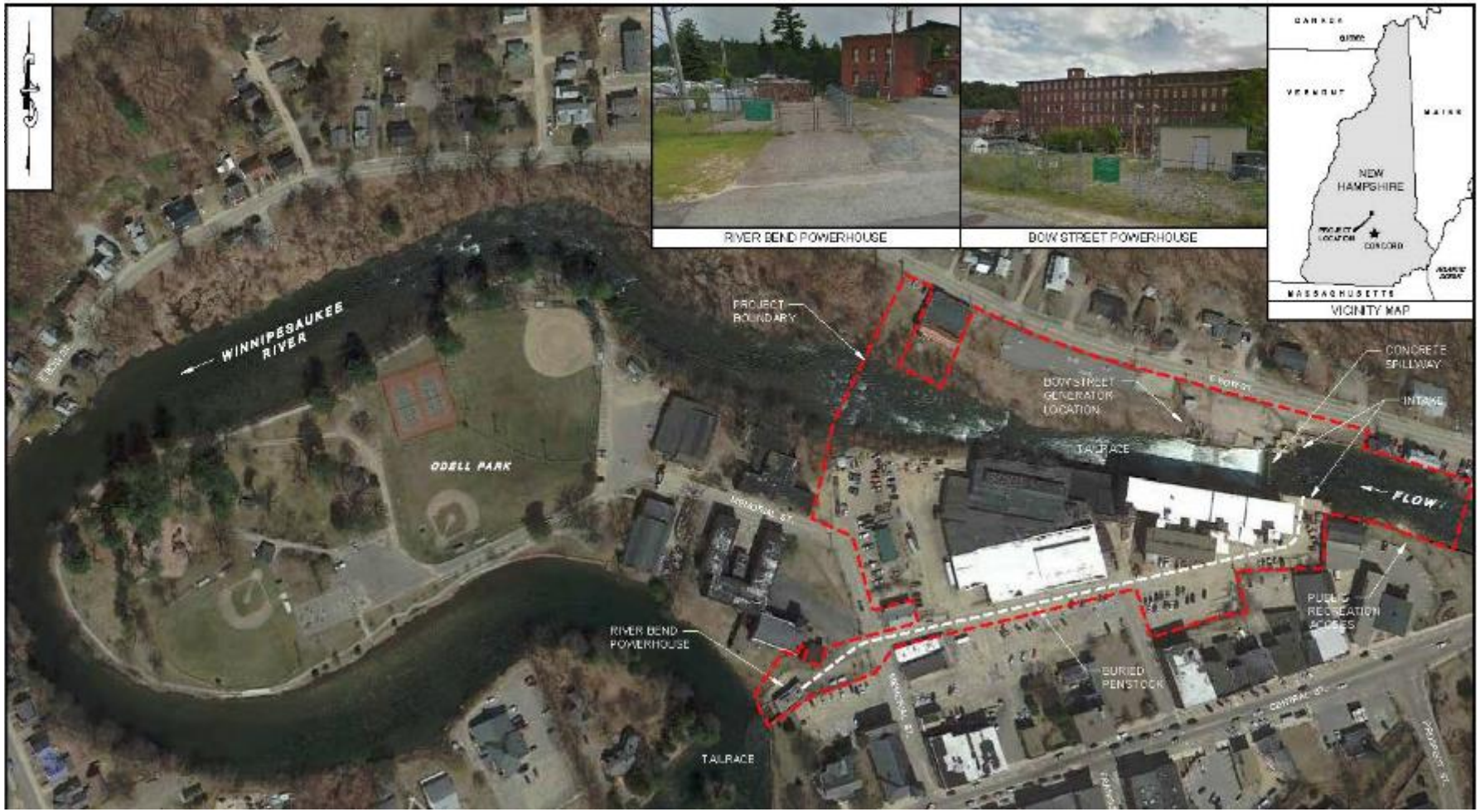

Figure 3. Project Layout

IV. REGULATORY AND COMPLIANCE STATUS

On June 14, 1983, the Federal Energy Regulatory Commission (FERC) issued an exemption from licensing (Project No. 3760) to the Franklin Electric Light and Power Company[3]. The exemption was amended on April 16, 1991[4] to reflect a change in installed capacity from 1,940 kW to 2,161 kW due to a change in the turbine generator purchased for the new unit, and for rehabilitation work needed for the existing units. The exemption was amended again on August 20, 1998[5] to reflect the removal of the circa 1907 250-kW generating unit located in the Bow Street powerhouse; the unit had been idle since 1992 due to mechanical difficulties. The total generating capacity of the Project was reduced from the authorized 2,161 kW to 1,936 kW.

Under the FERC exemption, the Project is subject to Standard Articles including Article 2 which requires compliance with any terms and conditions that federal and state fish and wildlife agencies may impose. No water quality certification (WQC) was required for the FERC exemption nor was one issued for the Project.

A review of the FERC elibrary from January 1, 2015 to June 30, 2020 identified only routine filings, and dam safety or public safety related documents. No exemption deviations were documented on the elibrary. The Applicant and the prior owner filed annual minimum flow compliance certification reports until FERC discontinued that practice for the Project in 2016; however, the Applicant is still required to file reports of any deviations that may occur.

In August 2014, US Fish and Wildlife Service (FWS) and Eagle Creek entered into a Memorandum of Agreement (MOA), the purpose of which was to establish a plan and schedule to address fish passage and minimum flows at several Eagle Creek hydroelectric projects in New Hampshire. This agreement was required as a condition of initial LIHI certification for the projects (Clement LIHI #117, Webster-Pembroke LIHI #118, Gregg's Falls LIHI #120, Stevens Mill LIHI #123 and the Lochmere and Mines Falls Projects). The MOA was executed with a 5-year term and an option for the Parties to extend the term by mutual agreement. Interim extensions to the MOA have been executed and are intended to allow FWS and New Hampshire Fish and Game Department (NHFG) to conduct site reviews of downstream fish passage facilities and minimum flows with the purpose of extending the MOA for another 5-year term. NHFG is actively involved in review of activities associated with the MOA although the agency is not a signatory to the MOA. The June 2019 interim extension was provided in Appendix D of the application. The MOA is being extended again pending final execution.

V. PUBLIC COMMENTS RECEIVED OR SOLICITED BY LIHI

The application was publicly noticed on January 3, 2020 and notice of the application was forwarded to resource agency and stakeholder representatives listed in the application. Public comments were received from USFWS and National Marine Fisheries Service (NMFS) during the 60-day comment

[3] https://lowimpacthydro.org/wp-content/uploads/2015/03/1983-06-14-Franklin-FERC-Order-Granting-Exemption-License.pdf
[4] https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3456385
[5] https://lowimpacthydro.org/wp-content/uploads/2015/03/Appendix-I.6_19980820_-Order-Amending-Exemption-3760.pdf

period which ended on July 11, 2020. Both are discussed below and included in Appendix A. Based on the completeness of the application, the MOA extension and related consultation documentation, no direct outreach to resource agencies or other stakeholders was conducted as part of this review.

VI. ZONES OF EFFECT

The Applicant delineated the Project into three Zones of Effect (ZoEs) as shown in Figure 4.

- Zone 1 is the impoundment extending 0.1 miles upstream from the dam.
- Zone 2 is the 0.75-mile bypassed reach.
- Zone 3 is tailrace and immediate downstream reach below the Riverbend powerhouse.

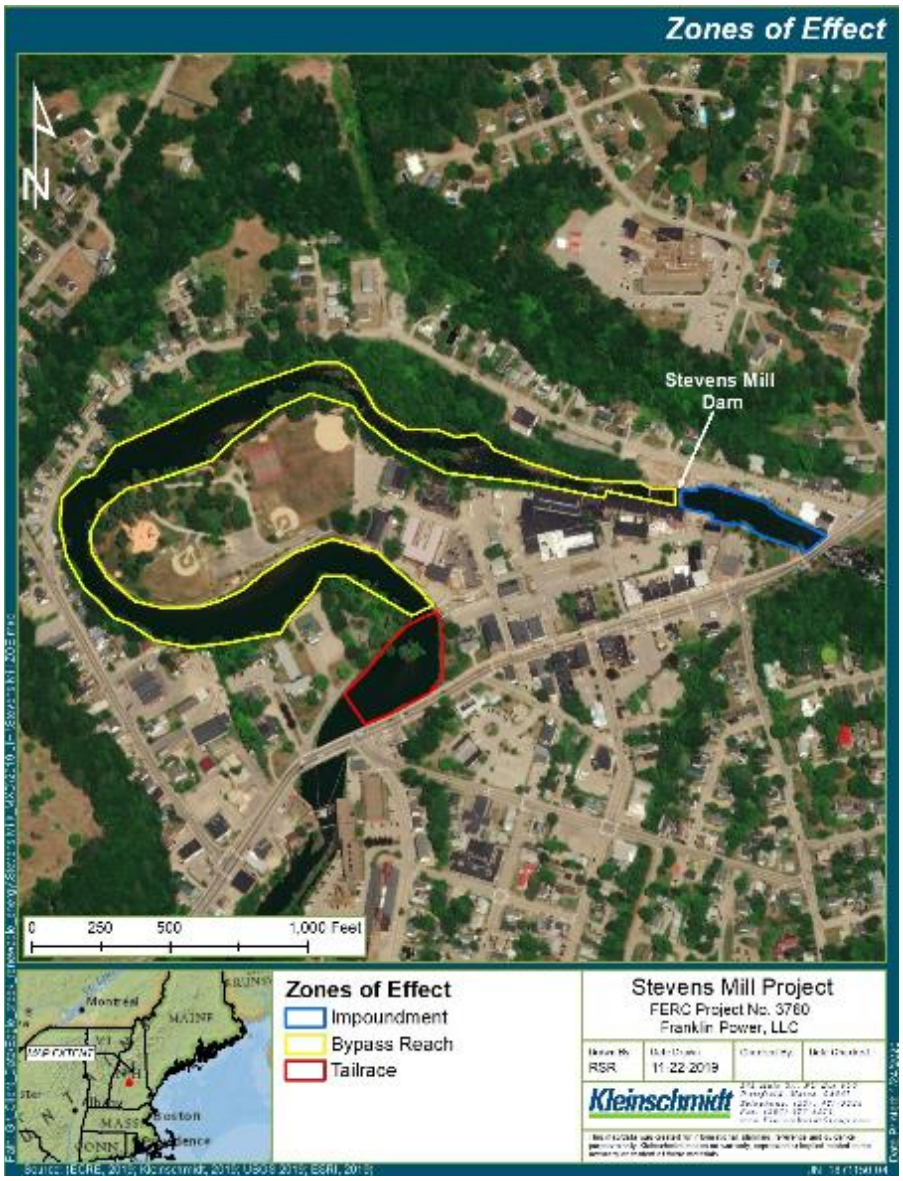

Figure 4. Zones of Effect

The Applicant selected the standards shown in the tables below. The Reviewer agrees with the selected Standards, except where noted in **RED**.

Zone 1: Impoundment		ALTERNATIVE STANDARDS				
		1	2	3	4	PLUS
A	Ecological Flow Regimes	X				
B	Water Quality		X			
C	Upstream Fish Passage	X				
D	Downstream Fish Passage		X			
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection		X			
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources	X		**X**		

Zone 2: Bypassed Reach		ALTERNATIVE STANDARDS				
		1	2	3	4	Plus
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage		X			
D	Downstream Fish Passage		X			
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection		X			
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources	X		**X**		

Zone 3: Tailrace		ALTERNATIVE STANDARDS				
		1	2	3	4	Plus
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage		X			
D	Downstream Fish Passage	**X**	X			
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection		X			
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources	X		**X**		

VII. DETAILED CRITERIA REVIEW

A: Ecological Flow Regimes

Goal: *The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.*

Assessment of Criterion: The Applicant selected Standard A-1, Not Applicable / De Minimis Effect for ZoE 1 and Standard A-2, Agency Recommendation for ZoEs 2 and 3.

Discussion: The Project operates in instantaneous run-of-river mode. Water levels above the dam are maintained at the crest of the dam and are not drawn down for generation. The Project is required by Article 2 of the exemption to maintain a continuous minimum flow of 100 cfs in the bypassed reach. An automated headpond level sensor maintains run of-river operation (fixed headpond elevation at the flashboard system crest) and bypass minimum flows. A study conducted as part of the FERC exemption proceeding[6] noted that the aquatic base flow (ABF) at the Project is 240 cfs and that flows are controlled by the upstream Lakeport dam. The study included quantitative evaluation of physical, aesthetic and biological impacts of the Applicant's proposed 100-cfs flow and the 240 cfs flow. The study was conducted under flows higher than this range and the effects at the two flows were calculated rather than directly measured. The study concluded that 100 cfs would not "significantly affect the fishery and would be adequate to protect existing resources". At that time, both FWS and NHFG found some fault with the study but reluctantly agreed to 100 cfs on a conditional basis, pending any future indication that the flow was inadequate. Under the MOA, the minimum flow was reevaluated in 2014 through on-site verification and was deemed adequate by the agencies.

The Applicant prepared and filed for FWS approval, an Operations and Flow Monitoring Plan. The Plan was developed based upon a mutually agreeable schedule that allowed downstream fish passage facilities at certain Applicant-owned NH projects to be placed into service in a staged manner. The Plan was prepared and submitted to FWS and approved in 2017. It was then updated in December 2018. The Applicant received additional comments from agencies in September 2019 and the Plan will be updated based on further agency discussions as part of the next MOA extension expected in October 2020.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project is in compliance with flow requirements and operates to protect aquatic habitat, and therefore continues to satisfy the ecological flow regimes criterion. The MOA constitutes the current formal science-based agency recommendation for management of flows. Continuation of the current certification's Conditions 2 and 5 (updated and reworded as Condition 1 herein) is recommended to ensure that LIHI is made aware of all changes in the MOA and specifically any modifications to the Plan.

[6] https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11765120

B: Water Quality

Goal: *Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions*.

Assessment of Criterion: The Applicant selected Standard B-2, Agency Recommendation for all ZoEs.

Discussion: The Upper Merrimack River in Franklin, which extends to the Winnipesaukee River in the Project area is a Class B river considered acceptable for fishing, swimming, and other recreational purposes, and for use as water supply after adequate treatment. The Winnipesaukee River in the Project vicinity is not listed as impaired or in need of a Total Maximum Daily Load (TMDL) in the state's 2018 Surface Water Quality Assessment Program 303(d) impaired waters list[7]. There is no WQC associated with the Project.

As discussed in Section I above, Condition 4 of the original LIHI certification required water quality monitoring which was conducted in 2016. The condition was closed in 2018 upon receipt of confirmation by NHDES that the river in the Project vicinity meets state water quality standards. The Project's run-of-river operation also supports a lack of an impact on water quality.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project does not appear to adversely impact water quality and therefore continues to satisfy the water quality criterion.

C: Upstream Fish Passage

Goal: *The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility.*

Assessment of Criterion: The Applicant selected Standard C-1, Not Applicable/De Minimis Effect for the impoundment ZoE and Standard C-2, Agency Recommendation for ZoEs 2 and 3. Standard C-1 is appropriate for the impoundment reach since once above a dam there is no further Project-related impediment to upstream movement.

Discussion: Migratory species historically present in the Winnipesaukee River include American shad, river herring (alewife and blueback herring) Atlantic salmon, and American eel[8]. Anadromous fish were historically well distributed in the upper Merrimack River basin. The Pemigewasset River basin served as the principal source of salmon production, while shad and river herring more likely utilized the Winnipesaukee River, the Merrimack River mainstem and other Merrimack River tributaries. In 1847, the Essex Dam in Lawrence, Massachusetts (LIHI #121) was constructed, blocking anadromous fish runs to upstream habitat throughout the rest of the basin. That project as well as the next upstream project, Lowell (LIHI #142) are now equipped with upstream passage facilities. Farther upstream in Manchester NH, the Amoskeag development (part of FERC No. 1893 that also includes the Hooksett and Garvins Falls developments) has upstream passage. Hooksett

[7] https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/2018-303d.xlsx
[8] https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-1252.pdf

(LIHI #162) is the next upstream development and is expected to implement upstream passage since the specified trigger numbers of shad and/or river herring passing Amoskeag were reached in 2016. Final fishway designs are expected in late 2020 with installation in 2021. The next upstream development, Garvins Falls would implement passage within three years of specific triggers being met at Hooksett or at Amoskeag, so the earliest availability of anadromous fish above Garvins Falls would be in 2025.

The historical range of American eel included the Winnipesaukee River[9] and eels are present in Lake Winnipesaukee and in the Winnipesaukee River[10] indicating that they are able to pass the dams naturally. The Merrimack River Project provides upstream eel passage past Garvins Falls.

Exemption Standard Article 2 requires compliance with any terms and conditions that federal and state fish and wildlife agencies may impose. The MOA was last updated in 2019 and established a plan and schedule for addressing fish passage for river herring and American eel. No upstream passage has been required at the Project to date; however, the need for upstream passage for both anadromous species and American eel will be re-evaluated in 2020 per the MOA schedule. In addition, there is no upstream fish passage at the downstream FERC exempt Franklin Falls Project which is the first dam on the Winnipesaukee River. Upstream passage at the Franklin Falls Project will be contingent on fish passage on the Merrimack River mainstem dams.

LIHI received a comment email from NMFS dated July 7, 2020 (Appendix A) that stated no objections to recertification as long as the Applicant implements the recommendations of NHDES and FWS, presumably referring to recommendations in the MOA. The letter noted that the agency is developing a new watershed-based comprehensive plan for restoration of diadromous fish in the Merrimack basin that should become part of future LIHI evaluations for projects throughout the basin.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project is in compliance with current agency recommendations and therefore continues to satisfy the upstream fish passage criterion. Since the MOA includes provisions for providing upstream passage for American eel and the fact that anadromous fish would likely not have access to Stevens Mill's during the next LIHI term, no specific upstream passage condition is warranted. However, Condition 1 recommended above includes requirements related to implementing measures under the MOA.

D: Downstream Fish Passage

Goal: *The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and upstream river reaches affected by Facility operations. All migratory species can successfully complete their life cycles and maintain healthy populations in the areas affected by the Facility.*

Assessment of Criterion: The Applicant selected Standard D-2, Agency Recommendation for all ZoEs. However, Standard D-1 is appropriate in the tailrace ZoE since once below a project there is no

[9] https://www.wildlife.state.nh.us/wildlife/wap.html
[10] https://manchesterinklink.com/nh-fishing-report-for-june-2020/

further Project-related impediment to downstream movement.

Discussion: The Project's exemption Standard Article 2 reserves authority for resource agencies to require fish passage facilities.

In accordance with the MOA, downstream passage facilities were installed in 2016. Based on the MOA, the Applicant developed measures to exclude downstream migrants from the hydropower intakes and provide passage around the dam. The final design was supported by FWS, NHFG and NHDES, and included ¾" exclusionary trashrack overlay panels at the Unit 1 intake (Bow Street), blocking racks perpendicular to flow at the Unit 3 intake (Riverbend), modifications to the existing sluice gate, and a new plunge pool and conveyance channel. The blocking rack at Riverbend was one of two options agreed to by the agencies in the MOA. The other option was to install ¾" trashrack overlays similar to those installed at Bow Street. Riverbend currently has 2-inch clear-spaced trashracks.

On November 7, 2016, comments were received from FWS (Appendix C of the application) regarding the adequacy of fish passage at the Project. Comments concluded that Stevens Mill had completed its downstream passage measures as agreed to, although the adequacy of those measures would be subject to ongoing observation and future changes could be required. The MOA required a Fishway Operations Plan (currently being updated) and the Applicant continues to coordinate with agencies and conducts site visits on an annual basis or as requested by agencies to review operation of the fishways. The most recent site inspection was conducted with agency representatives in September 2019.

LIHI received a comment email from FWS dated June 11, 2020 (Appendix A) that discussed concerns with downstream passage at Riverbend including trashrack spacing, sweeping velocity and approach velocities at the intake, and excess sediment buildup in the forebay that decreases available trashrack area and increases water velocity. The FWS email contained some information that seems to contradict the LIHI application. The application stated that the current trashrack has 2-inch spacing not 3-inch as FWS stated; and the rack angle is reported in the application as being perpendicular to river flow not parallel as FWS stated. Regardless, FWS recommended installing ¾" trashrack overlays and addressing velocity concerns. Flow inducers had been installed in an attempt to increase sweeping velocity but FWS determined them to be ineffective given observations of herring being entrained. FWS also noted approach velocity "hot spots" which were not measured but may be higher than the recommended maximum 2 ft/sec. FWS acknowledged the Applicant's agreement to conduct more frequent (e.g., annual) forebay dredging to keep the trashrack area clear. FWS recommended that all downstream passage issues be addressed as a condition of LIHI recertification given that the MOA has been extended on an interim basis until October 2020 and will not be re-evaluated until that time.

It is unclear why agencies allowed alternatives to the trashrack size in the original and amended MOA, but it seems that they approved installation of the larger rack spacing that currently exists. The 2019 MOA extension includes potential re-evaluation of the need for an angled surface boom at the Riverbend development which is likely to be part of the pending 2020 MOA amendment/extension. Notes from the September 2019 site evaluation (Appendix C of the application) stated that agencies would internally discuss the options of ¾" racks and/or an angled

boom (louver style orientation).

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the downstream fish passage criterion. The Applicant continues to collaborate with resource agencies to improve downstream passage and has committed to conduct additional dredging. Dredging would be a prerequisite to evaluating flow velocities. Dredging activities would require permits from NHDES and would need to be scheduled at an appropriate time of year under appropriate river flow conditions. A condition is recommended to encourage the Applicant to prepare for and conduct dredging in 2020 if site and flow conditions allow. The condition is an extension of the current certificate's Condition 3 (reworded as Condition 2 herein).

E: Shoreline and Watershed Protection

Goal: *The facility has demonstrated that sufficient action has been taken to protect, mitigate or enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.*

Assessment of Criterion: The Applicant selected Standard E-1, Not Applicable/De Minimis Effect for all ZoEs.

Discussion: The FERC license exemption does not include a requirement for a Shoreline Management Plan. No protected buffer zones have been created along the riverine impoundment through a settlement agreement or the FERC exemption and there is no watershed enhancement fund for the Project. There are also no resource agency recommendations regarding shoreline and watershed protection standards at the Project.

The Project's dam creates an impoundment with a surface area of approximately one acre extending less than 500 feet upstream. The Project is located in downtown Franklin, a developed urban area in an industrialized zone, though there are two City-owned parks - Trestle View Park, just upstream of the dam, and Odell Park along the bypass reach. The majority of the stream bank in the Project area is comprised of buildings with the remainder being parking areas. There is development on both sides of the river and dam – industrial buildings on the south side of the Project and a road with houses on the north side.

In 1990, the Upper Merrimack River, including the section of the Winnipesaukee River in Franklin was designated as a state-protected river under the NH Rivers Management and Protection Program[11] which provides an extra level of protection for significant instream river resources. Proposed development activities and any actions requiring a state permit such as dredge and fill permits that would be needed for forebay dredging, are subject to review by the Upper Merrimack River Local Advisory Committee guided by the Upper Merrimack Management and Implementation Plan[12]. This protection status also provides development and use restrictions within a 250-foot buffer from the river's edge in accordance with the NH Shoreland Water Quality Protection Act[13].

[11] https://www.des.nh.gov/organization/divisions/water/wmb/rivers/documents/mer-upp-report.pdf
[12] https://www.des.nh.gov/organization/divisions/water/wmb/rivers/documents/mer-up-plan.pdf
[13] https://www.des.nh.gov/organization/divisions/water/wetlands/cspa/index.htm

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project with its run-of-river operation and state regulatory restrictions and requirements for local oversight, has little to no impact on the shoreline in general and activities that could impact the shoreline would be conducted in a manner that minimizes impacts. The Project therefore continues to satisfy the shoreland and watershed protection criterion.

F: Threatened and Endangered Species

Goal: *The facility does not negatively impact federal or state listed species.*

Assessment of Criterion Passage: The Applicant selected Standard F-2, Finding of No Negative Effect for all ZoEs.

Discussion: The FWS Information for Planning and Consultation (IPaC) database was accessed as part of the recertification application process to determine federally listed species that could occur in the Project vicinity. The Northern long-eared bat (*Myotis septentrionalis)* was listed as a federally-threatened species on May 4, 2015 and is also a species of special concern in New Hampshire. There are no critical habitats for this species and no documented occurrences in the Project area although its range includes the Project area. The Applicant states that they will abide by the FWS 4(d) ruling for the species which restricts tree cutting to certain times of year although the need to cut trees is minimal. Ongoing run-of-river operations are not anticipated to negatively affect this species.

The IPaC report also listed six migratory birds protected under the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act.

- Bald Eagle (*Haliaeetus leucocephalus*)
- Black-billed Cuckoo (*Coccyzus erythropthalmus)*
- Canada Warbler *(Cardellina canadensis)*
- Prairie Warbler (*Dendroica discolor*)
- Olive-sided Flycatcher *(Contopus cooperi)* and
- Wood Thrush (*Hylocichla mustelina)*

Although these species of migratory birds may be present in the Project vicinity, there are no provisions or management plans related to species protection that affect the Project or its operations. The Applicant states that they comply with all provisions under the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. The Applicant provided a confidential NH Natural Heritage Bureau report of state-listed species that may be present in the Project area. The only species potentially within the Project boundary is the state-endangered common nighthawk. This species often nests on flat gravel rooftops[14] and is unlikely to be affected by Project operations.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project is unlikely to affect listed species given its small footprint, run-of-river operations, and commitment to follow the 4(d) rule for Northern long-eared bat. Therefore, the Project continues to satisfy the threatened and endangered species protection criterion.

[14] https://wildlife.state.nh.us/wildlife/profiles/wap/birds-commonnighthawk.pdf

G: Cultural and Historic Resources Protection

Goal: *The Facility does not unnecessarily impact cultural or historic resources that are associated with the facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.*

Assessment of Criterion: The Applicant selected Standard G-1, Not Applicable/De Minimis Effect for all ZoEs.

Discussion: The Franklin Falls Historic District was listed on the National Register of Historic Places in 1982 and includes the Project area, dam and structures[15]. Exemption Article 6 required consultation with the State Historic Preservation Officer (SHPO) during original rehabilitation of the Project in the early 1980s. The SHPO determined that there would be no adverse impact on cultural or historic resources under the proposed mitigation plan and measures implemented during rehabilitation.

The Applicant requested consultation with resource agencies during installation of the downstream fish passage facilities including the SHPO from whom no response was received, and the US Army Corps of Engineers whose contact with the SHPO for purposes of Section 106 consultation made a finding of no known resources likely to be affected by the installation of the passage facilities. The FERC exemption also requires SHPO consultation in the event previously unknown cultural or historic resources are discovered during Project operations, maintenance, or ground-disturbing activities.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project does not adversely impact cultural or historic resources. Therefore, the Project continues to satisfy the cultural and historic resources protection criterion.

H: Recreational Resources

Goal: *The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.*

Assessment of Criterion Passage: The Applicant selected Standard H-1, Not Applicable/De Minimis Effect for all ZoEs. However, this review finds that Standard H-3, Assured Accessibility is more appropriate.

Discussion: The Stevens Mill Project is not required to have, nor are there any formal recreational facilities within the Project boundary. Due to the Project's location between buildings on both banks, the rocky nature of the Project reach of the river, and the highly developed nature of the area, little to no recreational activity occurs at the Project. However, the Applicant allows recreational access free of charge within a safe distance from the Project works.

There are two City-owned parks near the Project. Trestle View Park is located just upstream of the dam on the south bank of the impoundment. A portage takeout for kayakers using the upstream

[15] https://catalog.archives.gov/id/77845338

gorge section of the river is located at Trestle View and this site includes a bathroom/changing facility and parking area. The site is also used for bank fishing. Odell Park is located along the bypassed reach and has a playground, playing fields, and picnic areas. There is no portage put in below the dam. The Winnipesaukee River Trail runs through Tilton, Northfield, and ends in Franklin at Trestle View Park just upstream of the Project dam. Another smaller trail runs along the south side of the bypassed reach around the perimeter of Odell Park.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the recreational resources criterion.

VII. CERTIFICATION RECOMMENDATION

This review included evaluation of the application and additional information provided, a review of the FERC elibrary during the current LIHI term, review of other publicly available information, and consideration of the comments received from NMFS and FWS. Based on this evaluation, the Reviewer recommends that the Gregg's Falls Project be recertified for a term of five (5) years with two conditions.

- **Condition 1.** The facility Owner shall report in its annual compliance submittals to LIHI, on any changes or amendments to the MOA, any changes in requirements under the MOA, or if modifications have been made to the Operations and Flow Monitoring Plan. If any changes were made, the facility owner will provide a brief summary of those changes.

- **Condition 2.** The facility Owner shall conduct forebay dredging in 2020 if site conditions allow, or as soon as conditions do allow. The Owner shall continue to consult with resource agencies on downstream passage in accordance with the MOA and shall notify LIHI of any changes in downstream passage measures in annual compliance submittals.

Appendix A – Agency Comment Letters

Gmail

Certification Comments <comments@lowimpacthydro.org>

Stevens Mill Project Comments

1 message

Sean McDermott - NOAA Federal <sean.mcdermott@noaa.gov> Tue, Jul 7, 2020 at 9:16 AM
To: comments@lowimpacthydro.org

NOAA Fisheries staff have reviewed the LIHI certification application of Franklin Power, LLC, Eagle Creek Renewable Energy, for the Stevens Mills Project (FERC No.3760). The Stevens Mill Project is located on the Winnipesaukee River in Franklin, NH.

Based on the information provided, we have no objections to recertification at this time as long as Franklin Power implements the conditions and recommendations of the New Hampshire Department of Environmental Services and U.S. Fish and Wildlife Service. For future recertifications, we recommend LIHI coordinate the review of all the applications in the watershed at one time. A watershed approach to LIHI certification will help streamline the process and facilitate consistency of requirements among projects.

In addition, NOAA Fisheries is working with the Merrimack River Technical Committee to develop a watershed based comprehensive plan. The central focus of this plan is the restoration of diadromous fishes to the Merrimack River watershed, including the Winnipesaukee River. The final comprehensive plan will be filed with the Federal Energy Regulatory Commission for consideration under their Federal Power Act regulations, Section 10(a). This will ensure the equal consideration of non-power uses of the river. Once completed, the recommendations of this comprehensive plan should be considered in the LIHI certification process for the development of conditions that support low impact standards for flows, water quality and fish passage.

Feel free to contact me if you have any questions.
-Sean

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Sean McDermott
Hydropower Program Coordinator
Habitat Conservation Division
National Marine Fisheries Service
978-281-9113

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Certification Comments <comments@lowimpacthydro.org>

Stevens Mill Project (FERC No. 3760) Comments

1 message

Rosset, Julianne <julianne_rosset@fws.gov> Thu, Jun 11, 2020 at 9:44 AM
To: "comments@lowimpacthydro.org" <comments@lowimpacthydro.org>

To whom it may concern,

The United States Fish and Wildlife Service (Service) has reviewed the Low Impact recertification application for the Stevens Mill Hydroelectric Project (FERC No. 3760) and has the following comments regarding fish passage.

The Stevens Mill Project (Project) consists of two turbine units, one on river right and one on river left (looking downstream). The following fish passage concerns are related to the river left unit, which has a hydraulic range of 100 cfs to 600 cfs.

1. Rack Spacing – the existing intake rack spacing is roughly 3 inches. Relevant to juvenile river herring, service fish passage guidelines recommend a maximum rack spacing of ¾ inches. Therefore, the existing rack spacing does not prevent downstream migrating river herring from becoming entrained in the turbine unit.

2. Sweeping velocity - juvenile river herring can physically swim through a gap of ¾ inches and therefore it is critical to provide a sweeping velocity (velocity vector measured parallel with the rack structure) that guides them past the intake racks and into the existing downstream bypass. The intake rack structure at Stevens Mills is parallel with the river flow, which is typically ideal for creating a prominent sweeping velocity vector. However, due to the units capacity relative to the total river flow (i.e., most of the river flow goes through the river left unit) as well as a reduced intake area as a result of built up sediment in front of the rack, the sweeping velocity is not pronounced. Flow inducers were utilized in an attempt to create a sweeping velocity, but based on a visual inspection on September 10, 2019 by Service Engineers, fish were witnessed becoming entrained, and therefore the flow inducers were determined to be ineffective.

3. Normal velocity – Service fish passage criteria recommends that the velocity normal to the intake racks are 2 ft/s or less. Velocities have not been measured, but a visual inspection on September 10, 2019 by Service Engineers revealed several hot spots (zones where velocities may have been greater than 2 ft/s) as shown in the attached photo (*SMphoto.png*).

4. Dredging – The impoundment created by the Stevens Mills project has become a depositional zone (i.e., an area in which mobilized sediment from upstream drops out of the water column) due to the fact that the reach just upstream is steep (greater than 2% slope). A significant amount of sediment builds up in front of the racks within a single year. The sediment reduces the cross-sectional area of the intake rack and in turn increases the velocity through the racks. This issue has been remediated by dredging the sediment and removing it from the site, but has not been done on a regular basis (e.g., annual) such that the problem was evident during the September 10, 2019 site visit.

While Eagle Creek has tentatively agreed to addressing Item #4 above (dredging sediment at Stevens Mill on an annual or semiannual basis) Eagle Creek has also requested two Memorandum of Agreement (MOA) extensions and a new, updated, MOA won't be signed until October 2020. Therefore, as part of this LIHI recertification process, the Service recommends the above fish passage issues are addressed and are implemented in any conditions issued or required by LIHI in order to provide safe, timely, and effective passage to downstream migrating river herring. Any changes to the Project relevant to fish passage and protection shall require consultation with, and approval of facilities, by the Service.

Thank you for this opportunity to comment. If you have any questions, please feel free to email me.

Kind regards,

Julianne

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