

REVIEW OF APPLICATION FOR CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE EEL WEIR HYDROELECTRIC FACILITY

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I. INTRODUCTION

This report reviews the updated application submitted by S.D. Warren Company d/b/a S.D. Warren North America (S.D. Warren or Applicant) dated September 1, 2017, to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the Eel Weir Hydroelectric Project (P-2984-ME) (Eel Weir or Project). A review of a draft application dated June 19, 2017, was made by the Reviewer, which resulted in an Intake Review Report and several consultation calls between the Applicant and Reviewer to address some questions. The final application was submitted September 1, 2017. This certification review was conducted in compliance with LIHI's Handbook, 2nd Edition, dated March 7, 2016.

The Eel Weir Project is located on the Presumpscot River at the outlet of Sebago Lake in southern Maine, and is one of six hydropower projects owned by S.D. Warren. S.D. Warren also owns a seventh non-hydropower dam, Cumberland Mills, which is the most downstream dam on the river.

The Eel Weir Project headgates were installed in the mid-1800s while the generating facilities were commissioned in 1903 by the Presumpscot Electric Company, a subsidiary of S.D. Warren.

The Eel Weir Project was originally licensed by the Federal Energy Regulatory Commission (FERC) in 1984, and currently holds a 40-year license issued on March 23, 2015, and a Water Quality Certification from the Maine Department of Environmental Protection (MEDEP) issued August 30, 2011. The Project's authorized capacity as licensed is 1.8 megawatts (MW) with a reported annual generation of 12,300 MWh.

II. PROJECT'S GEOGRAPHIC LOCATION

The Project is located at the outlet of Sebago Lake on the Presumpscot River, in Standish and Windham, Cumberland County, Maine. The Lake serves as a public water supply source for the Portland Water District, which provides management oversight of recreational activities to protect this water supply. Sebago Lake is one of the major recreational areas in Maine. The majority of land surrounding the lake is privately owned, and there are numerous year-round and seasonal homes. Sebago Lake is a 12-mile-long, 28,771-acre water body with a useable storage volume of 177,120 acre-feet at a normal maximum elevation of 266.65 feet mean sea level (msl). Although Sebago Lake is a natural lake, a 1,350-foot-long, 22-foot-high dam

controls Sebago Lake between elevations 248.0 feet msl and 266.65 feet msl. Latitude and longitude are 43°49'47.48" N (Headgates) and 70°27'19.31" W (Headgates). Eel Weir is located at river mile 25.0 and is the most upstream dam on the river. Figure 1 in Appendix A illustrates the location of Eel Weir along with seven other dams on the river. All are owned by S.D. Warren except the North Gorham Hydropower Project, which is owned by Brookfield Renewable Energy Group. The North Gorham Project was certified by LIHI (Certification # 129) effective April 27, 2016. S.D. Warren has submitted applications to LIHI for certification review for the five projects noted below in bold. These dams are identified as follows beginning with the head waters:

Facility Name	River Mile	FERC Project #
Eel Weir Hydropower Project	25.0	P-2984
North Gorham Hydropower Project	23.6	P-2519
Dundee Hydropower Project	21.9	P-2942
Gambo Hydropower Project	18.6	P-2931
Little Falls Hydropower Project	16.9	P-2941
Mallison Falls Hydropower Project	16.4	P-2932
Saccarappa Hydropower Project	11.3	P-2897
Cumberland Mills Dam	10.3	Not hydropower

S.D. Warren filed a license surrender application in 2015 for the Saccarappa Project, with plans to remove the spillways and install upstream passage for anadromous species. This filing and subsequent Settlement Agreement has no effect on the regulatory requirements of Eel Weir. The Cumberland Mills dam impoundment is used for non-contact cooling, process water and fire suppression for adjacent mill operations. The Smelt Hill Dam, which was formerly located downstream of the Cumberland Mills facility, was removed in October 2002.

Watershed area at the dam has been estimated at 441square miles taken from the Project’s Exhibit A, as provided in a follow-up email from the Applicant. Seven tributaries feed the Presumpscot River between Sebago Lake and the Saccarappa Project.

III. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

Flow from Sebago Lake passes through a screened canal intake gatehouse at Eel Weir into a 4,820-foot-long, 15-foot deep earthen power canal. Flow in the power canal passes into the bypassed reach through a 40-foot-long canal waste gate structure with three minimum flow gates located just downstream of the canal intake gatehouse. Flow in the power canal also passes downstream through a 69-foot-wide by 32-foot-long powerhouse that houses three turbine-generators. Flows discharged from the powerhouse enter a 200-foot-long tailrace that leads to the Presumpscot River. The Project creates a 6,700-foot-long bypassed reach. Minimum flows are released to the bypassed reach over the spillway or through the power canal’s three minimum flow gates.

The Eel Weir Project is operated in a store-and-release mode to achieve the lake elevations and flow releases established by the FERC license and Water Quality Certificate. The lake levels

are intended to protect aquatic resources and minimize erosion along the shoreline, while providing adequate conditions for recreation and boating. Project works consist of:

- a 1,350-foot-long dam, that includes: (i) a 900-foot-long, non-overflow concrete retaining wall and earth-fill east embankment; (ii) a 115-foot-long, 22-foot-high stone masonry and concrete spillway; (iii) a 35-foot-long, 17-foot-wide stone masonry and concrete river gatehouse with five 6.4-foot-high, 4.8-foot-wide wooden gates; and (iv) a 260-foot-long stone masonry and earth-fill west embankment;
- a 90-foot-long fish screen with $\frac{3}{4}$ -inch clear-bar spacing located immediately upstream of the canal intake gatehouse;
- a 40-foot-long, 19-foot-high canal waste gate structure with three 17-foot-wide, 11-foot-high steel slide gates;
- a minimum flow gate located within each steel slide gate;
- a 3.5-mile-long, 11-kilovolt transmission line connecting the powerhouse to S.D. Warren's Dundee Project (P-2942); and
- both upstream and downstream eel passage measures.

Appendix A, Figures 2 and 3 are aerial photographs of the Project. Photographs in Appendix A, Exhibit 1 show key Project features, including the eel lift. Photographs in Exhibits 2 through 4 show the Zones of Effect of the Project.

The only reported major repairs to the power equipment includes a 2009 rewind of the #1 Generator and the addition of digital metering and relaying; neither increased the capacity of the units. Alteration of the canal waste gates to satisfy the increased required minimum flows under the new license under are scheduled for completion by April 1, 2019.

IV. ZONES OF EFFECT

Three Zones of Effect (ZOE), noted below, are being evaluated for this Project. Photographs in Exhibits 2 through 4 show these zones of effect. They include:

1. The regulated reach (i.e. tailrace);
2. The bypass reach; and
3. The impoundment above the dam.

V. REGULATORY AND COMPLIANCE STATUS

FERC Licensing

The original FERC license for the Eel Weir Project was issued in 1984. S.D. Warren applied for license renewal in March of 2002, with a new, 40-year license issued on March 23, 2015. The discussion below under Water Quality Certification summarizes the cause of the long licensing period. Intervention status was granted to a large number of organizations, including the U.S. Department of the Interior; the Maine State Planning Office (MSPO); American Rivers and Friends of the Presumpscot River; Friends of Sebago Lake; Stephen M. Kasprzak; Sebago Lake Marina; Town of Frey, Maine; Sebago Lake Landowners/Users Coalition; Douglas C. Fray and

Northwest Shores Association; Sebago Pines Property Owners and Road Users Association; Kettle Cove Marina; Sebago Harbor Association; the Maine Public Employees for Environmental Responsibility; State Representative Janice E. Labrecque; and Richardson's Boat Yard and Marina. Comments and recommendations on the application were filed by Interior (on behalf of the U.S. Fish and Wildlife Service (USFWS)), MSPO (on behalf of the Maine Department of Marine Resources (MDMR) and the Maine Department of Inland Fisheries and Wildlife (MDIFW), MEDEP, Mr. Kasprzak, Friends of Sebago Lake, Charles M. Frechette, and Sebago Lake Landowners/Users Coalition. A draft Environmental Assessment (EA) was issued July 11, 2005, analyzing the impacts of the proposed Project and alternatives to it, including dam removal. Fourteen entities, agencies, and interest groups and 42 individuals filed comments on the draft EA. A final EA was prepared by Commission staff and issued on November 29, 2005. On May 26, 2011, S.D. Warren filed an amendment to its license application, proposing changes to Project operations and lake level management, as well as several other measures. Maine Department of Conservation (MDOC), MDIFW, MEDEP, Mr. Frechette, Harvey Dutil, Mr. Kasprzak, Neil Garston, and Friends of Sebago Lake filed timely comments. A supplemental EA analyzing the impacts of the amendment proposal and alternatives to it was prepared by Commission staff and issued on April 8, 2014. S.D. Warren, Maine DEP, Maine State Historic Preservation Commission, and 16 individuals filed comments on the supplemental EA.

The key new requirements of the license are listed below and discussed under the applicable criteria:

- the provision of specific seasonal minimum flows to the bypassed reach;
- development and implementation of a Bypassed Reach Monitoring Plan to monitor temperature in two coldwater refugia identified in the bypassed reach.
- the preparation and implementation of a lake level management and monitoring plan and minimum flow monitoring plan;
- design, installation and effectiveness testing of upstream and downstream eel passage facilities;
- a Reservation of Authority to Prescribe Fishways for anadromous species;
- development of a Flood Management Communication Protocol to describe how the licensee will communicate and coordinate with upstream pond owners in order to manage floods within the Presumpscot River basin;
- development of a Land Use and Recreation Management Plan;
- maintenance of a shoreline buffer zone as part of a shoreline management plan; and
- development of a historic properties management plan (HPMP) and implementation of the Programmatic Agreement which was executed on September 14, 2005.

Eel Weir's FERC license has not been amended. The 2016 Saccarappa Project Settlement Agreement, which affects most S.D. Warren Presumpscot River Projects, does not impact the requirements at the Eel Weir Project.

Water Quality Certification

S.D. Warren filed an initial application for Water Quality Certification (WQC) on March 19, 2002, but was not issued the WQC until August 30, 2011. From January 2003 through January 2011, the MEDEP annually requested that S.D. Warren withdraw and resubmit the WQC application for the Eel Weir Project, which S.D. Warren did, so that MEDEP could maintain certification authority while the Department continued review of the application. The delay from the MEDEP in issuing a WQC for the Project was due to the MEDEP only having an outdated model to determine appropriate flow requirements to meet water quality standards in the Presumpscot River below the Westbrook Mill, which is near the Saccarappa Dam, about 13 miles downstream of Eel Weir. Following the closure of the pulp mill and the removal of the Smelt Hill Dam, which was more than 15 miles downstream of Eel Weir, the ambient and hydraulic water quality conditions changed in the river, necessitating revision to the water quality model used, including collection of new data, calibration and verification of the model.

The new WQC, #L-19937-33-J-N, included minimum flow requirements, flow caps during landlocked salmon spawning season, impoundment (Sebago Lake) level management, upstream and downstream passage for American eel including passage effectiveness testing; a “reopener” clause should anadromous fish passage be determined to be needed in the future or if lake level management needs to be changed due to decreasing lake water quality; and enhancement of public access to Sebago Lake. There have been no amendments to the WQC.

License and WQC Compliance

My review of FERC’s eLibrary indicated no compliance issues. The application included recent letters from USFWS, MEDEP, MDMR and Maine Department of Agriculture, Conservation and Forestry (MDACF), none of which indicated compliance issues with the Project.

VI. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

Letters from USFWS, MEDEP, MDIFW, MDMR and MDACF, included in the application, all were complementary of the efforts made by S.D. Warren in meeting their environmental obligations, and also supported certification of the Project.

The deadline for submission of comments on the LIHI certification application was November 7, 2017. One joint comment letter was received from the Conservation Law Foundation (CLF) and Friends of the Presumpscot River (FOPR). This letter, along with a response letter submitted by the Applicant, are contained in Appendix B. Supporting documents that accompanied the CLF/FOPR letter are included in the comment letter found on LIHI’s website. The following is my assessment of the comments made in the CLF/FOPR letter. The letter from S.D. Warren makes many of the same points I discuss below.

While the CLF/FOPR letter format suggests three comments are made, I believe the comment in Section II and Section III-B are essentially duplicative, resulting in basically two comments:

1. The Mallison Fall, Little Falls, Gambo, Dundee and Eel Weir Projects should not be

certified as “low impact” until anadromous fish passage is installed and tested as providing safe passage at these sites.

2. The Mallison Falls and Little Falls Projects are not eligible for LIHI Certification since they were recommended for removal by resource agencies, namely the USFWS, MDMR and Maine Atlantic Salmon Commission during a “legal proceeding”.

The second comment does not apply to Eel Weir and therefore is not discussed here.

Regarding their first comment, CLF/FOPR’s position that a facility is not “low impact” until fish passage has been installed and proven to provide safe passage, reflects the fact that the definition of “low impact” is in the eye of the beholder, and can mean different things to different individuals. However, LIHI’s definition, as clearly detailed in LIHI’s Handbook, 2nd Edition, dated March 7, 2016, is specifically based on meeting certain criteria and standards. Neither upstream nor downstream passage for anadromous species is currently mandated or recommended by any resource agency, nor included in either the FERC license or the WQC for the Eel Weir Project, although the possibility of a future revised determination by resource agencies for its appropriateness is recognized. It is my opinion that S.D. Warren is in “conditional” compliance with the LIHI criteria and the selected standard of satisfying resource agency requirements for upstream and downstream fish passage. The condition would require that LIHI be notified if a revised agency requirement for anadromous fish passage is made during the term of LIHI certification.

Due to the completeness of the agency correspondence provided in the application, and the newness of the license and WQC, no outreach was made to any stakeholders during this review.

VII. SUMMARY OF COMPLIANCE WITH CRITERIA

The following matrices summarize the standards selected by the Applicant as applicable to this Project. The Reviewer found that most these standards are appropriate; exceptions are noted in red and identified in more detail below in the two tables (note that ZOE #1 and #2 are contained in the same table). Details of compliance are presented in Section VIII.

ZOE #1 - Regulated Reach (Tailwater) and ZOE#2 – Bypass Reach

Criterion		Standards Selected				
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Plus</i>
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			

Exception: Recreational Resources: I believe that Standard H-1 is more appropriate for ZOE #1 than Standard H-2 as discussed under that criterion.

ZOE #3– Impoundment

Criterion		Standards Selected				
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Plus</i>
A	Ecological Flow Regimes	X	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	X			
G	Cultural and Historic Resources Protection		X			
H	Recreational Resources		X			

Exceptions:

Ecological Flow Regime: Standard A-1 was selected for ZOE #3. It is recommended that A-2 is more applicable as discussed under this criterion.

Threatened and Endangered Species: The application conflicts on which standard is selected for ZOE #3, the impoundment. As discussed under this criterion, I believe Standard F-1 is more appropriate.

VIII. 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.

Standards: All river reaches where stream flows are altered by the facility shall be defined. In all locations, appropriate flow management should apply an ecosystem based approach that supports fish and wildlife resources by considering base flows, seasonal variability, high flow pulses, short-term rates of change, and year-to-year variability. Compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must also be demonstrated.

Assessment of Criterion Passage:

The Applicant has selected **Standard A-1, Not Applicable/De Minimis Effect** to pass the Ecological Flow Regimes criterion for ZOE #3 Impoundment and **Standard A-2, Agency Recommendation** for ZOE #1 Regulated Reach and ZOE #2 Bypass Reach. However, I believe that Standard A-2 also applies to ZOE #3, as discussed below. For completeness, requirements of both standards are noted below. I believe satisfaction of Standard A-2 for all ZOE's will be met if the recommended condition is adopted.

- **“STANDARD A-1. Not Applicable/De Minimis Effect:** The Facility operates in a true run-of-river operational mode and there are no bypassed reaches or water diversions associated with the Facility; or the facility is located within an existing water conduit that does not discharge into natural waterways.
- **STANDARD A-2. Agency Recommendation:** The flow regime at the Facility was developed in accord with a site specific, science based agency recommendation.”

Regarding applicability of Standard A-2 to ZOE #3 (the impoundment), the Presumpscot River flows, which are regulated by releases from the Eel Weir Project, are to be managed in compliance with the approved Eel Weir Operations and Flow Monitoring Plan (OFMP). Incorporated into the OFMP are flow and elevation requirements for Sebago Lake required by Conditions 1 and 2 of the current Water Quality Certification (WQC). These require that lake levels “shall be managed within a target range between 266.65 feet msl and 262.0 feet msl, with lake levels above or below this range triggering increased or decreased flow releases, respectively, from the Project dam, and with the goal of achieving a level of 266.0 feet msl (0.65 feet below spillway crest elevation) between May 1 and June 15 annually”. These requirements are taken from the former Lake Level Management Plan and operating parameters for Sebago Lake dated May 26, 2011, as revised June 6, 2011. Since flows and impoundment levels are interrelated, and both are regulated according to an Agency Recommendation, I believe Standard A-2 also applies to the impoundment.

The application states that the most stringent flow requirements applicable to the bypass are those established by the WQC and adopted into the FERC license. The flow requirements in

the WQC were based on a number of studies and assessments made by the MEDEP, and therefore are scientifically based. These minimum flows released are:

- 125 cfs from April 1 through October 31 and
- 75 cfs from November 1 through March 31.

LIHI's 2016 Handbook states that the most stringent resource agency recommendations issued according to a legal proceeding are to apply. Part of the 10(j) recommendations issued by the Department of Interior (USFWS) included higher minimum flow releases to the bypass:

- 200 cfs from April 1 to October 31, and
- 115 cfs from November 1 to March 31.

However, the Handbook also states that should an agency change its recommendation, then the most recent one applies. A study required by Article 404 of the license requires development and implementation of a Bypassed Reach Monitoring Plan, to determine the effects of the new minimum flows on two areas of cold water refugia that have been identified within the bypassed reach. Tested flows in the 2016 study were 93 cfs (thought to be 75 cfs during the study) and 143 cfs (thought to be 125 cfs). The difference in flows was due to spillway leakage not calculated into the flow estimates. The results of this study showed that thermal stratification was not found in either of the suspected refugia at either flow, and that the size of the second refugia decreased at the higher flows. Email comments from the USFWS, dated November 18, 2016, included in the report, indicated that they approve the flows of 75 cfs and 125 cfs. The MEDEP endorsed the USFWs position in an email on November 18, 2016. Thus, it appears that the USFWS's most "recent recommendation" for minimum flows is now in agreement with that in the WQC and FERC license.

The WQC also requires a total Project minimum flow of 270 cfs year-round (this includes the bypass minimum flow); and a total Project minimum flow of 408 cfs between June 1 and September 30 annually when required by the downstream Gambo Dam to provide adequate dissolved oxygen levels during warm weather (this also includes the bypass minimum flow). Thus, this flow applies to both the tailrace (ZOE #1) and the bypass (ZOE#2).

During land-locked salmon spawning season (October 16 through November 15 annually), the WQC also requires that flows from the Project shall be capped at 1,000 cfs. WQC condition 2E requires monitoring of the new minimum flows. None of these flow or lake level management requirements have been changed by any WQC or license amendments. It is also noted that the Project Operations and Flow Monitoring Plan was established and approved by applicable resource agencies and adopted by FERC.

As provided by the OFMP, the 125 cfs minimum bypass flows are to be released through modifications to an abandoned canal waste gate. An extension to implement these modifications was requested by S.D. Warren so they could complete the above noted cold water refugia study in 2016, construct upstream and downstream eel passage facilities in 2017, and initiate effectiveness testing of these facilities. A FERC Order dated March 8, 2017, approved an extension until April 1, 2019, for implementation of the 125 cfs flows. This extension was approved by the resource agencies. S. D. Warren has completed and received FERC approval of design for a gate to release 125 cfs to the bypass reach and anticipates installing the gate no

later than December 31, 2018. Since the 125 cfs are required by the WQC and FERC license, a condition has been recommended regarding this future compliance date.

The annual report for 2015 indicated that all requirements were met, with exception of the planned minimum flow deviations needed at two dates, which were appropriately discussed with resource agencies. In 2016, and 2017 (through September 1, 2017), S.D. Warren reported there have been no deviations from normal Impoundment Levels, Total Project Flows, or Bypass Reach Minimum Flows.

This Project Conditionally Passes Criterion A – Ecological Flow Regimes

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.

Standards: Compliance with the appropriate state/provincial or federal water quality standards must be demonstrated with all waterbodies where water quality is directly affected by the facility, including those affected areas outside the facility boundary. In all cases, if any waterbody directly affected by the facility has been defined as being water quality limited (for example, on a list of waters with quality that does not fully support designated uses), it must be demonstrated that that the facility has not contributed to that substandard water quality. Compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must also be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard B-2, Agency Recommendation** to pass the Water Quality criterion for all three ZOE's. This Standard requires:

“STANDARD B-2. Agency Recommendation: The facility is in compliance with all water quality conditions contained in a science-based agency recommendation providing reasonable assurance that water quality standards will be met for all waterbodies that are directly affected by the facility (for example, a recent Water Quality Certification issued pursuant Section 401 of the Clean Water Act). Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses and recreation.”

As noted previously, the flow requirements in the WQC were based on a number of studies and assessments made by the MEDEP, and therefore are scientifically based.

Bypass and Tailrace Zones

The most recent Integrated Water Quality Monitoring Assessment Report lists this section of the Presumpscot River (above Dundee Dam, ME0106000103_608R) as Class A, the second highest classification of Maine waters, and Category 2, which means some designated uses are attained but there is insufficient information to confirm this for other uses. No other details are provided in

this MEDEP Assessment Report.

The most recent Water Quality Certificate (WQC) was issued on August 30, 2011 by the MEDEP. To help ensure water quality standards are maintained, there are total Project flow requirements, bypass minimum flow requirements and flow caps during salmon spawning season stipulated in the WQC, as noted above.

WQC condition 2F requires that S.D. Warren monitor the effectiveness of the new minimum flows by monitoring the dissolved oxygen levels at the downstream Gambo Project (P-2931) Dam, in accordance with the 2003 WQC for that Project. The OFMP incorporates the monitoring requirements for minimum flows and dissolved oxygen. As previously noted, results of the monitoring are compiled annually and submitted to MEDEP and FERC. As noted above, other than two planned minimum flow deviations in 2015, which were approved by the agencies, all total Project and minimum flow requirements were met in 2015, 2016 and 2017 to date. Monitoring of the Gambo Project impoundment showed compliance with dissolved oxygen standards at that Project.

Impoundment (ZOE#3)

The most recent Integrated Water Quality Monitoring Assessment Report lists the Eel Weir impoundment (Sebago Lake) as Class GPA and Category 1. This means that all lake designated uses are fully attained.

As required by WQC condition 1A, water levels in Sebago Lake are managed within the target range identified above. Lake levels that reach elevations above or below this target range will trigger increased or decreased flow from the lake to the river, in order to bring the level back into range. The WQC provides that the continued operation of the Eel Weir Project will not violate water quality standards so long as the conditions of certification are met. The WQC also contains a condition allowing for modification of the WQC, if data indicates that water quality in Sebago Lake is being negatively affected by Project operation allowed under the FERC license and WQC.

The LIHI application included a letter dated May 31, 2017 letter from the MEDEP which denotes the following regarding Eel Weir and the other S.D. Warren Projects on the Presumpscot River:

“Therefore, based on the Department’s review of the referenced Presumpscot River hydropower project files and available water quality data, the Department concludes that S.D. Warren is currently in compliance with its WQC conditions and the projects attain Water Quality Standards.”

The WQC also contains conditions regarding eel passage, possible future anadromous fish species passage and public boat access on Sebago lake. These are addressed under the appropriate criteria below.

This Project Passes Criterion B – Water Quality

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, sustainable fish and wildlife resources in areas affected by the facility.

Standards: The applicant shall list all migratory fish species (for example, anadromous, catadromous, and potamodromous species) that occur now or have occurred historically at the Facility. Maintenance of upstream passage sufficient to support sustainable populations of these migratory species must be demonstrated by compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard C-2, Agency Recommendation** to pass the Upstream Fish Passage criterion for ZOE #1 Regulated Reach and ZOE #2 Bypass Reach and **Standard C-1, Not Applicable/De Minimis Effect** for ZOE #3 Impoundment. These standards require:

“STANDARD C-1. Not Applicable/De Minimis Effect: The facility does not create a barrier to upstream passage, or there are no migratory fish in the vicinity of the facility and the facility is not the cause of extirpation of such species if they had been present historically.

STANDARD C-2. Agency Recommendation: The facility is in compliance with science-based fish passage recommendations from appropriate resource agency(ies) which have been issued for the facility and which include provision for appropriate monitoring and effectiveness determinations.”

The impoundment (ZOE #3) does not pose a barrier to upstream passage so standard C-1 is appropriate.

Regarding the regulated reach (ZOE #1) and bypass reach (ZOE#2), neither the WQC nor the FERC license require the installation of upstream passage for anadromous species. A Reservation of Authority under Section 18 of the Federal Power Act to possibly require such passage in the future is contained in Article 406 of the license. Likewise, the WQC includes a condition allowing for modification of the WQC if such passage is deemed appropriate in the future. The key reasons that anadromous species passage was not required are concerns raised by MDIFW. MDIFW does not support upstream anadromous fish passage at Eel Weir because of the potential impact it would have on the managed fishery in the Presumpscot River. An upstream passage facility would mean that fish could pass out of the bypass and into Sebago Lake, reducing the popularity of the bypass reach as a fishery, making it less successful. Additionally, MDIFW fears that the introduction of new fish species to Sebago Lake via upstream passage facilities increases the risk of introducing fish diseases not previously known to the lake ecosystem, adversely affecting the ecology of Sebago Lake. MDMR and USFWS concurred with this position during licensing.

Pursuant to the FERC License and WQC conditions, S.D. Warren was required to install upstream passage for eels within 2 years of license issuance. Due to snowpack during the early spring of 2017 an extension of time was granted by FERC for the upstream eel passage facility installation. S.D. Warren completed installation of the facility during April 2017 and the facility continuously operated through its first season which ended August 15, 2017. The upstream eel passage system consists of a 21-foot tall vertical helical style eel ramp. The ramp is installed along the left (east) abutment of the Eel Weir dam. This system was preferred as the helical eel ramp design was a proven system for passing eels; it required less space to install than a traditional eel ramp; was less susceptible to damage under high flow conditions; and is more easily relocated should there be a need in the future to move the ramp to a more effective location. The ramp also has an eel-climbing substrate on the floor of the helix and is covered with a porous cover to discourage predation. A pump provides attraction water to the ramp. See Appendix A for photographs.

Ongoing monitoring and reporting as outlined in the approved Upstream American Eel Passage Design and Operations Plan is as follows:

- Effectiveness testing during Year 1 of operation
- If there are no eels observed during Year 1, effectiveness study will again be conducted triennially until eels are observed

By September 15 of each year, a report on the effectiveness testing will be submitted to MDMR and MDIFW for comment; and by November 1 of each year, the report along with comments from MDMR and MDIFW will be submitted to MEDEP and FERC. Results of the 2017 testing report were submitted on October 31, 2017. The report noted that a temporary eel trap was installed for four nights during the month of July, at the exit end of the ladder, to capture all eels that successfully exited the ladder during a 24-hour period. A total of 114 eels successfully exited the ladder. The report concluded that:

“The 2017 study verified that eels were present at the site and were successfully using the eel ladder to reach the upstream side of the dam and exit into Sebago Lake. Warren concludes that the requirements of the Effectiveness Testing Plan have been met. No additional effectiveness testing is recommended or required at the Eel Weir facility.”

Emails are contained in the above-noted October 2017 report from both the USFWS and MDMR in which they stated they had no comments. MDMR also complemented the activities of S.D. Warren.

A condition has been recommended to notify LIHI regarding the possible need for upstream anadromous fish passage at Eel Weir, although it is not likely that such direction will be made within the recommended five-year LIHI certification period.

This Project Conditionally Passes Criterion C – Upstream Fish Passage

D. DOWNSTREAM FISH PASSAGE AND PROTECTION

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 are able to successfully complete their life cycles and to maintain healthy, sustainable fish and wildlife resources in the areas affected by the Facility.

Standards: The applicant shall list all fish species (for example, riverine, anadromous, catadromous, and potamodromous) that occur now or have occurred historically in the area affected by the Facility. To pass the downstream fish passage and protection criterion, compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard D-1, Not Applicable/De Minimis Effect** for ZOE #1 Regulated Reach and ZOE #2 Bypass Reach and **Standard D-2, Agency Recommendation** for ZOE #3 Impoundment to pass the Downstream Fish Passage and Protection criterion. These standards require:

“STANDARD D-1. Not Applicable/De Minimis Effect: The facility does not create a barrier to downstream passage, or there are no migratory fish in the vicinity of the facility; if migratory fish had been present historically, the Facility is not responsible for extirpation of such species; the Facility does not contribute adversely to the sustainability of riverine fish populations or to their access to habitat necessary for the completion of their life cycles.

STANDARD D-2. Agency Recommendation: The Facility is in compliance with a science-based resource agency downstream fish passage or fish protection recommendations, which may include provisions for ongoing monitoring and effectiveness determinations that have been issued for the Facility.”

Currently, there is no requirement for downstream anadromous fish passage facilities at the Eel Weir Project in either the FERC license or the WQC. A Reservation of Authority under Section 18 of the Federal Power Act to possibly require such passage in the future is contained in Article 406 of the license. Likewise, the WQC includes a condition allowing for modification of the WQC if such passage is deemed appropriate in the future.

The WQC and FERC license require that downstream eel passage facilities be installed and/or operational measures implemented to provide downstream eel passage within 2 years of license issuance (i.e. March 2017). The downstream eel passage facility was installed and was put into operation on August 15, 2017. Because of the complexity of the design proposed for passing eels, but excluding adult land-locked salmon, this five-month delay was found acceptable to USFWS, MDMR and ultimately, FERC. The system includes a unique zig-zag intake pipe that while used in Europe, has not been used in the United States. As noted in the FERC order approving the design

of the passage system, USFWS stated “that the zig-zag intake pipe appeared promising, but should still be considered experimental as there is no known implementation of this type of system in the United States. With this experimental status, the USFWS expresses that they would expect a higher level of testing and monitoring to determine the effectiveness of the system.”

The Downstream American Eel Passage Design and Operations Plan was approved by FERC on November 9, 2016 and includes provisions for passage monitoring, an implementation schedule for installation, and effectiveness testing. S. D. Warren is currently monitoring the bypass facilities operation. The Plan requires report submission by April 1 of the year following the testing. This plan states:

“If Year 1 of effectiveness testing reveals that modifications are needed to the facilities, and if those modifications are completed prior to September 1 of Year 2, then the above effectiveness testing will be repeated. If no eels are observed during Year 1, effectiveness testing will not occur during Year 2. Finally, if during Year 1 no eels are observed, sub-surface observations will be made four times during the downstream migration season in Year 3 of operation. If eels are present and attempting use of the facilities, the above listed effectiveness testing will be completed. If no eels are observed during Year 1 and Year 3, effectiveness testing will be suspended for 3 additional years.”

A condition has been recommended regarding the results of downstream eel passage testing.

The Project Conditionally Passes Criterion D – Downstream Fish Passage and Protection

E. SHORELINE AND WATERSHED PROTECTION

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

Standards: To pass the watershed protection criterion for LIHI certification, the applicant shall demonstrate compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016.

Assessment of Criterion Passage

Of the following possible alternative Standards, the Applicant has selected and demonstrated compliance with **Standard E-2, Agency Recommendations** for all ZOE, to pass the Shoreline and Watershed Protection criterion. This standard requires:

“**STANDARD E-2. Agency Recommendations:** The facility is in compliance with all government agency recommendations in a license or certificate, such as an approved shoreline management plan or equivalent regarding protection, mitigation or enhancement of shoreline surrounding the project.”

LIHI’s 2016 Handbook states that the most stringent resource agency recommendation issued according to a legal proceeding is to apply for criterion compliance assessment. When S.D. Warren

initially applied for FERC license renewal in 2002, a 10(j) recommendation issued by the Department of Interior was that a Shoreline Management Plan (SMP) should be required to ensure protection of riparian resources around Sebago Lake, and that the Commission should exert authority over unregulated activities, such as temporary boat docks, within the Project boundary. S.D. Warren's Project boundary around Sebago Lake is limited to lands to the elevation of 267.15 (flowage rights). Initially such an SMP requirement was incorporated by FERC in the EA. The SMP would require conservation easements, buffer zones, mapping of Sebago Lake's shoreline, and a permitting program for unregulated activities to protect recreational opportunities and shoreline habitat at the Project. When S.D. Warren amended their license renewal application, they identified that the State of Maine implements a program under the Natural Resources Protection Act (Title 38, Chapter 3, §5 480-A to 480-2; "NRPA") and that Maine law requires that every municipality protect shoreland areas through adopting shoreland zoning maps and ordinances (Mandatory Shoreland Zoning Act, 38 M.R.S.A. sections 435-449). These two programs would require a permit for, or review of the same types of activities that would have been required to be managed by the permit program initially recommended by the Department of Interior. S.D. Warren suggested that requiring another permit program would be unnecessary. Comments issued by the MDIFW, MEDEP and MDOC in June and July of 2011 on the amended license application supported the position that a comprehensive SMP would be unnecessary. The Department of Interior did not provide any comments on this amended application or the revised EA. I have interpreted this lack of continuing recommendation by the Department of Interior for a comprehensive SMP as essentially their revised, or more recent recommendation, as defined in LIHI's Handbook.

In the revised EA, FERC reassessed this issue, and concluded that because there is no evidence in the record of significant shoreline effects associated with shoreline use or construction of structures, and that protection is offered by the noted regulatory and zoning requirements, that a comprehensive SMP is not needed to manage impacts around Sebago Lake.

Ultimately FERC issued a requirement for the development of a Land Use and Recreation Management Plan (LURMP) under license Article 407, but it does not require a permitting program to be managed by S.D. Warren. The plan required measures and information on recreational features around the lake and a description of how Project land will be managed, including considerations for maintaining the aesthetic character of Project land. The LURMP must also be developed in consultation with MDIFW, MEDEP, and the town of Windham. It is assumed that FERC required the input from these state and local entities as they would be more familiar with the local needs than the Department of Interior.

The LURMP was filed by S.D. Warren on September 13, 2016 and approved by FERC on January 30, 2017. S.D. Warren is in compliance with this plan. Additionally, Article 409, which is standard in essentially all newer licenses, allows for regulation by S.D. Warren of Project land and water for specific uses and occupancies, such as boat docks, landings, and other structures to enhance the scenic, recreational, and environmental value of the Project lands. S.D. Warren confirmed that they have not issued any such approvals, nor are they entertaining issuing any for uses of the Project lands along the bypass reach or power canal. Thus, this criterion has been satisfied.

The Project Passes Criterion E – Shoreline and Watershed Protection

F. THREATENED AND ENDANGERED SPECIES PROTECTION

Goal: The Facility does not negatively impact listed species.

Standards: Facilities shall not have caused or contributed in a demonstrable way to the extirpation of a listed species. However, a facility that is making significant efforts to reintroduce an extirpated species may pass this criterion. To pass the Threatened and Endangered Species criterion compliance with at least one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated conditional compliance with **Standard F-1, Not Applicable / De Minimis Effect** for ZOE #1 Regulated Reach and ZOE #2 Bypass Reach, and **Standard F-2 Finding of No Negative Effect** for ZOE #3 Impoundment to pass the Threatened and Endangered Species Protection criterion. I suggest that Standard F-1 is appropriate for all ZOE. For completeness, both standards are noted below:

“STANDARD F-1. Not Applicable/De Minimis Effect: There are no listed species present in the facility area or downstream reach, and the facility was not responsible for the extirpation of the listed species if they were previously there.

STANDARD F-2. Finding of No Negative Effect: There are listed species in the area, but the facility has been found by an appropriate resource management agency to have no negative effect on them, either recently or in the past.”

The application states that no federally protected species occur at this site, based on licensing field studies and confirmed by the USFWS during these activities. Follow-up data from the Maine Natural Areas Program on presence of state determined rare or unique botanical features (which include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities) found three such botanical features near this site, all located on the upland portions of Frye Island, located in Sebago Lake. The Maine Natural Areas Program, in a letter dated October 14, 2017, stated that no impacts to these species would be expected if normal operations do not affect such upland areas. Correspondence with the Applicant confirms such impacts do not occur. A copy of the letter is located in Appendix C.

Follow-up information provided by the Applicant indicates that past field studies, as well as information from MDIFW, indicates that there are no specific records of state endangered or threatened animal species occurring at this site. However, several protected species (one is also federally protected) may potentially occur, based on state records showing their presence “in the vicinity” of the site. These species are:

- Northern long-eared bat (Federally and State Endangered)
- Eastern small-footed bat (State Threatened)
- Little brown bat (State Endangered)

- Brook floater (State Threatened)
- Eastern box turtle (State Endangered)
- Least bittern (State Endangered)
- Spotted turtle (State Threatened)
- Upland sandpiper (State Threatened)

Assessment by the Applicant's consultant, based on agency consultation and research, indicated that impacts to the animal species that may occur onsite are not expected from routine operational activities. The following are the types of activities that may cause impacts should these species be onsite:

- Removal of large trees that may provide roosting habitat for the bats;
- Loss of or fragmentation of habitat due to development for the Least Bittern, Upland Sandpiper and Spotted Turtle
- Direct taking of Box Turtles for pets.

The impoundment is Sebago Lake, which cannot be significantly "drawn down" as it is a natural lake. Thus, impacts to the Brook Floater mussel, if found in the lake, could not be affected by S.D. Warren actions. S.D. Warren has indicated that none of the other above-noted activities are planned at this site, and that they have no ability to prevent someone from taking Box Turtles.

Appendix C contains the email from John Perry of MDIFW, and the above-noted letter from the Maine Natural Areas Program. Further details on the known locations of sensitive plant communities were provided by the Maine Natural Areas Program, but LIHI has elected to not post this detailed information.

To help ensure that such species are not affected by future activities, a condition has been recommended to confirm satisfaction of this criterion.

The Project Conditionally Passes Criterion F – Threatened and Endangered Species Protection

G. CULTURAL AND HISTORIC RESOURCE PROTECTION

Goal: The Facility does not inappropriately 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.

Standards: To pass the Cultural and Historic Resource criterion compliance with one or more of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard G-2, Approved Plan** to pass the Cultural and Historic Protection criterion for all three ZOE's. This standard requires:

“STANDARD G-2. Approved Plan: The facility is in compliance with approved state, provincial, federal, and recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility.”

License Article 408 requires S.D. Warren to implement the Programmatic Agreement (PA) that was executed on September 14, 2005. As required by the PA, the licensee was to file a Historic Properties Management Plan (HPMP) within one year of license issuance. On March 7, 2016, the Applicant provided the HPMP to the Maine SHPO for review and comment, received comments on March 14, 2016, which were incorporated into the HPMP. On March 19, 2016, the Maine SHPO provided concurrence with the proposed HPMP. This HPMP was filed with FERC on March 24, 2016. FERC approved the HPMP in an Order dated September 6, 2017.

The HPMP requires an annual report to be filed with FERC and MSHPO by January 31st each year. As FERC has just approved the HPMP, S.D. Warren has not yet filed an annual HPMP report.

The PA denotes that components of the Project itself (the dam, canal, forebay, powerhouse, and tailrace) are a National Register Eligible Hydropower Historic District; and therefore, are subject to requirements under 36 C.F.R. Part 67, Guidelines for Rehabilitating Historic Buildings (revised 1990), and applicable National Park Service Preservation Briefs. Part of these requirements are to provide prior notice of any proposed or contemplated undertaking that may adversely affect the Project to the Maine SHPO and to the Secretary of the Commission. The PA also contains interim requirements for consultation with the SHPO and any affected Indian tribes while the HPMP was awaiting FERC approval for 1) activities, including recreational developments, that require ground disturbance; (2) new construction, demolition, or rehabilitation of project facilities; or (3) any other procedure or activity that may affect any Historic Property, other than the Project.”

A follow-up request was issued to the Applicant regarding compliance with these PA requirements. On November 1, 2017, the Applicant reported that during this period, a river gate project in 2013 and a grounding project in 2016, which were not considered “Routine Repairs”, were completed. Records documenting SHPO approval were provided for LIHI review.

S.D. Warren has contracted a pre-historic archeologist to conduct a Phase 0 archeological report, also required by License Article 408. The study requires extensive field survey as many properties are owned by seasonal residents; per the HPMP the work is scheduled to be completed in 2021.

It appears the Eel Weir is in compliance with these requirements, although a condition has been recommended regarding performance of the archaeological studies.

The Project Conditionally Passes Criterion G - Cultural and Historic Resource Protection

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.

Standards: To pass the recreation criterion, compliance with at least one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated. In all cases, it must be demonstrated that flow-related recreational impacts are mitigated to a reasonable extent in all zones where there is flow-related recreation. Where there is recognized, flow-related recreational use, the facility shall provide the public with relevant and up-to-date information on reservoir levels and river flows, preferably real-time updates. It is understood that recreational activities must be consistent with the assurance of reasonable safety of employees and the public, and with critical infrastructure protection dictated by state or federal authorities.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard H-2, Agency Recommendations** to pass the Recreational Resources criterion for all ZOE's. However, as there are no existing recreational facilities nor are any required for ZOE #1, the tailrace (regulated reach), it may be that Standard H-1 may be more appropriate. These standards require:

“STANDARD H-1. Not Applicable/De Minimis Effect: The facility does not occupy lands or waters to which the public can be granted access and does not otherwise impact recreational opportunities in the vicinity of the facility;

STANDARD H-2. Agency Recommendations: If there are comprehensive resource agency recommendations for recreational access or accommodation (including recreational flow releases) on record, or there is an enforceable recreation plan in place, the Facility demonstrates that it is in compliance with those.”

FERC License Article 407 requires a Land Use and Recreation Management Plan (LURMP). There are no requirements for recreation facility construction at the Eel Weir tailrace. The recreation requirements as they pertain to the Eel Weir bypass and impoundment are as follows:

- a description of how Project lands will be managed, including aesthetic character;
- measures for maintaining angling access to the Eel Weir bypassed reach existing parking areas, access areas, paths, signage, and maintenance measures to support bypass angling;
- maps showing recreational facilities and angler access points to the bypass; and
- measures for improving public boat access to Sebago Lake based on the results of the public boat access study required by WQC condition 8.

Additionally, S.D. Warren is required to file a Form 80 on a 6-year cycle, as required by the FERC Guidelines, detailing the recreation uses at the Project.

The LURMP was submitted to FERC on September 13, 2016 and approved on January 30, 2017. Paragraph E of that Order requires S.D. Warren to file a recreation facility amenity table that shows

an accurate account of installed recreation facilities. The recreation facility amenity table was filed with FERC on February 24, 2017 and includes proof of completion of the requisite angler bypass access. The most recent Form 80 was filed on April 1, 2015. Due to the newness of the license, Eel Weir has not had an Environmental Public Use Inspection by FERC since the new license issuance.

The Public Boat Access Study was completed on March 3, 2016, which identified three areas on licensee owned land for a potential new boating facility. However, S.D. Warren determined that the sites pose safety concerns due to their proximity to the dam and navigational hazards because of shallow waters within the Sebago Basin, and suggested none were viable options. This Study also identified four existing “public” sites for possible improvements, but determined only one owned by MDACF, and Forestry was feasible. As this site was recently expanded, it was agreed that the next cycle of Form 80 review (April 2021) will help determine if additional expansion would be appropriate. MDIFW raised some concerns about some of the Study findings made by S.D. Warren.

FERC issued an order on January 30, 2017, requiring a report to be issued by June 30, 2022 to address the need for and best option(s) for additional/improved public access to Sebago Lake. The report must include consultation with the MDACF, MDIFW, MEDEP and the Town of Windham. A condition has been recommended for notification to LIHI upon completion of this report, including satisfaction of the agencies of its findings on how to provide improved public access to Sebago Lake.

The Project Conditionally Passes Criterion H – Recreational Resources

IX. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review of information submitted by the Applicant, I believe that this Project meets the requirements of a Low Impact facility and should be certified for a five-year period assuming the following conditions are established:

- *The Owner shall notify LIHI within 60 days of implementation of the release of the 125 cfs minimum flows to the bypass reach. The Owner has reported that these flows are expected to be released April 1, 2019.*
- *The Owner shall provide LIHI with a copy of the downstream eel testing report, including any resource agency comments as to whether or not safe downstream passage for eels is being provided. This information shall be provided within 60 days of receipt of agency comments on the final report.*
- *The Owner shall proactively contact the MIF&W and USFWS a minimum of 60 days prior to any construction activities affecting lands not already developed or structures/tree removal that may provide roosting habitat for listed bat species, to determine if any special measures are needed to ensure no or minimal impact occurs to state and/or federally listed protected species identified as possibly occurring at the site. The Owner shall work with the applicable agency(ies) to implement appropriate measures should they be needed. The Owner shall advise LIHI of any such events, including the results of any activities conducted to minimize such impacts. Such notification shall be provided as part of the annual compliance statement to LIHI.*
- *The Owner shall update LIHI on the following activities in the annual LIHI compliance statement:*
 - *receipt of formal agency notification by USFWS or any state resource agency that conditions have changed and it is appropriate that upstream and/or downstream passage for anadromous species is installed at the Project;*
 - *that the Phase 0 archeological studies were completed by the 2021 deadline specified in the HPMP; and*
 - *that the report on improvements for public access to Sebago Lake was completed by the June 30, 2022 deadline, including satisfaction of the resource agencies of its findings.*

**THE EEL WEIR PROJECT CONDITIONALLY
MEETS THE LIHI CRITERIA FOR
CERTIFICATION AS A LOW IMPACT FACILITY**

Appendix A
Figures and Photographs

Fig. 1 – Dams located on the Presumpscot River



Fig. 2 – Aerial of Project and Key Features

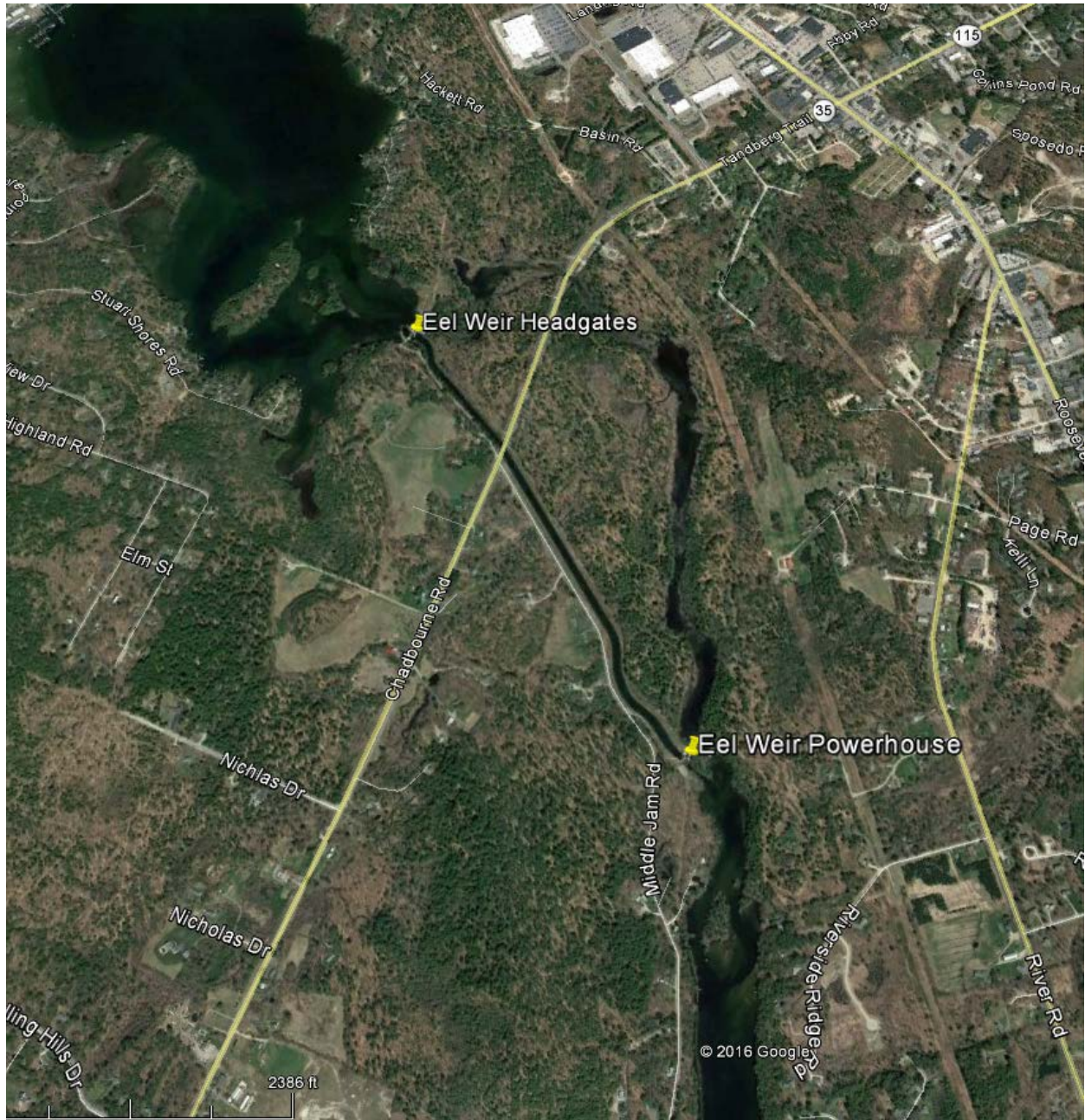


Fig. 3 – Close-up of Project Features



Exhibit #1 – Photographs of Project Features



Spillway and Rivergate structure, (Bypass Reach)



Canal Waste Gates from left abutment



Canal looking downstream



West forebay sluice discharge to lower bypass at powerhouse



Eel ladder entrance



Eel ladder top section

Exhibit #2 - Photographs of Zone of Effect No. 1 – Project Tailwater



Exhibit #3 – Photograph of Zone of Effect No. 2 – Bypass Reach



Exhibit #4 – Photographs of Zone of Effect No. 3 - Impoundment



Appendix B
Application Comment Letter and Applicant Response



For a thriving New England

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October 31, 2017

Low Impact Hydropower Institute
329 Massachusetts Ave, Suite 2
Lexington, MA 02420

RE: Presumpscot River, Maine: applications for certification by Sappi North America for Eel Weir, Dundee, Gambo, Mallison Falls and Little Falls Projects

Dear LIHI,

On behalf of the Conservation Law Foundation (CLF) and Friends of the Presumpscot River (FOPR), two NGOs with long and extensive involvement with and knowledge of hydropower and its effects on the Presumpscot River in Maine, we write to offer the following comments on Sappi's applications for certification of its five Presumpscot River hydropower projects. For almost two decades, and in partnership with American Rivers, CLF and FOPR have been leading the effort to restore numerous species of anadromous fish species to the Presumpscot (alewife, American shad, Atlantic salmon, blueback herring and more) – species which once spawned and reared in the Presumpscot in prodigious quantities but were decimated, and for some species extirpated, as a result of the multitude of impassable dams inhabiting the 25-mile length of this river.

I. Our background with this river and these dams.

Over the past eighteen years, CLF, FOPR and/or American Rivers have, in close collaboration with state and federal natural resource agencies:

- Succeeded in causing the lowermost dam on the river (Smelt Hill) to be removed;
- Succeeded in having the State of Maine require Sappi to install a state-of-the-art fishway on the now-lowermost, non-hydropower dam (Cumberland Mills);
- For the next five dams going up the river (Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee), succeeded in having the State of Maine and FERC order Sappi to install fishways (2003 licensing decisions), with installation to occur on a progressive implementation schedule;
- Successfully defended those state and federal fishway orders against Sappi's appeals of them before the Maine Supreme Court, the D.C. Court of Appeals, and the U.S. Supreme Court;
- Successfully reached a settlement agreement with Sappi and the natural resource agencies in 2016 regarding dam removal and channel reconstruction at the Saccarappa site, as well

as the schedule for fish passage installation over the next decades at the Mallison Falls, Little Falls, Gambo and Dundee dams.

In sum, CLF and FOPR know this river – its fishery history, its ecology, its regulatory past, its restoration potential and the challenges to restoration that it faces from dams – very, very well.

II. Are the dams for which Sappi seeks certification currently having a low ecological impact?

CLF and FOPR do not dispute that, based on what they know, Sappi is currently in full compliance with the requirements of the USFWS’s 2002 fishway prescription and Maine DEP’s 2003 water quality certification. But because installation of the fishways required under these licensing orders has not occurred, will not begin to occur for at least a decade, and has not been determined, once installed, to be effective, there is -- bluntly stated -- no credible scientific or ecological argument that the facilities for which Sappi seeks certification are:

- (1) *currently* having a “low impact” on the sea-run anadromous fisheries of the Presumpscot;
- (2) will have a “low impact” *for at least a decade from now*, when fish passage *might* be triggered and installed at the lowermost dam, Mallison Falls; and
- (3) when finally installed at each dam, *actually able to provide safe, timely and effective passage*.

Thus, certifying these five facilities *right now* as having a “low impact” to migrating anadromous fish *while nonetheless lacking any fish passage* would be patently false. Whether these five facilities eventually prove to be of low ecological impact to migrating anadromous fish is years away from even being tested, let alone determined. LIHI certifying them now as “low impact” to anadromous species, relying on your Criterion C-2 to do so, would at best be a made-up story. At worst, it would be a gross misrepresentation to the public.

To talk specifics: in 2021, under the recently negotiated Saccarappa agreement, the removal of the spillways at Saccarappa will be completed and sea-run fish (principally alewife, American shad and blueback herring) should, for the first time in well over 100 years, have free-swim access to the base of the Mallison Falls dam. At this point, these fish will encounter an impassable wall at Mallison Falls that will completely stop their upriver migration; impassable until either 18,020 of their blueback herring brothers/sisters or 2,960 of their American shad brothers/sisters have similarly passed the Saccarappa site (during spring migration), at which point Sappi will be legally required to build a fishway at Mallison Falls. *Until then constructed*, and in the words of LIHI’s Criterion C “goal,” *there will be no safe, timely and effective upstream fish passage at Mallison Falls, let alone at the dams further upstream*. Achieving these blueback or shad numbers to “trigger” fish passage construction at Mallison Falls is almost certainly at least 10 years in the future, and the fish passage that will then be installed will be untested in its effectiveness for several years thereafter. Until then, Mallison Falls is having, and will continue to have, an absolute, singular and profoundly negative impact on the ability of anadromous fish to migrate upstream, as are the other four facilities for which Sappi seeks certification.

It should be noted that the fact of the very adverse impact that Sappi's dams had on decimating the migratory fishery is not historically disputed (except, possibly, by Sappi) The state and federal natural resource agencies are in complete accord on this history, and have written about it in numerous places (*e.g.*, the 2003 water quality certification issued by the State of Maine and relied upon by Sappi as part of this LIHI application, as well as in discussion contained in the documents submitted as part of these comments).

III. Have LIHI's Eligibility Requirements and Certification Criteria Been Met?

A. The Mallison Falls and Little Falls Projects Are Not Eligible for LIHI Certification

Section 2.2 of LIHI's eligibility requirements state that "[t]he following types of hydropower facilities "are not currently eligible for LIHI certification":

Facilities associated with dams that have been recommended for removal by a resource agency. If a natural resource agency has concluded that a dam should be removed and has documented their recommendation in an official, publically [sic] available report or proceeding, the hydroelectric facilities associated with that dam are not eligible for LIHI certification and owners of those facilities should not apply (see Section 2.1.1 for possible exceptions)

LIHI should have been informed by Sappi that in the case of the Mallison Falls and Little Falls facilities, the Maine Department of Marine Resources, the Maine Atlantic Salmon Commission, and the US Department of the Interior all filed official, publicly available reports during the FERC licensing process urging removal of these two dams, as well as the downriver Saccarappa dam.¹ As acknowledged by FERC in its June 2002 Final Environmental Impact Statement:

...the FWS, the state of Maine resource agencies, American Rivers/FOPR, MCASF/Friends of Sebago Lake, and TU all filed comments and recommended license terms and conditions that state that the Commission should order the removal of the three minor project dams, or at a minimum order the installation of fish passage facilities for anadromous species at all five dams. (p. 116)

On January 31, 2001, the Maine Atlantic Salmon Commission (MASC) stated the following to FERC in writing:

Project decommissioning and dam removal would certainly enhance the prospects and conditions for diadromous fish restoration and the MASC encourages FERC to continue this analysis as part of its environmental assessment as a reasonable alternative benefiting all migratory fish species, especially in light of the fact that some Atlantic salmon periodically are observed in the low Presumpscot River. (p.3)

On November 27, 2001, the same MASC, responding in a highly critical way to FERC's Draft Environmental Impact Statement (which did not recommend removal of the Mallison Falls,

¹ The documents cited in these comments are attached hereto.

Little Falls and Saccarappa dams), stated that it was “genuinely surprised that the FERC staff neglected to take a holistic approach in its analysis of the effects of the Presumpscot River projects” (p.1), and proceeded in the remainder of its comments to set forth the case for Atlantic salmon restoration through dam removal.

On November 28, 2001, the Maine Department of Marine Resources wrote a similarly critical letter to FERC, expressing how “disappointed” it was that FERC’s draft EIS did not adequately analyze the benefits of removing Mallison Falls, Little Falls and Saccarappa (p.2), discussing in some depth the cumulative impact of the inefficiency from relying on upstream fishways and the downstream mortality caused by leaving the three dams in place, noting how FERC’s own analysis demonstrates that “removal of Mallison Falls and Little Falls dams would increase the amount of run habitat above Saccarappa.” (p.3)

On December 3, 2001, also in response to the Draft EIS, the US Department of the Interior wrote to FERC:

While the Commission has included the alternative of decommissioning and removal of one or more of the five projects in its DEIS...the analysis of environmental benefits falls far short of the equal consideration standard required under the Federal Power Act... Had a full accounting of all environmental benefits and costs associated with mitigation of impacts (fish passage and instream flows) been conducted by the Commission as required under NEPA, the analysis would clearly support the finding that decommissioning and removal of one or more of the dams is the alternative that best meets the public interest. (p.2)

In sum, the record on the agencies’ positions on dam removal of Mallison Falls and Little Falls is a very strong preference for dam removal, but having to settle for fishways. These two dams are not eligible for LIHI certification given this record.

B. Certification of the Gambo, Dundee, and Eel Weir Projects should wait until they are actually causing a low impact to migrating fish.

If LIHI is interpreting its section 3.2.3 Criterion C – Upstream Fish Passage to mean that a facility is “low impact” to upstream migrating fish so long as an applicant for certification is subject to and in compliance with a regulatory order which states that at some unknown future date the owner of this complete barrier to upstream migration will be required to install an upstream fishway, even though the present, on-the-ground reality is that,

- (1) the facility currently completely blocks upstream fish migration,
- (2) it will continue to do for decades from now – many cycles of certification and re-certification -- before even the lowermost dam has installed upstream fish passage to remove this complete blockage, and
- (3) even then, there is no proof that, once installed (decades from now) this fish passage will actually prove to be safe, timely and effective,

then indeed Sappi's Gambo, Dundee and Eel Weir facilities are certifiable under LIHI's peculiar and singular view of ecological "low impact."

CLF and FOPR suggest that such a designation would be absurd. A far more defensible approach for LIHI to take would be for LIHI to encourage Sappi to apply for low-impact certification for the Gambo, Dundee and Eel Weir facilities *once it has actually installed fish passage*, and is then able to demonstrate that the installed fish passage is providing safe, timely and effective passage of migrating native anadromous species to occur. At such a time, CLF and FOPR will be the strongest supporters of low-impact certification for the Gambo, Dundee and Eel Weir facilities.

Thank you for your attention to our comments.

Sincerely,



Sean Mahoney, Esq.
Executive Vice President
Conservation Law Foundation



Ronald A. Kreisman, Esq.
Counsel
Friends of the Presumpscot River



**Sappi
North America**

November 17, 2017

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RE: Response to Comments Submitted by CLF and FOPR

Dear Low Impact Hydropower Institute,

S.D. Warren Company d/b/a Sappi North America (Sappi) is hereby submitting this response to public comments submitted on our LIHI application by the Conservation Law Foundation (CLF) and Friends of the Presumpscot River (FOPR). These organizations made three general points that we would like to address:

Argument #1 – The fish passage facilities have not yet been installed, so the Sappi hydropower facilities are currently having a detrimental impact on fish passage.

CLF and FOPR’s primary argument is that the facility cannot have a low ecological impact because the installation of fish passage has not yet occurred. However, this narrow interpretation does not reflect an accurate understanding of the LIHI handbook, criteria, or process.

As stated in the LIHI 2nd Edition Handbook, one of the primary purposes of LIHI is to “provide positive recognition and economic reinforcement to hydropower owners who take steps to improve their facilities and invest in the local environment.” Many hydroelectric facilities have received LIHI certification because they have demonstrated firm commitments and are on a path toward reducing environmental impacts through capital investments and operational improvements. In fact, LIHI often provides the initial incentive for facilities to undertake those improvements in the first place, whether or not they are required by a regulatory proceeding. This is a critical role to fill in the hydropower industry, and LIHI certification provides that incentive to reduce the environmental impacts of hydropower generation, in accordance with LIHI’s mission. Requiring each facility to pass certification only after the facility has successfully installed and demonstrated each environmental improvement to the satisfaction of every party involved would be onerous, and ignores the timelines that are necessary to license improvements, make capital budgeting decisions, and install equipment.

This precedent has been set in many, if not most, LIHI-certified facilities. As just a few examples (there are many more):

- LIHI #66, Orono, and LIHI #67, Stillwater: “This certification review is based on the presumption that the final transfer of the Great Works, Veazie and Howland Projects will occur, and the fish passage protection provisions associated with that option of the Settlement Agreement will be implemented. Should the transfer not take place, and if LIHI certification is still desired, then reanalysis of the Orono Project against LIHI certification criteria, incorporating these alternative fish passage provisions must be requested / performed.”
- LIHI Certificate #11, Pawtucket: “The owner of the Pawtucket hydropower facility shall continue to participate in efforts to restore fish passage in the lower Blackstone River, as documented in Memoranda of Agreement of 2007 (amended 2009) and 2012 with RIDEM. The owner shall keep LIHI fully informed of all progress, delays, and changes in these efforts and agreements. LIHI certification is contingent on the owner continuing to play a strongly supportive and proactive role in achieving the goals of the Blackstone River Fish Passage Restoration Project, subject to cooperation, material progress, and the appropriation of project funding from state and federal agencies.”
- LIHI Certificate #12, Tallassee Shoals: “There are active and evolving efforts to restore migratory fish populations in the Oconee River basin that may eventually interact with the facility at some point in the future. Therefore, the owner shall monitor the progress of these efforts on a regular and continuing basis, and participate in them when appropriate.
- LIHI Certificate #89, Holyoke Hydro: “If HG&E does not meet any of the downstream fish passage design and implementation deadlines that fall within the 5-year term of certification, LIHI will suspend certification unless HG&E demonstrates to LIHI that the resource agencies believe good cause exists for the schedule delay. Any subsequent re-certifications of the Facility will be dependent on HG&E’s passage facilities meeting effectiveness targets set by the agencies.”
- LIHI #110, Stillwater B: “The facility owner shall consult with the involved fisheries resource agencies and the Penobscot Indian Nation (PIN) to confirm that the designs that have been implemented at the new downstream fish and eel passages are consistent with the Settlement Agreement. An annual status report on such consultation, plans and results from effectiveness testing of fishways, and final acceptance by agencies and PIN shall be sent to LIHI along with the owner’s annual compliance letter.”

- LIHI #128, North Gorham: “Within 90 days of LIHI certification, the Owner shall proactively initiate discussions with MDMR and USFWS regarding future construction of an upstream fish passage facility for American eel at the site and implementation of appropriate measures to facilitate safe downstream passage for American eel. The siting and design work on the upstream passage structures shall be initiated within the first two years of LIHI certification; construction and operation shall be completed as soon as practicable, but no later than the end of the five-year LIHI certification period.”

In Sappi’s case, there is a clear timetable and biological triggers in place to install fish passage. This timeline has been agreed to in a Settlement Agreement (S.A.), between Sappi, U.S. Fish and Wildlife Service, Maine Department of Marine Resources, Conservation Law Foundation, Friends of the Presumpscot River, and the City of Westbrook. Sappi will be making significant capital investments to remove Saccarappa Dam and make site alterations to improve fish passage, in excess of \$5 million when design cost are included. All parties to the S.A. concurred with this approach, as evidenced in the S.A. and letters supporting LIHI certification from the various resource agencies. According to the Fish and Wildlife Service (letter dated May 31, 2017):

“Warren, the Service, and other Stakeholders have worked tirelessly to negotiate the terms of a Settlement Agreement (Agreement) affecting fish passage at four of the Projects noted herein. We are now implementing this Agreement. The Agreement addresses issues of concern to the Stakeholders, gives Warren some certainty regarding the requirements for decommissioning and removal of the Saccarappa Project, and extends the time when Warren must comply with fish passage requirements at the other four Projects. S.D. Warren Company has been very cooperative with the Service regarding issues and concerns relating to these projects and we support their application for certification.”

Argument #2 – Dam removal recommendation eliminates eligibility.

CLF and FOPR contend that Sappi’s projects are ineligible because of various comments made during re-licensing recommending that dam removal be considered as an alternative to continued operations of the project. This comment is faulty on two grounds:

1. ***Dam removal was recommended to be considered as an alternative in FERC’s NEPA process – this does not qualify as a recommendation for removal***: Several agencies requested that FERC consider dam removal as an *alternative*, and removal was never a final recommendation from any resource agency, which instead opted for fish passage facilities. The language from the FEIS reads: “Interior, the state of Maine resource agencies, American Rivers/FOPR, MCASF/Friends of Sebago Lake, and TU all filed comments and recommended that the Commission consider removal of three dams as an alternative to licensing” (page 55). At the time of re-licensing, these facilities did not have any passage installed or plans to do so. Fish passage installation was also recommended as an alternative (in addition to dam removal). The final recommendations from

the agencies (USFWS, MDIFW, MDEP, etc.) almost exclusively focused on installing upstream and downstream passage. The FEIS offers a summary of the final recommendations by all agencies, on pages 21-25. For example:

- a. “The MDMR is the lead state agency in the restoration and management of diadromous (anadromous and catadromous) species of fish other than sea-run Atlantic salmon. **The MDMR recommends** installation of upstream and downstream fish passage facilities for American shad and blueback herring at the lower four projects, including screens on the trashracks and separate upstream and downstream measures (shut downs) for eels at each of the five projects.”
- b. “The Maine Atlantic Salmon Commission (MASC) is responsible for the restoration of Atlantic salmon throughout its historical range in the state of Maine. However, the recent events that prompted the request for dam removal (see section 2.2.2) also have caused the MASC to re-evaluate its priorities for restoration of Atlantic salmon in the Presumpscot River¹. **The MASC recommends** a reopener clause to address the need for upstream and downstream passage facilities for diadromous fish once the Cumberland Mills dam has fish passage facilities; consultation with S.D. Warren every 3 years to develop a schedule for installation of fish passage facilities; and a study to determine appropriate flows to support Atlantic salmon, after MASC has completed its assessment of the river habitat.”
- c. “**Interior also recommends** installing upstream and downstream fish passage facilities for American shad and blueback herring, and separate measures for eel passage.”
- d. “**The FWS recommends** ROR operation, year-round minimum flows, a headpond elevation and flow monitoring plan, the development of a detailed Shoreline Management Plan (SMP) for licensee-owned lands that are needed to project-related purposes within 500 feet of the high water elevation, and recreational use monitoring every 6 years.”

LIHI requires that resource agencies conclusively recommend a dam for removal, not that dam removal is considered as an alternative or that dam removal was considered as an option at some point in the re-licensing proceeding. Recommendations by agencies frequently change during the course of the re-licensing, and did in this case as well, to favor installation of passage facilities. For example, the Shoreline Management Plan originally recommended by USFWS is now a Land Use Recreation Management Plan. The NGOs that commented did recommend removal, but this is not relevant for LIHI criteria, which requires the recommendation to come from resource agencies.

¹ This recommendation was made by NGOs, not a resource agency. See page 21: “Several NGO's, including the Friends of the Presumpscot River (FOPR), Friends of Sebago Lake, and the Maine Council of the Atlantic Salmon Federation (MCASF), as well as numerous individuals are advocating that the Commission order the removal of the Little Falls, Mallison Falls, and Saccarappa dams.” These do not qualify under LIHI standards because, under those standards, recommendations must come from the resource agencies.

2. ***The Agencies' final recommendations are contained in the Settlement Agreement.*** LIHI's criteria states (pg. 42): "If a single Resource Agency has made multiple recommendations, the most recent recommendation shall apply. This principle also applies when there is a settlement. If a Resource Agency is party to a settlement, or otherwise formally concurs in a settlement, the settlement terms are considered to be the most recent Resource Agency Recommendation for these purposes. If, however, a Resource Agency is not party to a settlement and does not formally concur in the settlement, the most recent recommendation of that Resource Agency, and not the settlement terms, apply for purposes of certification."

This is a clear example where the qualifying agency recommendations are contained in the S.A. The timeline and biological triggers for installation of passage at each project has been agreed to in the S.A. by Sappi, U.S. Fish and Wildlife Service, Maine Department of Marine Resources, Conservation Law Foundation, Friends of the Presumpscot River, and the City of Westbrook. Each resource agency party to the S.A. were those that recommended FERC consider dam removal as an alternative during the NEPA process in 2003. The S.A. represents years of study, design and consultation into providing fish passage at the Saccarappa Project and goes far beyond the requirements of the Projects' Section 18 Fishway Prescription in the License, or of a typical decommissioning / license surrender order.

Argument #3 – Certification should wait until the project has proven it is having a low impact to fish.

This is a restatement of Argument #1, and our response is above.

In his December 27, 2016 letter to the MDEP supporting a "Minor Revision" to the Projects' Water Quality Certification (attached), Sean Mahoney, writing on behalf of CLF and FOPR, states:

"For more than three years, the parties to the SA negotiated to reach an agreement that would be the best possible result for water quality of the Presumpscot River. The effort required an enormous investment of resources, in terms of time and money, and at the end of the day each of the parties believes that the SA reached will be to the benefit of the Presumpscot River, the communities that share it and the company that uses it to continue its operations."

This statement undercuts CLF's and FOPR's objections here, showing that CLF and FOPR clearly believe the SA will benefit the Presumpscot River by offering the "best possible result for water quality of the Presumpscot River."

If you have any questions concerning this matter, please contact me at 207-856-4083 or by e-mail at Brad.Goulet@SAPPI.com.

Sincerely,



Brad Goulet
Hydro Manager/Utilities Engineer

Attachment:
December 27, 2016 CLF letter to MDEP

cc: Peter Drown Cleantech
Matt Manahan P.A.
Briana O'Regan Sappi

Appendix C
Agency Correspondence

Hi Peter,

The following state-listed Endangered, Threatened, and Special Concern species have been documented in the general vicinity of the Presumpscot River watershed. Note that this list should not be considered all-inclusive:

American eel (Special Concern)
Brook floater (State Threatened)
Creek chubsucker (Special Concern)
Eastern box turtle (State Endangered)
Least bittern (State Endangered)
Spotted turtle (State Threatened)
Upland sandpiper (State Threatened)
Wood turtle (Special Concern)

In addition, while a comprehensive statewide inventory for bats has not been completed it is likely that several of species of bats occur within the project area during migration and/or the breeding season:

Little brown bat (State Endangered)
Northern long-eared bat (State Endangered)
Eastern small-footed bat (State Threatened)
Big brown bat (Special Concern)
Red bat (Special Concern)
Hoary bat (Special Concern)
Silver-haired bat (Special Concern)
Tri-colored bat (Special Concern)

Finally, please note that this list does not include any listed species of migratory birds that are likely found in the area during spring and fall migrations.

It is not known what effects, if any, the operations of the project may have on any of the species listed above.

Please let us know if you need additional information.

John

John Perry

Environmental Review Coordinator
Maine Department of Inland Fisheries and Wildlife
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Correspondence to and from this office is considered a public record and may be subject to a request under the Maine Freedom of Access Act. Information that you wish to keep confidential should not be included in email correspondence.

From: Peter Drown [mailto:peter.drown@cleantechanalytics.com]
Sent: Thursday, September 14, 2017 12:52 PM
To: Perry, John
Cc: Brad Goulet; Robinson, Sydney
Subject: T&E Species - SD Warren Hydro Projects

Hi John,

I am working with SD Warren Co. on several Low Impact Hydropower Applications for their projects on the Presumpscot River. Our reviewer would like to know whether any T&E species are present in the area, but the data we have is from a 1997 study and we were asked to provide more current data, if possible. I understand you provided a Threatened and Endangered Species review for the North Gorham project last November. Could you also provide any T&E species that may be located in the project boundaries of the SD Warren projects?

Project location map is attached.

Thank you,

--

Peter Drown | President
Mobile: (207) 951-3042


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