

REVIEW OF APPLICATION FOR RE-CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE MILFORD HYDROELECTRIC FACILITY

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May 7, 2019

I. INTRODUCTION

This report summarizes the review findings of the application submitted by Black Bear Hydro Partners (Black Bear or Applicant) to the Low Impact Hydropower Institute (LIHI) for re-certification of the Milford Hydroelectric Project FERC P-2534 (Milford or Project). The Project was first Low Impact Certified by LIHI on February 12, 2014 with an effective date of November 13, 2013 (LIHI Certificate # 113). Black Bear appears to have been independent when the Project was first certified by LIHI but was purchased by Brookfield Renewable Energy Group in November 2013.

The Milford Project was part of the 2004 Lower Penobscot River Multiparty Settlement Agreement which resulted in the removal of two major dams on the Penobscot River. The 2004 Settlement Agreement involved five hydropower projects owned and operated by Black Bear located within the Penobscot River Basin. Three of these other sites have received LIHI Low Impact Certification: the Medway Project (LIHI #65), Orono Project (LIHI #66), and both the original units and Powerhouse B of the Stillwater Project (LIHI #67).

This current review was made using the 2nd Edition LIHI Certification Handbook (Revision 2.03, December 20, 2018).

The Project's 2014 LIHI Certificate had three conditions:

1. Fish passage effectiveness studies, including numerical performance for specific standards for Atlantic salmon, are scheduled for the next three years (downstream passage) and two years (upstream passage) to confirm adequacy of the fishways installed. The owner shall report to LIHI on the results of all fish passage effectiveness testing conducted within thirty (30) days of conclusion of each year's studies, including reporting on any changes in operation of the passage facilities, as recommended or required by the resource agencies and/or the Penobscot Indian Nation (PIN). This reporting shall summarize the opinions (if rendered) of The United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Maine Department of Marine Resources (MDMR) and the Penobscot Indian Nation (PIN) on the results of the effectiveness studies.
2. Three state threatened mussel species may be present in the vicinity of the Milford facility and these could be impacted during significant impoundment lowering. If significant drawdowns are scheduled (other than those needed for normal maintenance activities) that may adversely affect mussels, the owner shall notify LIHI of the license-required

consultation with FERC and applicable state resource agencies, along with mitigation actions developed to ensure impacts to sensitive mussel species are minimized.

3. The owner shall report to LIHI on the status and results of the consultations regarding the canoe portage trail, as well as the status of development of the trail.

The first two Conditions remain open. Status of these activities are discussed under the applicable criteria. The third Condition was closed by LIHI staff in 2018 based on the Annual Compliance Statement and Condition Status Update submitted by Black Bear.

II. RECERTIFICATION PROCESS AND MATERIAL CHANGE REVIEW

Under the current Handbook, 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 development of a complete 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 2016 Handbook.

Black Bear submitted the current recertification application on November 13, 2018, which resulted in a Stage I or Intake Report, dated November 30, 2018. This Stage I assessment indicated there were "material changes" at the Project and there was missing data. A final application was received on March 7, 2019 addressing the majority of information found to be missing during the Stage I review. Additional questions were submitted to Black Bear on March 18 and 19, 2019 with responses received April 26, 2019. This current review was conducted in compliance with LIHI's Handbook, 2nd Edition LIHI Certification Handbook (Revision 2.03, December 20, 2018).

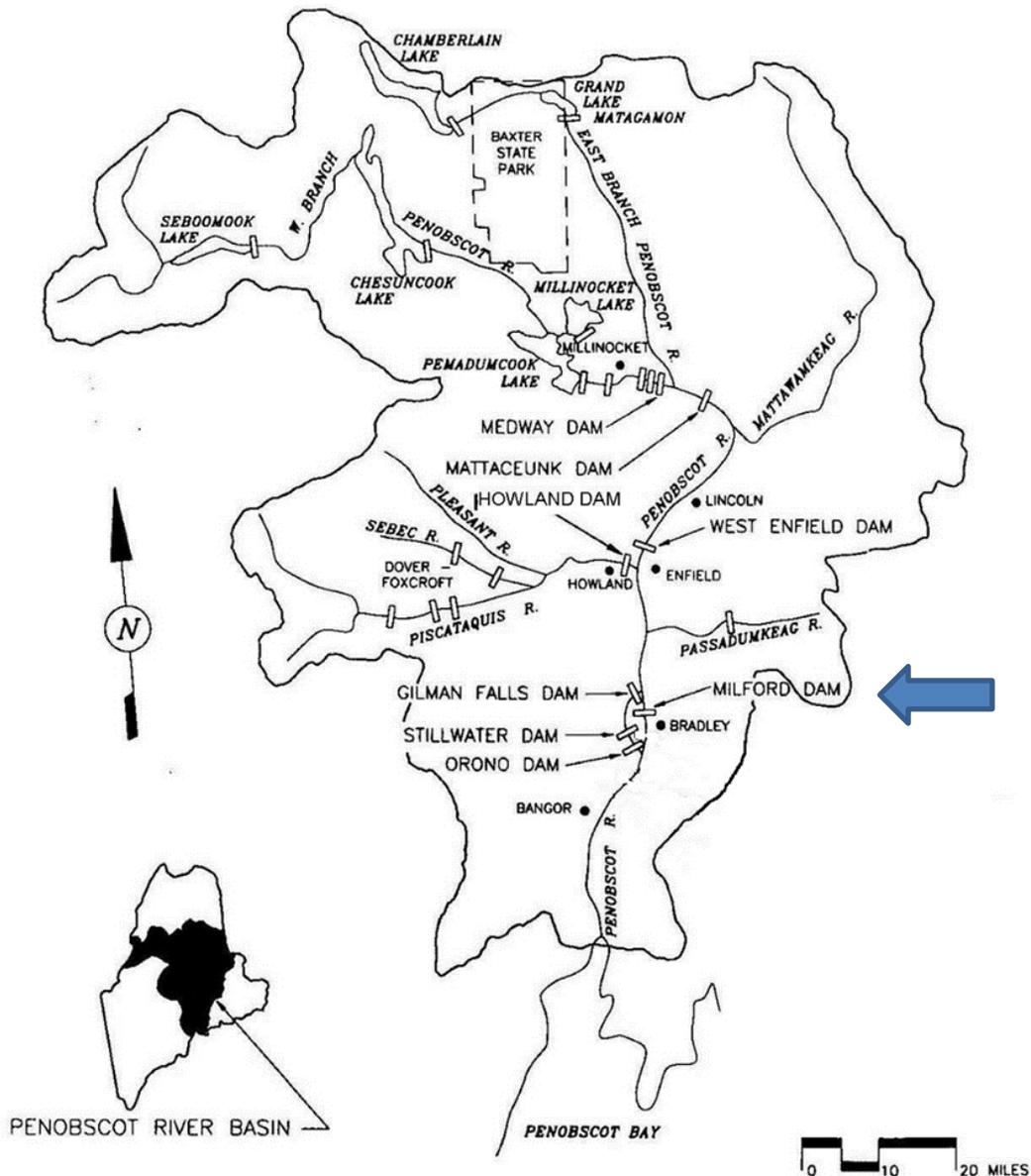
This Stage II assessment included review of the application package, supplemental information provided by the Applicant, public records in FERC's eLibrary since LIHI reviewed the Project for certification in 2013, agency input from outreach activities, and the annual compliance statements received by LIHI during the past term of certification.

III. PROJECT'S GEOGRAPHIC LOCATION

The Milford Project consists of two dams, the Milford Dam, on the main stem of the Penobscot River ("River") at river mile 33.25, and the Gilman Falls Dam, located at the head of the Stillwater Branch of the Penobscot River. The Project is located in Milford and Old Town, Penobscot County,

Maine. The Penobscot River Basin is New England's second largest river system.

The Milford Project is located on the main stem of the Penobscot River approximately 22 miles downstream of the West Enfield Hydro Project (FERC P-2600). Two dams that had been located downstream of the Milford Dam (Great Works Dam and Veazie Dam) have been removed as part of the Settlement Agreement. The Milford Dam is now the most downstream dam on the Penobscot River. There are 20 run-of-river dams located on the other Basin waterways as shown below on Figure 1.



PENOBSCOT RIVER BASIN

Figure 1 – Milford Project and Nearby Dams

The aerial below shows the location of the Gilman Falls Dam, on the Stillwater Branch in the red circle, and the Milford Dam on the main stem of the Penobscot River in the blue circle. Both the Penobscot River and Stillwater Branch are impounded by Milford Dam.

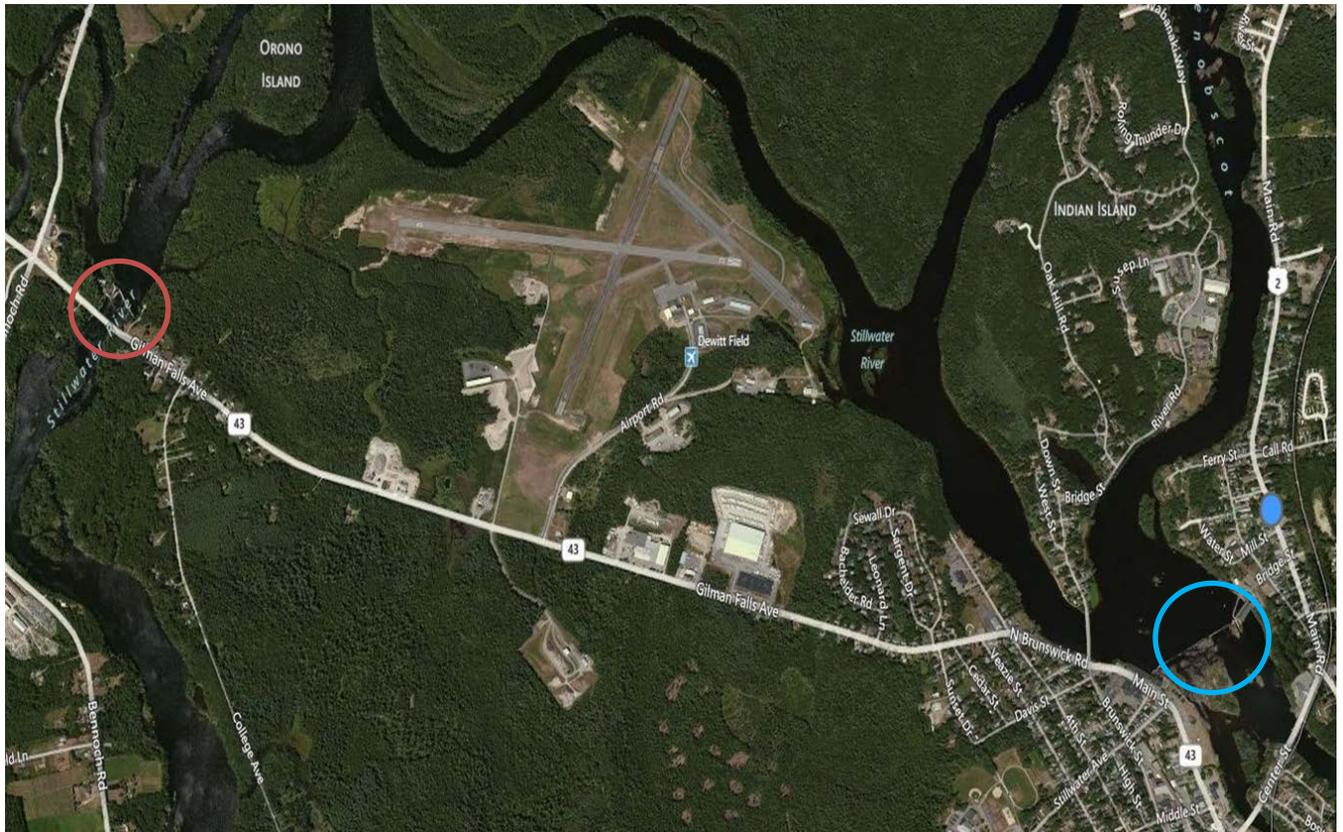


Figure 2 – Location of Milford (blue circle) and Gilman Falls (red circle) Dams

IV. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The Milford Dam is approximately 1,160 feet long, of concrete gravity design, and has an average height of approximately 20 feet exclusive of flashboards. The permanent concrete crest elevation of the dam is 97.2 feet. The dam is fitted with 4.5-foot high steel hinged flashboards on the western spillway and 4.0-foot high Obermeyer inflatable flashboards on the eastern spillway. Normal headpond elevation is 101.7 feet. See Figure 3 for an aerial of the dam.

The Gilman Falls dam consists of an approximate 4-foot high main spillway, which has 4.4-foot-high flashboards and is 311-foot-long, including a center abutment 25-foot-wide, with a permanent crest at elevation 97.3 feet. (See Figure 4) There is also a 6-foot-wide sluice gate with a top at elevation 100.8 feet; and two taintor gates. There is no generation at this dam.

There is a Denil fishway on the western side of the powerhouse with its entrance adjacent to the tailrace and exit adjacent to the forebay trashracks. It has been operational for many years.



Figure 3 – Milford Dam Across the Penobscot River



Figure 4 - Gilman Falls Dam Across the Stillwater Branch

During the past certification period a new fish lift was constructed on the eastern side of the powerhouse, capable of passing 300 cfs of attraction flow. The entrance is a manually adjusted gate that tracks tailwater levels. The hopper is raised 20 feet where fish exit past a counting window either directly to the headpond, or to a second hopper and sorting facilities. After sorting, fish are either released to the headpond or transported for hatchery and stocking programs. A seasonally installed eel ladder was also put into service during this same period. It is installed at the top of the rock ledges in the middle of the spillway. The upstream passage facility locations are shown below in Figure 5 while Figures 6 and 7 are closeups of the upstream passage facilities.

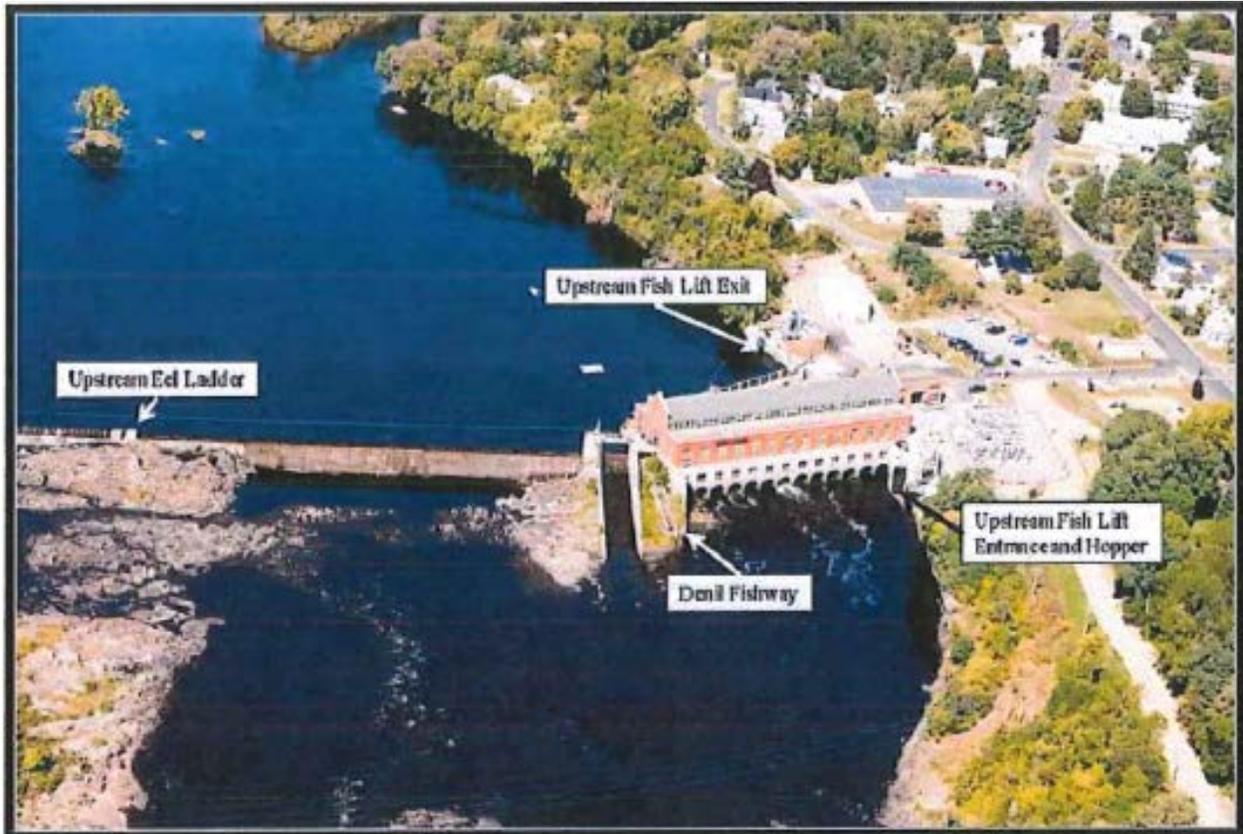


Figure 5 – Location of Upstream Fish Passage Facilities



Figure 6 – Fish Lift (left) and Denil ladder (right)



Figure 7 – Upstream Eel Ladder

New downstream fish passage facilities consist of two surface bypass flumes passing through the powerhouse wall at the west end and center (see Figure 8). The entrances are located at the face of the interior 1-inch clear spacing full depth trashracks. The original bypass flume on the west end of the powerhouse was extended through the powerhouse to discharge to an unused turbine bay in 2013-2014 when the new fish passage facilities were being installed.



Figure 8 – Surface Bypasses on West Side (left) and Center of Powerhouse (right).

There is also a low-level downstream eel bypass at the bottom of the trashracks below the surface bypass entrance at the center of the powerhouse. This bypass can pass up to 70 cfs. Finally, there is a 24-inch diameter downstream migrant bypass pipe at the downstream end of the exit flume of the upstream fish passage facility that can be used for incidental downstream passage of fish that end up in the exit flume. All downstream measures were installed in 2014 except for the weirs on the outer trashracks which were installed in 2018.

All of these new facilities are considered “material changes”, albeit positive ones, to the Project since last Low Impact Certified by LIHI.

The Milford Project is operated as a run-of-river development with discharge from the turbines and spillway equivalent to inflow. The Project also provides a minimum flow of 3,800 cfs or inflow, whichever is less, and a headpond elevation limit of one foot from the normal full pond when flashboards are in place.

There is a 235-acre reservoir with a gross storage of 2,250 acre-feet. Other than the property containing the powerhouse and associated features, estimated at 1.2 acres, Black Bear only has flowage rights at the Project. The flowage rights over lands adjacent to the Project impoundment extend about 3.3 feet higher than normal full pond.

V. ZONES OF EFFECTAND STANDARDS SELECTED

Five Zones of Effect (ZOE) were designated by the Applicant and were determined to be appropriate. Their locations are shown on Figure 9 and in the aerials in Figures 10 and 11.

- ZOE #1 - Regulated Reach on Penobscot River above the Milford Dam
- ZOE #2 - Impoundment on the Stillwater Branch and Penobscot River (created by Milford and Gilman Falls dams)
- ZOE #3 - Bypass Reach on Penobscot River below Milford Dam
- ZOE #4 - Regulated Reach on the Stillwater Branch below Gilman Falls
- ZOE #5 - Regulated Reach on the Penobscot River below Milford Dam



Figure 9 – Zones of Effect



Figure 10 – Zones of Effect 2, 3, and 5 at the Milford Dam



Figure 11 – Zones of Effect 2 and 4 at the Gilman Falls Dam

The following tables show the Standards selected for each criterion for the five ZOE's. Where applicable, reviewer recommendations for alternate standards are shown in **red**.

ZOE #1 – Regulated Reach (Penobscot River) above Milford Impoundment

Criterion	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				

ZOE #2 – Project Impoundment (Penobscot River and Stillwater Branch) from Milford Dam and Gilman Falls Dam

Criterion	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			

ZOE #3 – Bypass Reach Below Milford Dam

Criterion	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			

ZOE #4 – Regulated Reach (Stillwater Branch) Below Gilman Falls Dam

Criterion	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			

ZOE #5 – Regulated Reach (Penobscot River) Below Milford Dam

Criterion	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			

The Review found that standards selected are appropriate except for Downstream Fish Passage for ZOE #3 and #5 where I believe Standard D-1 is more appropriate. I believe sufficient supporting data was provided which demonstrated compliance with all criteria. Details of compliance with the criteria are presented in Section VIII.

VI. REGULATORY AND COMPLIANCE STATUS**FERC License**

The original Federal Energy Regulatory Commission (FERC) license was issued to Bangor Hydro Electric Company (Bangor Hydro) and expired in December 1990. The Project was operated under an annual license until license renewal was approved on April 20, 1998.¹ A 40-year term was approved by FERC to coordinate expiration dates for projects on the same river basin, in support of their policy to consider cumulative impacts of projects in the same river basin collectively at relicensing. Thus, the Milford license was issued with the same expiration date as the Stillwater and Veazie Projects. The Milford license was transferred to Penobscot Hydro LLC, which later became PPL Maine, LLC, (PPL Maine) in October 2000. The Milford Project was subsequently purchased by Black Bear and the license transferred on September 17, 2009.

Relicensing and pending appeals for several hydropower projects in the Penobscot River Basin, including the Milford Project, occurred over the period from license issuance in 1998 until 2004. After extensive studies, consultations and legal challenges, the re-licensing process culminated in the signing of the Lower Penobscot River Basin Comprehensive Settlement Accord, which included a number of agreements, including the Lower Penobscot River Multiparty Settlement Agreement (Settlement Agreement or SA).² This Settlement Agreement involved the Owner, numerous agencies and Non-governmental Organizations, including the PIN. PIN remains very active with Project issues. Notably missing from the Settlement Agreement is the NMFS. They were involved in the earlier licensing proceedings of the Milford Project, and had issued a mandatory fish passage prescription under Section 18 of the Federal Power Act (FPA) on February

¹ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=8155669>

² <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10188480>

16, 1995. They also remain active. A key feature of the Settlement Agreement was the removal of the Veazie and Great Works Projects and dams located downstream of the Milford Project. Also, a state-of-the-art fish bypass was constructed at the Howland dam (upstream of Milford) as part of the river restoration project. In exchange for dam removal, the SA allowed for generation increases at several other Black Bear projects in the Penobscot River Basin.

The following amendments were made to the Milford FERC license:

- 2005 – incorporated the terms of the Settlement Agreement that previously conflicted with the license articles³
- 2012 - incorporated installation of the inflatable flashboard system at the Milford Dam
- 2018 – addressed revised Exhibit As which corrected a discrepancy in the licensed and nameplate capacity of the units. The error, caused by incorrect generator rating previously used for units #1, #2 and #5, was identified by a FERC site inspection on July 9, 2018.

Water Quality Certification

On March 10, 2005, the Maine Department of Environmental Protection (MEDEP) issued a revised WQC adopting the applicable provisions of the Settlement Agreement and the PIN Agreement, resulting in conditions equivalent to those discussed above. The 2005 WQC was made part of the FERC Order.⁴ In response to a May 12, 2005 letter from NMFS, FERC issued an Order dated May 16, 2005 correcting Article 409, noting that that NMFS' prescription is consistent only with Attachment A of the Settlement Agreement. The 2012 and 2018 FERC license amendments did not require revision to the WQC.

Construction reports filed by Black Bear during construction of the new turbine units and fishways did not report any environmentally-related concerns. Based on this review, Black Bear appears to have demonstrated conscientious attention to the environmentally-related issues associated with the Milford Project's current FERC License during this period.

Regulatory Compliance

A review of the FERC database from January 1, 2013 through March 2019 found the following:

- Only one deviation of normal operation (temporary drawdown) has occurred at the Project in the last five years to accommodate an emergency repair of the Milford Dam. FERC did not consider it a violation of the FERC License.
- There were two fish kills during this period: one involving American eel in 2014 and one in 2017 involving river herring. While neither were found to be a license violation, they were significant enough for FERC to require improvements to be made to operational procedures at the fish passage facilities. The 2014 event was identified by apparent clogging of the blocking screen within the auxiliary attraction water system immediately upstream of the primary hopper of the fish lift. More than 50 dead American eels were observed impinged on the upstream side of the blocking screen blocking the flow. Initial remedial measures taken were not found to remedy the situation. In response to MDMR recommendations, divers now annually inspect these features and the fish lift Operations

³ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10499161>

⁴ Ibid.

and Monitoring Plan has been improved. The 2017 event started when the lift hopper would not return to the full down position, at which time staff re-seated the hoist block cable which had come off, and the sorting facility hopper was returned to service within a few hours. As a result of MDMR observations on the next day, it was discovered that the lift had not lowered fully to the bottom of the hopper pit in the flume which resulted in gaps beneath and around the hopper, which allowed 8,000 to 10,000 river herring and ten sea lamprey to crowd into the space, with no exit upstream. Changes were again made to the fish lift Operations and Monitoring Plan to hopefully minimize this issue from re-occurring.

- A FERC Additional Information Request based on a complaint received by FERC was issued in 2017⁵ that a public viewing facility at the fish lift required by the Settlement Agreement had not been constructed. Black Bear reported that the viewing facility had been constructed in 2014 but was only open during guided tours to alleviate public safety issues. An enhancement to the original plan involved installation of a video camera and monitor outside of the public safety fencing and accessible to the public at all times. Installation was completed in 2018.⁶
- Several required filings were missed since the Project was purchased in 2013 by Brookfield Renewable, as identified in an Environmental Inspection conducted by FERC on July 9, 2018. These are discussed under the Water Quality, Watershed and Shoreline Protection and Cultural and Historic Resources Protection criterion. These were not cited by FERC as license violations and appear to be the result of the new owner's lack of knowledge about some reporting requirements, that have since been resolved.

VII. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

The deadline for submission of comments on the LIHI certification application was May 6, 2019. One public comment letter, from the MEDEP, was received.

Outreach was made to key federal and state resource agency personnel and members of PIN by the LIHI reviewer. The results of these communications are summarized in the applicable criteria sections. Feedback was only received from the agency representatives highlighted in bold below.

- **Kathy Howatt, Hydropower Coordinator, MEDEP**
- Steven Shepard; C.F.P., USFWS
- **Jeff Murphy; Penobscot SHRU, NMFS**
- Gail Wippelhauser, MDMR
- Kevin Dunham; Fisheries Biologist, Maine Inland Fish and Wildlife (MIF&W)
- Dan Kusnierz; Water Resources Program Manager, PIN
- Daniel McCaw; Fisheries Program Manager, PIN
- Jason Mitchell; Water Resources Field/NPS Coordinator, PIN

Copies of the comment letters and email communications are included in Appendix A.

⁵ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14700354>

⁶ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14723879>

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.

Assessment of Criterion Passage

The Applicant has appropriately selected **Standard A-1, Not Applicable/De Minimis Effect** for ZOE#1, the regulated reach of the Penobscot River above the Milford Dam and ZOE #2, the Impoundment; and **Standard A-2, Agency Recommendation** for the three remaining ZOE's.

ZOE #1 receives run-of-river flows from upstream tributaries and the West Enfield Project. Regarding ZOE #2, impoundment water levels must be maintained within 1 foot of full pond (101.7 feet msl). The only deviation from this in the past five years was an agency approved drawdown to accommodate emergency repair at the dam.

Flows to the bypass reach below Milford Dam (ZOE #3) by design, are only from leakage and when the spillway flashboards are down or are being overtopped, so as not to attract upstream-migrating fish away from the fish lift which is located on the opposite side of the dam. This was approved by FERC and the resource agencies.

Article 403 of the Milford Project FERC license requires a minimum flow release of 3,800 cfs or inflow, whichever is less, from the Milford Project with a minimum of 3,268 cfs from the Milford powerhouse to the main stem of the Penobscot River (ZOE #5), and a minimum of 532 cfs from the Gilman Falls Dam to the Stillwater Branch of the Penobscot River (ZOE #4). In addition, the 2004 Settlement Agreement requires allocations of 30 to 40 percent of river flows to the Stillwater Branch to accommodate fish passage and hydro generation, depending on total river flows and the time of year. The Project is operated in accordance with the 2013 Operations and Flow Monitoring Plan. It appears there have been no deviations from these minimum flow requirements in the past five years. Thus, it appears compliance with this criterion has been demonstrated.

The Project 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.

Assessment of Criterion Passage

The Applicant appropriately selected **Standard B-1, Not Applicable/De Minimis Effect** for ZOE #1 as the Milford Project has no impact on this ZOE and **B-2, Agency Recommendation** for all other ZOE's.

The Project is operated as a run-of-river facility with minimal fluctuation and operations have not changed since last certified by LIHI. Although flows to the bypass reach below Milford Dam (ZOE #3) are limited as described above, these flows are nonetheless in compliance with those specified in the Water Quality Certification as meeting water quality standards. Minimum flows required to the Stillwater Branch (ZOE #4) help ensure water quality standards are met. No deviations to these flows have occurred since 2013.

As required under Article 405 of the Milford Project license, dissolved oxygen monitoring downstream of Milford Dam was due in 2017, but was not performed until 2018. Black Bear reported that they elected to delay the testing as emergency dam repairs were conducted at the dam in the summer of 2017 which they believed would have resulted in “anomalous dissolved oxygen readings” compared to normal operations. Given that the FERC July 9, 2018 Environmental Inspection noted the missing 2017 report, it appears that advance communication with FERC about this one-year delay in sampling was not conducted. FERC did not consider this oversight a license violation, and only requested submittal of a plan and schedule to conduct the monitoring, which was already in progress at that time.

The monitoring was performed during the months of July and August consistent with the "Dissolved Oxygen Monitoring Plan, which was approved by FERC on October 27, 2005. The 2018 results report was submitted to FERC on December 7, 2018.⁷ Required coordination with PIN was completed. The purpose of this sampling is to ensure that dissolved oxygen content in the river below the Milford Project meets the State of Maine's water quality standards. Sampling is to be performed once every 5 years for the duration of the Milford license term (i.e., until 2038). All sample measurements were higher than the state standard of “not less than 7 parts per million”.

A comment letter was received from MEDEP stating that Project operation does not appear to be negatively affecting water quality. This letter is contained in Appendix A.

The main stem of the Penobscot River in the reaches above and below the Milford Dam, as well as the Stillwater Branch, are identified as impaired for eutrophication, dissolved oxygen and dioxin, but are noted in the state’s 2016 Integrated Water Quality Report as reasonably expected to result in attainment due to reduced loading from pulp and paper mills and removal of new dioxin sources. They are also impaired by E. coli and legacy PCBs. None of these pollutant sources are noted as attributable to the Milford Project. This was also noted in the letter received from the MEDEP.

Based on my review, I believe the Project complies with this criterion. However, since the next required monitoring will occur during the new LIHI Certification term, I am recommending that a condition be included to provide a copy of the next five-year dissolved oxygen monitoring report to LIHI in that year’s annual compliance statement.

The Project Conditionally Passes Criterion B – Water Quality

⁷ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15112565>

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.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard C-1, Not Applicable/De Minimis Effect** for ZOE #1 (regulated reach above the impoundment) and #2 (Project Impoundment); and **Standard C-2 Agency Recommendation** for the regulated reaches below the Gilman Falls Dam (ZOE #4) and the Milford Dam (ZOE #5) as well the bypass reach of the Milford Dam (ZOE #3). While there are no fish passage requirements at the Gilman Falls Dam, the Orono Project located at the discharge of the Stillwater Branch to the main stem of the Penobscot River, also owned by Brookfield, has a new 2014 fish lift and trapping facility. Upstream migrating fish are captured there and trucked upstream past the Gilman Fall Dam. Thus, upstream fish passage in the Stillwater Branch downstream of Gilman Falls Dam is managed in accordance with regulatory agency recommendations.

The Milford Project license has both mandatory upstream and downstream fish passage requirements under Articles 407 through 409, and reservation of authority for both the USFWS and NMFS under Article 411. The original LIHI Certification report for the Project describes the basis for both types of requirements.⁸ These requirements included requirements of the 2004 Settlement Agreement signed by the majority of stakeholders (but not NMFS) involved in this Project. However, in a letter dated March 21, 2005, NMFS confirmed that its fishway prescription (issued pursuant to the 2005 license) is consistent with the intent of the USFWS's prescription, which was incorporated into the Settlement Agreement and FERC license.

Target species of the passage facilities are American shad, alewife, blueback herring, American eel and the state and federally endangered Gulf of Maine Distinct Population Segment Atlantic salmon (Atlantic salmon). At the time of the original 2013 LIHI certification review, the Project had a 4-foot Denil style upstream fishway located at the west side of the powerhouse tailrace. This ladder is currently operated as a back-up to the fish lift constructed in 2014. A shore-based fish lift for upstream passage of anadromous fish species, is located immediately downstream from the powerhouse on the east side of the Project tailrace. This facility includes secondary collection facilities in the upper flume for counting, sorting, trapping, and trucking of fishes captured in the fish lift. An upstream fishway for American eel, which is installed seasonally at the spillway upon the mid-river ledges which abut the rubber dam and flashboard spillway sections was modified in 2015 to improve its use.

The Lower Penobscot River Multiparty Settlement Agreement (MPA), required certification of the fish passage facilities by USFWS, which was received on September 11, 2018. (See Appendix A). This only certifies that the facilities were constructed as designed but does not address whether

⁸ https://lowimpacthydro.org/wp-content/uploads/2014/02/Milford-Certification-Report_pbm-122613.pdf

the facilities are providing safe and effective passage. This USFWS certification discusses changes that were needed to these facilities:

“In particular, the Milford upstream fishway was modified to reduce air that was entrained in the attraction water which caused bubbles that interfered with American shad passage, and possibly the passage of other species. Operational modifications were attempted without success and a wooden baffle was subsequently added to the attraction water supply in August 2016 which improved the hydraulics such that the attraction water could be provided at a rate close to the design capacity without significant amounts of entrained air. Attraction and passage into the primary hopper now appear to function as intended, although the attraction flow is typically set lower than the full design specification. The Milford upstream American eel fishway also required several iterations of design modification, as noted above. These operational issues, design modifications, and evaluation studies of the experimental American eel fishways have delayed MPA certification. However, these fish passage facilities now function as intended.”

Testing Requirements

The testing for the Atlantic salmon is governed by the Biological Opinion (BO) issued on August 31, 2012. The BO applies to four other Black Bear projects on the Penobscot River and Stillwater Branch in addition to the Milford Project. The performance standard for upstream fish passage effectiveness is 95%. That is, 95% of adult Atlantic salmon at Milford entering the Project tailrace (defined as 200 meters downstream of the lowermost turbine discharge) must locate the fishway entrance, and then pass the fishway within 48 hours. Those fish with injuries caused by the passage are considered not to have passed successfully. Testing for upstream passage is to be conducted for two years, with the specific timeframe to be coordinated with the resource agencies. Specific action plans have also been established if these standards are not met each consecutive year. Renewed agency consultation will be established if the standard is not met at the end of the third years' enhancement implementation.

While the FERC license requires effectiveness testing for upstream passage, there are no specific performance standards established at the Project for alosines or American eel. A collaborative and prioritized approach has been used to evaluate the new fish passage facilities, where, through agency and tribal consultation, annual study plans have been prepared, studies conducted, and reports generated, incorporating review comments from fisheries agencies and PIN. This approach appears to have been productive, has satisfied license requirements, and has allowed the studies to be collaboratively and adaptively focused based on current fish passage needs, fish availability, and priorities.

Studies Conducted 2014-2018

The following upstream passage testing has been conducted in the past five years:

2014: (1) American eel upstream passage monitoring via nighttime visual surveys and counting of eels passing through the upstream eel fishway; (2) Atlantic salmon upstream passage effectiveness study using radio telemetry; (3) monitoring of fish passage through the upstream fish lift (all

species).

2015: (1) American eel upstream passage monitoring via nighttime visual surveys and counting of eels passing through the upstream eel fishway; (2) radio telemetry study of upstream-migrating adult river herring (alewives; blueback herring); (3) video monitoring of the upstream fish lift entrance (all species); (4) Atlantic salmon upstream passage effectiveness study using radio telemetry; (5) monitoring of fish passage through the upstream fish lift (all species).

2016: (1) American eel upstream passage monitoring via nighttime visual surveys and counting of eels passing through the upstream eel fishway; (2) monitoring of fish passage through the upstream fish lift (all species), including video monitoring at night.

2017: (1) American eel upstream passage monitoring via counting of eels passing through the upstream eel fishway; (2) monitoring of fish passage (all species) through the upstream fish lift, including video monitoring at night.

2018: (1) American eel upstream passage monitoring via counting of eels passing through the upstream eel fishway; (2) monitoring of fish passage (all species) through the upstream fish lift, including video monitoring for Atlantic salmon during two extended periods when the sorting facility gates were left open.

Study Results Discussion

Atlantic salmon

Quantitative upstream effectiveness testing of Atlantic salmon was conducted in 2014 and 2015. This testing demonstrated that greater than 95% of Atlantic salmon that approached the dam successfully passed upriver; however, the majority of the salmon took longer than the passage standard of 48 hours. No upstream passage efficiency studies for adult Atlantic salmon have been conducted since 2015, given agencies' concerns with anticipated salmon returns, an entrained air issue in the Milford fish lift (addressed in 2016), and a reluctance to allow volitional passage at Milford's denil fishway (which would have been operated as an upstream passage augmentation) because of the need to trap adult Atlantic salmon for broodstock. As a result of the video monitoring and night-time operation of the lift conducted in subsequent years, improvements were made to the lift (primarily reduction of air entrainment) to improve performance.

In response to my inquiry, NMFS reported that the performance standards for upstream passage for Atlantic salmon have not yet been met. (See email in Appendix A.) Agency consultation regarding upstream performance standards will be reinitiated for the 2019 passage season to consider both the river's current fish passage conditions (with the removal of two main stem Great Works and Veazie dams and fish passage improvements implemented on the remaining dams) and the increased knowledge pertaining to Penobscot River Atlantic salmon that is now available. These discussions will also discuss NMFS requested re-initiation of consultation under the ESA to address the issue of salmon becoming stranded in the bypass reach, as this issue was not addressed in their 2012 Biological Opinion.

Alosines

Qualitative upstream monitoring studies were conducted in 2014 to assess the availability of adult alosines, juvenile alosines, and adult eel for future quantitative studies and to collect information about the use of the new upstream fishway. Upstream adult river herring studies were attempted at the Project in 2015. Approximately 90% of radio tagged adults fell back downstream after release. The results of the 2015 study demonstrate that monitoring river herring with stationary automated radio-telemetry techniques involving tagging alosines with current methods does not provide relevant information about fishway effectiveness. The results align with current research on the Penobscot River and other waterways, demonstrating that alosines are sensitive to capture, handling, and tagging, and that these activities can affect migratory behavior. Black Bear, with support from MDMR, has quantified river herring passage through counts at the Milford fish lift since its commissioning in 2014. The behavior of all diadromous fish species in the Milford fish lift may have been impacted due to entrained air (i.e., bubbles) in the entrance flume, with improvements made in 2016 to address this concern. Counts done 2014 to 2018 are noted below:

Species	2014	2015	2016	2017	2018	Total
American Shad	812	1,806	7,862	3,868	3,958	18,306
River Herring	187,429	589,503	1,259,384	1,256,061	2,174,745	5,467,122

Studies planned for 2019 include monitoring of the upstream fish lift, and a radio telemetry study to evaluate upstream passage of river herring at the Milford Project. While Black Bear appears to be working collaboratively with recommended effectiveness testing, and the numbers of fish passing upstream appear to show the lift is successful, the lack of specific performance standards makes proof of effective passage difficult for Black Bear to objectively demonstrate.

American eel

The table below shows eel passage counts. Modifications have been made to the eel ladder in response to agency and PIN comments. In both 2017 and 2018 the traps were removed before completion of the passage season due to emergency repair needs in 2017, and in 2018, because the Project was taken offline for three weeks in August as requested by Emera Maine in order to do substation repairs. Despite the lack of a specific standard, in August of 2018, MDMR and USFWS determined no further monitoring of upstream eel passage is needed. A copy of an email stating this is contained in Appendix A.

Year	Number of Eels Collected		
	Milford	West Enfield	Total
2008	31	58	89
2009	224	760	984
2010	6,779	2,192	8,971
2011	7,490	1,637	9,127
2012	57	28	85
2013	3,200	22	3,222
2014	370	64	434
2015	3,120	73	3,193
2016	8,448	2,548	10,996
2017	777*	12,501	13,278
2018	8,503**	88,264	96,767
Total	38,999	108,147	147,146

Based on the materials I reviewed, I believe that Black Bear has been conducting appropriate measures, including operation of the upstream passage facilities, responding to issues that have arisen, submitted required reports and conducted studies recommended by the fisheries agencies. Thus, I believe they are in conditional compliance with this criterion at this time. Because upstream passage has not yet been determined by the agencies to be “safe and effective”, I am recommending that a condition be included to notify LIHI once these determinations have been made or if agency findings show significant concern with measures being employed at the Project for upstream passage of Atlantic salmon or alosines.

The 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.

Assessment of Criterion Passage

The Applicant has demonstrated compliance with **Standard C-2 Agency Recommendation** for ZOE #2 (the impoundment) and **Standard D-1, Not Applicable/De Minimis Effect** for all other ZOE. Note that this includes my recommendation for a change in the appropriateness of the standard selected for ZOE #5.

Testing Requirements

The testing for downstream passage of Atlantic salmon is also governed by the Biological Opinion issued on August 31, 2012. Numerical performance standards have been established for downstream passage to be measured during a three-year testing period. The performance standard

for downstream migrating Atlantic salmon smolts at the Milford Project is 96% survival, evaluated by being within the lower and upper 75% confidence interval (CI).

There are no specific performance standards established at the Project for downstream passage of alosines or American eel. Similar to that used for upstream passage assessment, a collaborative and prioritized approach has been used to evaluate the new fish passage facilities' use by these species for downstream passage.

Studies Conducted 2014 - 2018

The following downstream passage testing has been conducted in the past five years:

2014: (1) Atlantic salmon smolt downstream passage effectiveness study using radio telemetry, (2) qualitative (video; visual) monitoring of downstream-migrating adult and juvenile alosines, (3) electrofishing and netting surveys to assess availability of out-migrating adult silver eels.

2015: (1) Atlantic salmon smolt downstream passage effectiveness study using radio telemetry, (2) pilot tagging study of downstream-migrating juvenile alosines (American shad; blueback herring; alewives).

2016: (1) Atlantic salmon smolt downstream passage effectiveness study using radio telemetry; (2) adult American eel downstream passage study using radio telemetry.

2017: (1) Atlantic salmon smolt downstream passage effectiveness study using radio telemetry; (2) adult American shad downstream passage effectiveness study using radio telemetry.

2018: (1) Atlantic salmon smolt downstream passage effectiveness study using radio telemetry (2) conducted a second year of radio telemetry studies of adult American shad downstream passage (to evaluate the effect of weirs installed in the outer trashracks); (3) conducted a radio telemetry study of adult river herring downstream passage.

Study Results Discussion

Atlantic salmon

Downstream Atlantic salmon smolt monitoring studies have been conducted at the Milford Project since 2014, and the application states that the studies show that smolt survival at the Project meets the Endangered Species Act performance standard (96% survival within a 75% confidence interval; that is, 96% of downstream migrating smolts approaching the dam survive passing the dam within 24 hours, which would include from 200 meters upstream of the trashracks in the impoundment and continuing downstream to the point where latent effects of passage can be quantified). The following table summarizes study results for Atlantic salmon smolts since 2014. No downstream passage studies for Atlantic salmon are planned for 2019.

Project	Year	No. Smolts	Estimated Project Survival (%)	75% Confidence Interval	
				Lower	Upper
Milford	2014	84/48	92.7%	87.5%	98.3%
	2015	200	80.9%	73.2%	84.3%
	2016	122	91.6%	88.2%	94.7%
	2017	259	97.6%	96.0%	99.1%
	2018	187	98.6%	94.7%	100.0%

In response to my inquiry, NMFS reported that based on the 2018 study results “while we are still evaluating the data, it does appear that the Milford Project is achieving the downstream passage performance standard.” Their email is contained in Appendix A. Black Bear also noted in response to my inquiry, that because consultation is being re-initiated on the BO, and because the three other projects associated with this BO have not met standards, NMFS may not issue any final written statement on satisfaction of the performance standards for Milford until these issues are satisfied.

Alosines

As noted above, qualitative monitoring studies in 2014 were conducted to evaluate the use of the new fishways and to assess the availability of alosines and adult eels for future quantitative studies. In 2015, Black Bear conducted a pilot downstream radio tagging study of juvenile alosines. The study did not provide meaningful results as almost all of the juvenile river herring (including tagged and control fish) died with 48 hours. As a result, Black Bear did not conduct any quantitative studies of alosine downstream passage in 2016. In 2017, Black Bear evaluated downstream passage of adult American shad. The study demonstrated current overall survival (i.e., including background/natural mortality) at the Project of 86% for American shad. Comments made by PIN on the report providing the 2017 results noted that shad could not have passed through the 1-inch screening at the intakes and survived as reported. Black Bear confirmed that passage through the turbines was an assumption, and that in fact the route used by shad to pass the dam was either through the downstream passage and went undetected, or the transmitters were dislodged from fish impinged on the screens and were washed downstream. Based on the initial 2017 shad results, modifications (installation of weirs) were made to the outer trashracks at Milford in 2018 to improve shad survival. In 2018, downstream passage of adult herring and a second year of shad studies was conducted. These studies showed passage survival estimates for adult river herring of 86.1% (75% CI=82.1-89.7%) and 86.2% (75% CI=82.4-89.9%) for adult American shad. To date, the agencies have not yet stated that the downstream passages for these species are considered safe and effective.

No downstream passage studies for alosines are planned for 2019 at the Milford Project according to their 2019 Study Plan.

American Eel

Black Bear conducted downstream American eel passage in 2016 by studying downstream adult (silver-phase) eel passage utilizing radio-tagged eels from an out of basin supplier. The 2016 study of downstream-migrating American eels demonstrated current overall survival (i.e. including background/natural mortality) at the Project of 90%. There were several comments issued by PIN and USFWS about apparent passing of eels through the trashracks. Gaps were found and repaired. No downstream passage studies for American eel were conducted in 2017 or 2018 and none are planned for 2019.

Based on the materials I reviewed, I believe that similar to upstream passage, Black Bear has been fulfilling their obligations associated with providing and assessing downstream passage of migratory species at this Project. I believe they are in conditional compliance with this criterion at this time. Because downstream passage has not yet been determined by the agencies to be “safe and effective”, I am recommending that a condition be included to notify LIHI once these determinations have been made or if agency findings show significant concern with measures being employed at the Project for downstream passage of Atlantic salmon, alosines or American eel.

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.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard E-1, Not Applicable/De Minimis Effect** in all ZOE's to pass the Shoreline and Watershed Protection criterion for the Project.

There has been no change in the Shoreline and Watershed Protection requirement of the Facility since it was certified by LIHI. No conservation buffer zone, watershed enhancement fund, nor a shoreland management plan were required by the FERC License nor any amendment. Article 417 of the Milford FERC license requires stream bank stabilization measures along potentially impacted shorelines of PIN lands, including Indian and Orson Islands in ZOE #2. A Stream Bank Stabilization Plan was approved by FERC on December 21, 2005, and shoreline stabilization activities (i.e., riprapping of shoreline areas) have been ongoing on Indian and Orson Islands. Reports are to be submitted to FERC summarizing these activities every three years. However, as noted in the 2018 FERC Environmental Inspection, reports for 2014 and 2017 were never submitted, although the applicant's representative stated that the work had nonetheless been done during this period. A report was submitted on November 19, 2018 that summarized the work from 2013-2018⁹. The report also identified the target area for 2019 stabilization activities.

⁹ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15100029>

About 1.2 acres of land is owned by Black Bear within the Project boundary, which contains the powerhouse and related features. Black Bear only has flowage rights of about 3.3 feet above normal pool level around the impoundment. Most of this land is noted as being wooded or “affected” by human use. None of the area under these flowage rights were identified in the application as having ecologically valuable significance. The islands which are surrounded by the Stillwater Branch are apparently owned by the PIN.

I believe the Project currently satisfies this criterion based on current requirements.

The Project Passes Criterion E – Shoreline and Watershed Protection

F. THREATENED AND ENDANGERED SPECIES PROTECTION

Goal: The Facility does not negatively impact listed species.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with Standard F-1, **Not Applicable/De Minimis Effect** for ZOE #1 and **Standard F-3, Recovery Planning and Action** for all other ZOE to pass the Threatened and Endangered Species Protection criterion for the Project.

The endangered Gulf of Maine Distinct Population Segment Atlantic Salmon is a federally endangered species found in the Milford Project area. Two other federally listed species, Shortnose Sturgeon and Atlantic Sturgeon are located in the lower reaches of the Penobscot River, but have formerly been blocked from reaching the Milford Project by two dams, both which have been removed. All three species are addressed in the Biological Opinion, which has incidental take authorization, issued by NMFS in 2012. As previously discussed, the BO contains performance standards to be met for upstream and downstream passage of Atlantic salmon. However, any sturgeon located in the fish lift are captured and released at designated locations downstream of the Milford Project. These procedures are included in a Sturgeon Handling Plan which was last updated in 2017.

Black Bear has submitted Incidental Take Reports each year addressing takes of Atlantic salmon and sturgeon. The total number of Atlantic salmon reported as mortalities 2014 through 2018 are: 2014-four; 2015-eight; 2016-five, 2017-nine and 2018-one. These reports also reported capture and release of two shortnose sturgeon in 2016 and 2018, and one in 2017. Review of emails issued to Black Bear from NMFS in response to mortality reports of salmon did not show any significant concern on the part of NMFS regarding loss of these fish

Black Bear’s consultation with the MIF&W on state protected species indicated that while two state threatened mussel species, brook floater and yellow lampmussel, have been documented in the general vicinity of the Milford Project, Black Bear believes the run-of-river operations would support suitable habitat for these species. Little brown bat (endangered), northern long-eared bat (threatened) and eastern small-footed bat (endangered) were likely to be in the area. However, there are no project facilities that require regular tree clearing activities that could impact these species. As noted in the email contained in Appendix A, Black Bear has committed to consult with

MIF&W if such work is required.

The potential occurrence of the state threatened mussel species was addressed in the past LIHI Certificate through a condition, and a similar condition is recommended again. Also, a second condition is suggested requiring notification to LIHI when that data is received to allow for additional LIHI review if the updated state information shows other species are or may be onsite.

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.

Assessment of Criterion Passage

The Applicant has appropriately selected **Standard G-2, Agency Recommendation** to pass the Cultural and Historic Protection criterion for the Project for all ZOE’s except ZOE #1 for which they selected **Standard G-1, Not Applicable/De Minimis Effect** as that ZOE is upstream of and not affected by the Project.

Pursuant to Article 415 of the Milford Project FERC license, a Cultural Resource Management Plan (CRMP) for the Project was developed and submitted to FERC on May 27, 1999 and approved on November 29, 1999. The CRMP requires annual report submissions on required recovery and protection requirements. The last annual report was submitted in 2014 for 2013 activities, at which time work on the Gut Island and Beaver archaeological sites was not yet complete. It appears that some confusion on the need for submission of annual reports even if there have been no activities, occurred once the Project was purchased by Brookfield. This has since been corrected. Field activities at Gut Island were last conducted in 2003, after which PIN elected to withdraw permission for continued work. Black Bear has stated in the application that all field work is now done and remaining work under the CRMP includes reporting and analysis of artifacts for the Beaver archaeological site, which is located in ZOE # 2. Black Bear submitted its final privileged report to FERC on April 20, 2019.

With completion of reporting and analysis of the recovered artifacts I believe the Project is in compliance with this criterion.

The Project 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.

Assessment of Criterion Passage

The Applicant has appropriately selected **Standard H-1, Not Applicable/De Minimis Effect** for ZOE #1 and **Standard H-2, Agency Recommendation** for the remaining ZOEs to pass the Recreational Resources criterion. ZOE #1 is upstream of and not part of the Project.

All recreational facilities required by Article 412 of the Milford Project's 1998 FERC license were developed shortly after the license was issued. Article 414 requires preparation of a Recreation Use and Facility Report every 6 years that includes: (1) annual recreational and Indian cultural use figures; (2) a discussion of the adequacy of the Project's recreation facilities to meet recreation demand; (3) a description of the methodology used to collect study data; and (4) if there is a need for additional facilities, the licensee's design of the recreational facilities and how such design takes into account the national standards established pursuant to the Americans with Disabilities Act of 1990.

Activities since 2013 include submission of the Recreation Use and Facility Report on December 1, 2016. Also as required by Article 421 of the Milford license, Black Bear consulted with PIN, the United States Bureau of Indian Affairs (BIA), the City of Old Town, Maine, and other affected landowners in 2015 and 2016 regarding whether a canoe portage trail should be constructed around Milford Dam on the west shore of the Penobscot River. Such a portage would be in ZOEs #2 and #4. As the result of these consultations, Black Bear indicated to FERC in January 2016 that this canoe portage is not needed and not advisable due to public safety concerns, the lack of licensee land ownership on this side of the river and the existence of a portage on the opposite side of the river. The City, which owns much of the land on the west side, stated they would consider installing such a canoe portage on their land. Black Bear agreed it would work with the City and PIN to help ensure public safety. Appendix A includes key correspondence on this issue.

The 2018 FERC inspection report indicated that all recreational facilities were in good condition. Based on my review of the materials, I believe the Project has satisfied this criterion.

The Project Passes Criterion H – Recreational Resources

IX. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review, I believe that this Project conditionally meets the requirements of a Low Impact facility and recommend it be re-certified for a five-year period with the conditions noted below. This will ensure satisfaction of the criteria addressing Upstream and Downstream Fish Passage and Threatened and Endangered Species Protection.

1. The Owner shall submit a copy of the Dissolved Oxygen Monitoring Report due in 2023 to LIHI with the submission of the Annual Compliance Statement for that year to confirm compliance with this FERC License requirement.
2. The Owner shall notify LIHI in the Annual Compliance Statements of receipt of agency notification of the following items. Data to be provided includes the documentation provided by the agency and in the case of item (c), the Owner's response to this notice.
 - a) upstream passage for Atlantic salmon has met the performance standards established by the Biological Order in place at the time of this determination, and
 - b) upstream passage of alosines has been determined to be safe and effective, or
 - c) ongoing studies indicate concern that safe upstream passage for these species cannot be assured, and that significant new measures are required at the Project.
3. The Owner shall notify LIHI in the Annual Compliance Statements of receipt of agency notification of the following items. Data to be provided includes the documentation provided by the agency and in the case of item (c), the Owner's response to this notice.
 - a) downstream passage for Atlantic salmon has met the performance standards established by the Biological Order in place at the time of this determination, and
 - b) downstream passage of alosines and/or American eel has been determined to be safe and effective, or
 - c) ongoing studies indicate concern that safe downstream passage for these species cannot be assured, and that significant new measures are required at the Project.
4. If significant drawdowns are scheduled (other than those needed for normal maintenance activities) that may adversely affect protected mussels, or tree clearing activities that may impact protected bats, the owner shall notify LIHI of the license-required consultation with applicable state resource agencies, along with mitigation actions developed to ensure impacts to these protected species are minimized.

LIHI should reserve the right to additionally condition the Project's LIHI Certificate or reconsider the certification decision based on the information provided in response to these Conditions.

APPENDIX A

Stakeholder Letters and Other Key Correspondance



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



JANET T. MILLS
GOVERNOR

GERALD D. REID
COMMISSIONER

April 29, 2019

RE: LOW IMPACT HYDROPOWER INSTITUTE STAGE II APPLICATION FOR RECERTIFICATION FOR THE MILFORD PROJECT (FERC NO. 2534); LIHI CERTIFICATE NO. 113

To whom it may concern:

The Milford Project consists of two dams; the Milford Dam is located on the main stem of the Penobscot River at river mile 33.25, and the Gilmans Falls Dam is located on the Stillwater Branch. The Project is in Milford and Old Town, Penobscot County, Maine. The existing LIHI Certification for the project expires on May 31, 2019.

On March 3, 2019, the Department of Environmental Protection received a request to review its water quality data to ascertain whether the Milford Hydroelectric Project is in compliance with Maine's water quality standards, in support of a LIHI certification renewal.

The Milford Dam is licensed for run of river operations, which includes minimum flow requirements, as well as mainstem and Stillwater Branch allocation requirements outlined in the FERC license, WQC, and fisheries Settlement Agreement. The Gilmans Falls Dam receives flows from the Stillwater branch of the Penobscot River. The Penobscot surface waters upstream and downstream of the project are described Class B waters, the 3rd highest classification by the Department. The Department reviewed its most recent water quality data for surface waters of the Milford Project. The Department has no evidence to suggest that the continued operation of the project will negatively impact the designated uses, numeric or narrative criteria of its classification standards (Class B).

The 2016 Integrated Water Quality and Assessment Report (305b Report) indicates that the main stem of the Penobscot River from Orson Island to the Veazie Dam, including its Stillwater Branch, is categorized as '4-B: Rivers and Streams Impaired by Pollutants – Pollution Control Requirements Reasonably expected to Result in Attainment'. This section shows that, previously, this reach of the river did not attain standards for dissolved oxygen (DO), nutrient/eutrophication biological indicators and dioxins. In 2011, permits were issued by the Department which limited nutrient discharges. These were anticipated to correct existing aquatic life use impairments and this river reach was expected to attain water quality standards by 2014. DO data collected in 2011 and 2012 showed no continued criteria violations. This river reach was also described as impaired by dioxins, PCB legacy pollutants and by mercury, a non-point source pollutant that is the basis of a statewide fish consumption advisory for all freshwaters.

The presence of a fish consumption advisory due to dioxins, PCB's and mercury, for the waters of the Milford Project prevents attainment of Maine's Water Quality Standards, specifically the designated use of "fishing" which requires that fish are safe for human consumption in unlimited quantities. However, non-attainment status from these contaminants is

not a result of the operation of the Milford Project. The Department has determined that project waters meet Maine's water quality standards for nutrients and DO. Further, fish passage facilities are present at the project which accommodate target diadromous fish species including Atlantic salmon, American eel, American shad and river herring. Therefore, the Department supports the recertification for the Milford Project (FERC No. 2534); LIHI Certificate No. 113.

Please feel free to contact me at (207) 446-1619 or via email at Christopher.Sferra@maine.gov if you have any questions regarding this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris O. Sferra". The signature is written in black ink and is positioned below the word "Sincerely,".

Christopher O. Sferra, Project Manager
Bureau of Land Resources



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Maine Fish and Wildlife Service Complex
Ecological Services
Maine Field Office
306 Hatchery Road
East Orland, Maine 04431
207/469-7300 Fax: 207/902-1588

September 11, 2018

Kelly Maloney
Manager of Licensing and Compliance
Brookfield Renewable Energy Group
150 Main Street
Lewiston, Maine 04240

SUBMITTED ELECTRONICALLY

RE: Certification of fish passage facilities at the Milford (FERC #2534), Orono (FERC #2710), and Stillwater (FERC #2712) Projects, Penobscot County, Maine

Dear Ms. Maloney:

Brookfield Renewable Energy Group (Brookfield, or Licensee) is successor to certain obligations of the Lower Penobscot River Multiparty Settlement Agreement (MPA), as well as the provisions of the June 25, 2004 submittal of the MPA (Submittal), which includes additional agreements. The MPA was signed and filed with the Federal Energy Regulatory Commission (FERC) on June 25, 2004. Brookfield is bound by the terms of the MPA and the Submittal as a result of acquiring the assets of the previous owners and Licensees.

This letter addresses MPA and Submittal obligations of Brookfield and the U.S. Fish and Wildlife Service (Service), regarding “certification” of the construction of fish passage facilities. The Service is the only MPA signatory with responsibility for fish passage certification. This letter also triggers the start of a 10 year “safe harbor” period that is noted below and fully described in Attachment A II(c) of the MPA.

MPA Fish Passage Certification

The MPA describes the obligations of the signatories regarding dam removal, improved fish passage, and increased power generation at nine hydroelectric projects on the Penobscot and

Union Rivers.¹ Attachment A to the MPA addresses certain specific fish passage actions that must be undertaken immediately after the effective date of the MPA, as well as those fish passage actions to be undertaken upon purchase of Veazie, Great Works, and Howland Projects, by the Penobscot River Restoration Trust (Trust).² At this time, the Trust has acquired the three projects, removed the Veazie and Great Works Dams, and satisfied the fish passage measures required at the Howland Dam pursuant to the MPA.

The Licensee has constructed fish passage facilities at the Milford, Orono and Stillwater Dams, as required by the MPA. These fish passage facilities were designed and constructed in consultation with State and Federal natural resource agencies and pursuant to the Service 1997 fish passage prescriptions for the three projects, the Service 2004 modified fish passage prescription, and various FERC orders issued circa 2010 through 2016. Attachment A Section II(c) of the MPA provides the following specific language regarding “Certification” of the fish passage facilities associated with the Brookfield projects:

Certification will consist of affirmation by DOI that the licensee has designed and installed the facilities as prescribed, completed a year of testing and fine tuning, and that the facilities are ready for routine operations.

Certification applies to certain fish passage facilities and operational measures that must be implemented by the Licensee. In general, the fish passage facilities and measures required of the Licensee include upstream and downstream fishways for anadromous fish species and American eel at the Milford, Orono, and Stillwater Projects. These fish passage facilities and measures are described in MPA Submittal section III.D(1)(b), MPA Attachment A sections, I(c)(2), I(d)(2), and I(e), as well as in various FERC orders that implement these fish passage facilities and operational measures. Collectively, these documents describe the fish passage facilities and fish passage operational measures that must be built to satisfy the requirements of the MPA. Based on these documents, certification applies to the following fish passage facilities and operational measures:

¹ The MPA provides for removal of the Veazie, Great Works, and Howland Projects (FERC No’s. 2403, 2312, and 2721, respectively), improved fish passage and increased power generation at the Orono, Stillwater, and Milford Projects (No’s. 2710, 2712, and 2534, respectively) and increased power generation at the West Enfield, Medway, and Ellsworth Projects (No’s., 2600, 2666, and 2727, respectively). The Howland Project was only partially removed and a nature like bypass channel was constructed. Power generation has not been increased at the Ellsworth Project, to date.

² In the event that the Trust did not exercise the option to purchase the PPL Hydroelectric Projects, fish passage obligations reverted to the Licensee, with certain certification requirements attached. The Service’s certification obligations related to this contingency are not discussed here.

Milford Project

The Milford Project includes a single powerhouse and appurtenant facilities. Two new generating turbines were installed in empty bays of the powerhouse, as per the MPA. New upstream and downstream passage facilities for anadromous species and American eel were installed, consistent with the MPA. Details of the fish passage facilities are as follows:

1. A shore-based fish lift for upstream passage of anadromous fish species, including:
 - a. a single entrance immediately downstream from the powerhouse;
 - b. an exit channel through the basement of the powerhouse;
 - c. secondary collection facilities in the upper flume for counting, sorting, trapping, and trucking of fishes captured in the fish lift;
 - d. an attraction flow of at least 210 cubic feet per second (cfs) at the fish lift entrance;
 - e. an operation control center computer module; and
 - f. a separate underground viewing facility for public use.³
2. A rubber dam at the spillway crest from approximately mid-river to the east abutment of the spillway.
3. Alteration of the log sluice and removal of the supporting ledge outcrop.⁴
4. An upstream fishway for American eel, to be installed seasonally at the spillway upon the mid-river ledges which abut the rubber dam and flashboard spillway sections.⁵
5. Downstream passage facilities as proposed by the Licensee in the January 12, 1990 Milford Project filing (Response to FERC AIR, Items 10 -13) and prescribed by the Service. Such facilities to include:
 - a. outer trashracks with 1-inch clear bar spacing over the upper 12 feet of the rack, or 4-inch clear bar spacing on the outer rack and 1-inch clear bar spacing on the inner trashracks with two additional entrance ports installed on the inner trashrack;

³ Licensee's *Fish Lift Public Viewing Plan* filed with FERC by letter dated February 28, 2018 proposed a remote fishway viewing location with interpretive signage and a video feed of the fishway viewing window in lieu of the MPA requirement for a separate underground viewing facility for public use. The Service approved this alternative (correspondence of February 2, 2018).

⁴ Alteration of the log sluice and removal of the supporting ledge outcrop has been indefinitely deferred by mutual agreement of the Licensee and the resource agencies in order to retain use of the existing Denil fishway as a contingency (e.g., during periods when the Milford fish lift is out of service).

⁵ The Milford upstream American eel fishway is a modular temporary facility that is installed annually by Brookfield at the center abutment of the spillway when weather and river flows allow for safe installation. Installation of a rubber dam at the Milford spillway in 2013 altered flow conditions such that the American eel fishway was no longer functional. Several new fishway configurations were created from portions of the earlier American eel fishway and tested, but were not successful. A new configuration was installed in 2017 and monitored in 2017 and 2018. The Service and the Maine Department of Marine Resources (MDMR) agree that the facility is effective, when operated in conjunction with upstream American eel passage at the fish lift during night operations. The Service and the MDMR recommended no further monitoring (correspondence of August 10, 2018).

- b. twin 4-foot-wide (8 feet total) weirs at the outer trashrack, capable of passing up to 280 cfs; the location of the weirs is to be west of the edge of the new generation unit (No. 2);
- c. attraction flows to the downstream fishway of 280 cfs;
- d. a gated bottom intake to the downstream migrant facilities for the downstream passage of American eels; and
- e. a downstream migrant conduit designed so that the discharge jet does not impact on any vertical walls.

Orono Project

The Orono Project includes two separate powerhouses.⁶ The two stations share a common intake structure that is located at the west end of the flashboard spillway section. The shared intake structure has a downstream passage facility that is equipped with a surface bypass weir and a deep bypass weir. A trapping facility for upstream migrating anadromous fish is located at the west end of the flashboard spillway section. An upstream passage facility for juvenile American eel is located at the east end of the dam where it penetrates through the overflow section of the spillway. Details of these facilities are as follows:

1. An upstream anadromous fish trapping and trucking facility located at the spillway on the outboard side of the Powerhouse B intake. The trapping facility consists of the following:
 - a. a single gated entrance located in the bypass reach immediately downstream from the spillway;
 - b. an eight foot wide concrete entrance channel with a downward opening manually operated gate designed to maintain an entrance velocity of four to six feet per second;
 - c. an adjustable V-gate;
 - d. a 733 gallon lifting hopper with floor brail crowder, and a blocking/diffusion screen;
 - e. a weir passing up to 35 cfs of attraction flow through the hopper;
 - f. a floor diffusion screen capable of passing up to 95 cfs of attraction flow;
 - g. sorting and loading equipment designed to discharge into a transport tank and truck.⁷

⁶ The original Orono powerhouse is designated "Powerhouse A" and was returned to service in 2008 by refurbishing the turbines and replacing the three failed steel penstocks with a single concrete penstock. Orono Powerhouse B was constructed on the outboard side of Powerhouse A in 2013. It included a new concrete penstock and a new common intake structure which supplies water to the Powerhouse A and B penstocks.

⁷ The transport tank that was initially proposed by the Licensee was designed to move small numbers of Atlantic salmon from the lift hopper to the transport truck. During consultation in 2011, the Service anticipated that large

2. A downstream fish passage system at the Orono Project intakes consisting of the following;
 - a. full depth, angled trashracks with one inch clear spacing;
 - b. a single surface bypass with;
 - i. an 8-foot-wide adjustable entrance weir passing up to 153 cfs with an electrically operated downward opening gate;
 - ii. a 12-foot-wide concrete transition flume with a 3/8 inch clear spacing wedge-wire screened floor that diverts up to 130 cfs of attraction flow into the upstream fish lift;
 - c. a single low-level bypass located at the bottom of the Powerhouse B trashracks at invert elevation 58.1 feet, with;
 - i. a 4.25 feet by 4.0 foot entrance fitted with a 2.5 feet by 1.5 foot bell-mouth weir to provide a uniform acceleration attraction flow;
 - ii. a sloped steel weir box discharging into the concrete transition flume and 3.0 foot wide flow control weir with wooden stop logs.
3. An experimental upstream eel passage facility.⁸ The facility includes the following elements;
 - a. a 20 degree angle concrete ramp approximately 66 feet long, and 4.5 foot wide, with;
 - b. bristle-brush substrate clusters spaced at 25 millimeters on-center;
 - c. a steel cover with hinged access panels;
 - d. an entrance near the west end of the overflow spillway section; and
 - e. an exit penetrating through the overflow spillway section.

Stillwater Project

The Stillwater Project includes two separate powerhouses and intakes. The original Powerhouse A is located at the west end of the dam, while the new Powerhouse B is located at the east end of the dam. Each powerhouse is equipped with downstream passage facilities designed for anadromous fish species and American eel. An upstream passage facility for American eel is included at an overflow section of the spillway, near the middle of the dam. Upstream passage for anadromous species is not required at this time, consistent with the MPA. Fish passage details are as follows:

numbers of river herring might also enter the bypass reach and requested a larger transport tank. The Licensee addressed this comment with modifications to the proposed fish handling equipment.

⁸ The Orono upstream fishway for American eel is an experimental design that was proposed by the licensee. Although the facility nominally meets current Service fish passage engineering design criteria (USFWS 2017), the experimental design was approved by the Service subject to acceptable monitoring and evaluation results. Acceptable results were provided in the Licensee's March 31, 2017 report on upstream American eel passage monitoring at the lower Penobscot River Projects.

1. Downstream fish passage at Powerhouse A, consisting of;
 - a. full depth trashracks with one inch clear spacing mounted at the upstream side of the existing concrete intake piers;
 - b. flume flow of 70 cfs that is split between surface and deep gates;
 - c. adjustable surface gate passing up to 70 cfs;
 - d. deep gate passing up to 50 cfs.
2. Downstream fish passage at Powerhouse B, consisting of;
 - a. full depth trashracks with one inch clear spacing mounted at an angle of 45 degrees to the powerhouse intakes;
 - b. total bypass flow up to 138 cfs;
 - c. a deep gate fitted with a bell mouth weir to create a uniform flow acceleration at the entrance;
 - d. a surface bypass weir with flow control via stop logs;
3. An experimental upstream eel passage facility.⁹ The facility includes the following elements;
 - a. A concrete ramp with sections sloped at 11 degrees to 13 degrees, approximately 36 feet long, and 4.5 feet wide;
 - b. bristle-brush substrate clusters spaced at 25 millimeters on-center;¹⁰
 - c. an entrance upon ledges at the island near the center of the flashboard spillway section.

Certification

The upstream and downstream fish passage facilities described above were constructed at the lower Penobscot River dams in 2012 through 2017. They were built according to Service prescriptions incorporated in the MPA, the designs proposed by the Licensee, and certain modifications pursuant to resource agency consultation. Modifications proposed by the Service during consultation were incorporated. The only exception to MPA design requirements relates to the experimental upstream eel passage facilities at the Orono and Stillwater Projects, as noted above. The Service agreed to these experimental designs with an added requirement that effectiveness studies must be conducted to demonstrate that they provide safe, timely, and effective passage. The required upstream American eel passage studies were completed in 2016

⁹ The Stillwater upstream fishway for American eel is an experimental design that was proposed by the Licensee and is very similar to the experimental Orono upstream American eel fishway described in the previous note. The facility does not meet Service fish passage engineering design criteria and is not endorsed by the Service. The design was approved by the Service based on the monitoring and evaluation results in Licensee's report of March 2018, and associated correspondence with the Service.

¹⁰ The ramp was initially built with a steep transition of bare concrete down to the ledges at the toe of the spillway. This bare, steep, section of ramp presented an obstacle to American eel passage. It was modified near the end of the 2016 passage season to include bristle substrate. The modified fishway was evaluated in the 2017 American eel passage season with results reported in the March 2018 report.

and 2017 to the satisfaction of the Service. The Service has since modified our American eel passage engineering design criteria to encompass the design principles of these experimental facilities.¹¹

Certain modifications were made to some of the fish passage facilities in order to meet design specifications. In particular, the Milford upstream fishway was modified to reduce air that was entrained in the attraction water which caused bubbles that interfered with American shad passage, and possibly the passage of other species. Operational modifications were attempted without success and a wooden baffle was subsequently added to the attraction water supply in August 2016 which improved the hydraulics such that the attraction water could be provided at a rate close to the design capacity without significant amounts of entrained air. Attraction and passage into the primary hopper now appears to function as intended, although the attraction flow is typically set lower than the full design specification. The Milford upstream American eel fishway also required several iterations of design modification, as noted above. These operational issues, design modifications, and evaluation studies of the experimental American eel fishways have delayed MPA certification. However, these fish passage facilities now function as intended. In addition, "...one year of testing and fine tuning." has been addressed at each facility.

The last step in the process is that the facility must be ready for routine operations. The Service interprets this to mean that there is a current approved Operations and Management Plan (O&M Plan) for each facility. This includes having identified spare parts on site so anticipated problems can be fixed immediately. The licensee has addressed the O&M Plan requirement for each of the subject projects. In summary, the Service hereby determines that the fish passage facilities required by the MPA meet all MPA certification requirements.

The Service notes that certification of the projects in accordance with the provisions of the MPA does not conclude that any of the fishways at Milford, Orono, or Stillwater are currently providing safe, timely or effective passage for anadromous fish species in the Penobscot River. Studies of upstream and downstream passage of Atlantic salmon, Alosines, and American eel have been conducted, or are currently underway, to evaluate the effectiveness of fishways at the Milford, Orono, and Stillwater Projects. The results of these studies will be used by the Service to evaluate compliance with fish passage requirements of the FERC licenses for the subject projects.

¹¹ USFWS (U.S. Fish and Wildlife Service). 2017. Fish Passage Engineering Design Criteria. USFWS, Northeast Region R5, Hadley, Massachusetts.

Safe Harbor provisions

With the Certification provided here, the fish passage facilities at the three lower Penobscot River hydroelectric projects are afforded safe harbor from “major changes” (i.e., significant renovation or replacement). The safe harbor provisions are included in MPA Attachment A II(c), which states the following, in part:

...the Restoration Interests will not request that FERC require the licensee to make any "major changes" in the fish passage facilities constructed by the licensee at the Milford, Stillwater, and Orono Projects for a period of 10 years after installation and "certification" of the facilities. ...For purposes of this provision, "major changes" shall mean changes in facilities or operations requiring an expenditure by the licensee(s) of more than an aggregate of \$50,000 in any one calendar year, for modifications at all the projects covered by the safe harbor.

The Service believes this letter completes the certification process. Issues raised by the Service in our letter of February 29, 2016 have been addressed. We commend Brookfield for their patience, cooperation, and responsiveness to issues raised in this novel certification process. If you have any questions regarding this letter, please contact Steven Shepard by email at Steven_Shepard@fws.gov or by telephone at 207/902-1572.

Sincerely,

Anna Harris
Project Leader
Maine Field Office
Maine Fish and Wildlife Service Complex

cc: D. McCaw – PIN
B. Sojkowski, B. Towler – USFWS RO/EN
A. Bentivoglio – USFWS MEFO
J. Murphy, D. Dow, S. McDermott – NOAA
S. Ledwin, G. Wippelhauser, M. Simpson – MDMR
K. Bernier, R. Dill – Brookfield

August 10, 2018 - F.W.S. & Brookfield Correspondence Center Ledge Eel Fishway

From: Shepard, Steven
To: [Dill, Richard](#)
Cc: [Gail Wippelhauser](#)
Subject: Millford Center Ledge eel fishway
Date: Friday, August 10, 2018 11:16:51 AM

Richard

Gail and I have talked further about operation of the subject fishway. The studies have demonstrated the efficacy of the fishway. There is no need to continue trapping at the center ledge eel fishway. In the future, it should be operated with a volitional exit and no trapping tub. This will allow eels to continue night migration and seek refuge in daytime, reducing any potential predation on daytime releases.

I also recommend removing the fishway in the event that very large flows are forecast (e.g., a late summer hurricane). As you know, this has been the past practice to reduce the chance of damage or loss.

Steve

~~~~~ Steven  
Shepard, C.F.P.  
U.S. Fish and Wildlife Service  
Direct: 207-902-1572 Telework:  
584-5950  
Mobile: 207-949-1288  
~~~~~

Government is not a warfare of interests—Woodrow Wilson

Print

Date: Wednesday, April 10, 2019 2:10 PM
From: Jeff Murphy - NOAA Federal <jeff.murphy@noaa.gov>
To: Patricia <pbmwork@maine.rr.com>
Subject: Re: MilfordIProject LIHI recertification application

Hi Pat - From an Atlantic salmon perspective, yes to Question 6. Brookfield has made great efforts meet their obligations. Thanks again, Jeff.

On Wed, Apr 10, 2019 at 1:42 PM <pbmwork@maine.rr.com> wrote:

Jeff

Thank you very much for your quick and concise reply. I assume from your response that there are no other general comments to question 6 that you wish to share...unless you send me some back.

Pat

---- Jeff Murphy - NOAA Federal <jeff.murphy@noaa.gov> wrote:

> Hello Pat - Regarding Question #2, I can confirm that the upstream passage
> performance standard for Atlantic salmon has not been achieved at the
> Milford Project to date. Regarding downstream passage for Atlantic salmon,
> while we are still evaluating the data, it does appear that the Milford
> Project is achieving the downstream passage performance standard.

>

> I will defer to Steve and Gail to your other questions. Thank you, Jeff.

>

> On Wed, Apr 10, 2019 at 12:06 PM <pbmwork@maine.rr.com> wrote:

>

> > Hi folks

> >

> > I am the reviewer for the application made by Brookfield (or Black Bear)
> > for recertification of the Milford Project. I have been through their
> > application and read many of the reports submitted on fisheries issues. I
> > would like your thoughts on the following questions. If you are planning on
> > submitting a letter directly to LIHI, you can also address these questions
> > in that letter. Or if its easier for you, you can simply respond by email
> > to me. Alternatively, if you would prefer that we talk over the phone,
> > please send me a note and tell me when (date and time) such a call would
> > work for you. I appreciate any feedback you can provide to me.

> >

> > 1) Are you satisfied that the problems at the Project that resulted in the
> > eel kill in 2014 and river herring kill in 2017 have been appropriately
> > resolved in terms of physical modifications and procedural changes?

> >

> > 2) Can you confirm from your perspective, whether or not the performance
> > standards established by the Biological Order have been met yet for the
> > downstream and upstream passage of Atlantic salmon?

> >

> > 3) I understand that quantitative effectiveness testing was conducted in
> > 2015 but the methodology was found to not accurately measure passage
> > effectiveness. The application also states that it was been agreed that
> > upstream passage of alosines has been good and that using fish counts at
> > the lift was sufficient for 2016 through 2018. So can it be interpreted
> > that additional quantitative testing will not be required immediately but
> > may be some time in the future?

> >

> > 4) I understand the 2015 study of downstream passage of juvenile alosine
> > did not provide meaningful results. I also understand that downstream
> > passage of adult American shad and river herring was conducted in 2016 and
> > 2017. Can you provide me your perspective on the need for future testing of
> > downstream passage of juvenile alosine and whether more testing will be
> > required for American shad and river herring based on the results of the
> > 2018 studies?

> >

> > 5) The application states that it was agreed by your organizations that
> > upstream passage of American eel has been successfully demonstrated as of
> > 2018 studies. Do you agree with this statement? Also, based on the results

From: [Maloney, Kelly](#)
To: pbmwork@maine.rr.com
Cc: mfischer@lowimpacthydro.org
Subject: FW: RE Penobscot projects endangered and threatened species list inquiry
Date: Monday, May 6, 2019 9:55:04 AM

Pat,

Please see below for information on state listed species for Milford. Please note, because we are a run-of-river facility, we do not fluctuate the impoundment and therefore would expect to support listed mussel species habitat.

There is no transmission line associated with the Project. As such, we generally do not engage in tree clearing activities that would affect endangered or threatened bats nor bald eagle. Should we have to conduct any of these activities, we would coordinate as required with the agencies.

Thank you,
Kelly

From: Frechette, Allison
Sent: Friday, May 03, 2019 1:37 PM
To: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: FW: RE Penobscot projects endangered and threatened species list inquiry

Hi Kelly just heard back from the state on Milford!

From: Settele, Rebecca <Rebecca.Settele@maine.gov>
Sent: Friday, May 03, 2019 11:59 AM
To: Frechette, Allison <Allison.Frechette@brookfieldrenewable.com>
Cc: Perry, John <John.Perry@maine.gov>
Subject: RE Penobscot projects endangered and threatened species list inquiry

Hi Allison,

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

Creeper (Special Concern)
Brook floater (State Threatened)
Yellow lampmussel (State Threatened)

Note: Bald eagles have been documented in the Project area. Until recently, bald eagles were listed as a Species of Special Concern in Maine. However, eagles continue to be protected under the federal Bald Eagle and Golden Eagle Protection Act ("Eagle Act") as well as other federal laws.

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.

Becca

Becca Settele

Wildlife Biologist

Maine Dept of Inland Fisheries & Wildlife
Wildlife Division
650 State St
Bangor ME 04401
(207)941-4438
mefishwildlife.com | [facebook](https://www.facebook.com/mefishwildlife) | [twitter](https://twitter.com/mefishwildlife)

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

Brookfield

Brookfield Renewable Energy Group
Black Bear Hydro Partners, LLC
1024 Central Street
Millinocket, ME 04462

Tel 207.723.4341
Fax 207.723.4597
www.brookfieldrenewable.com

January 13, 2016

Milford Project, FERC No. 2534 Article 421

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

RE: Milford Project (FERC No. 2534), Article 421 Compliance Canoe Portage on West Shore of Penobscot River

Dear Secretary Bose:

Article 421 of the April 18, 2005 amended FERC license for the Milford Project states, in part, that:

"If the Veazie and Great Works dams are removed from the Penobscot River as contemplated by Section VI of the June 2004 Lower Penobscot River Multiparty Settlement Agreement, the licensee, within two (2) years from the date removal of both dams is completed, shall consult with the Penobscot Indian Nation (PIN), the United States Bureau of Indian Affairs (BIA), the City of Old Town, Maine, and other affected landowners regarding whether a canoe portage trail should be constructed by the licensee around the Milford Dam on the west shore of the Penobscot River and file with the Commission a report on such consultation".

The Great Works and Veazie dams were removed in 2012 and 2013, respectively, thus triggering this license Article requirement for 2015. Thus, Black Bear Hydro Partners, LLC (BBHP), licensee for the Milford Project, convened a meeting on December 29, 2015 to satisfy this requirement, inviting PIN, BIA, the City of Old Town (Old Town), and affected landowners.

As indicated in the attached meeting summary, which has been reviewed and approved by the meeting participants (see attached correspondences). BBHP indicated its position at the meeting that a canoe portage on the west side of Milford Dam is not needed and not advisable, the primary reasons being:

1. BBHP already has a canoe portage on the east side of Milford Dam.
2. The existing canoe portage is rarely, if ever, used.
3. River flows are directed to the east side of the river, so the existing canoe portage is appropriately located.
4. BBHP has limited ownership interests on the west side of Milford Dam.
5. A canoe portage on the west side of Milford Dam would pose significant public safety challenges.

Brookfield

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Despite these BBHP concerns, PIN and Old Town both indicated their interest in a canoe portage on the west side of Milford Dam. Due to this interest, and since Old Town owns most of the land on the west side of the dam, Old Town indicated its intent to create a canoe portage trail on their property. Although this canoe portage would not be on BBHP property (nor in the Milford Project FERC boundary), BBHP indicated its willingness to work with Old Town and PIN to ensure that public safety concerns are addressed, e.g., ensuring that recreationists remain well upstream of the dam and boater barrier, and away from the steep and rocky shoreline and riverbed immediately downstream of the dam.

Each of the parties agreed with this approach and to work collaboratively on a canoe portage trail on the west side of the Penobscot River, whereby the portage would be located on City of Old Town property and outside of the Milford FERC Project boundary.

Please do not hesitate to contact me at (207) 723-4341, x118 if you have any questions.

Sincerely,



Kevin Bernier
Senior Compliance Specialist

Attachments

CC: K. Maloney, J. Seyfried, K. Murphy, J. Cole, T. Zarrella, B. Brochu, E. Deluca, B. Smith;
BREG
J. Banks, J. Mitchell; PIN
B. Mayo, D. Russell; City of Old Town

BREG File: 2534/1

Consultation Meeting for Milford Project Canoe Portage
December 29, 2015, 9:00 a.m.
City of Old Town Municipal Office
Meeting Notes

Attendees:

Kevin Bernier, James Cole, Bob Brochu; BBHP
John Banks, Jason Mitchell; Penobscot Nation
Bill Mayo, David Russell; City of Old Town

Background:

One of follow-up actions to the June 2004 Settlement Agreement for the Lower Penobscot River was for the Milford Hydroelectric Project licensee (Black Bear Hydro Partners, LLC, or BBHP) to consult with the Penobscot Indian Nation (PIN), the United States Bureau of Indian Affairs (BIA), the City of Old Town, and other affected landowners as to whether a canoe portage trail should be constructed by the licensee around Milford Dam on the west shore of the Penobscot River. FERC incorporated this requirement into its April 2005 license amendment for the Milford Project (FERC No. 2534), which included a 2 year trigger following removal of the Great Works and Veazie dams downstream of Milford. Article 421 of the April 18, 2005 amended FERC license for the Milford Project specifically states, in part, that:

"If the Veazie and Great Works dams are removed from the Penobscot River as contemplated by Section VI of the June 2004 Lower Penobscot River Multiparty Settlement Agreement, the licensee, within two (2) years from the date removal of both dams is completed, shall consult with the Penobscot Indian Nation (PIN), the United States Bureau of Indian Affairs (BIA), the City of Old Town, Maine (City), and other affected landowners regarding whether a canoe portage trail should be constructed by the licensee around the Milford Dam on the west shore of the Penobscot River and file with the Commission a report on such consultation".

The Great Works and Veazie dams were removed in 2012 and 2013, respectively, thus triggering this license Article requirement for 2015. Thus, BBHP convened a meeting on December 29, 2015 to satisfy this requirement, inviting PIN, BIA, the City of Old Town, and affected landowners.

Meeting Summary:

BBHP, with assistance from PIN, summarized the background that led to the 2005 Milford Project FERC license requirement for parties to discuss the need for a canoe portage on the west (Old Town) side of Milford Dam. BBHP indicated its position that a canoe portage on the west side of Milford Dam is not needed and not advisable for the following reasons:

1. A canoe portage already exists on the east (Milford) side of Milford Dam.
2. Observations by BBHP staff indicate that the canoe portage is rarely, if ever, used.
3. Since the installation of an inflatable flashboard system at Milford Dam in 2010, along with new fish passage facilities that were completed in 2014, river flows at Milford Dam are now directed to the east (Milford) side of the river to promote fish passage at the Project. Therefore, the existing canoe portage is appropriately located on the side of the river where flows are now intentionally directed.

4. Compared to the east (Milford) side of the river, BBHP has limited ownership interests on the west (Old Town) side of Milford Dam; these interests and land ownership are not sufficient to accommodate a second canoe portage on BBHP property.
5. Due to the steep and rocky shoreline downstream of Milford Dam, and the presence of a large building (called the River House) directly abutting the river at and upstream of the dam, a canoe portage on the west side of Milford Dam would pose significant public safety challenges.

Despite these BBHP concerns, PIN and the City of Old Town both indicated their interests in a canoe portage on the west (Old Town) side of Milford Dam. PIN said that the tribe has started an initiative to promote cultural tourism in the area, which includes educational trips on the Penobscot River. PIN said that it also worked with stakeholders to host a national whitewater boating championship on the Penobscot River in 2015, which was based on the west (Old Town) side of the river. PIN believes that this championship will continue to be held at this location for at least the next two years, and it would be beneficial to memorialize a portage route on the west side of the river for kayakers and canoeists. PIN and the City of Old Town agreed that lower river flows are present on the west (Old Town) side of the river under current dam operations, but suggested that the whitewater boating event could be held earlier in the year when river flows are typically higher.

The City of Old Town agreed that a portage route on the west (Old Town) side of the river would be beneficial due to the presence of a city park in the area and recreational use associated with the whitewater boating championships and other events. The City of Old Town also indicated that they own virtually all of the land on the west (Old Town) side of Milford Dam, and thus, questioned if there were any obstacles to them laying out a canoe portage on City property. There is already a graveled access point to the river at the park downstream of Milford Dam (which is maintained by the Old Town fire department for river rescues), and just some minor groundwork would be needed upstream of the dam and River House to create a canoe take-out.

BBHP replied that to its knowledge, the City of Old Town could do what they wanted on City property, including designating a canoe portage trail on the west (Old Town) side of Milford Dam where BBHP has limited ownership interests. However, BBHP indicated that it would be interested in working with the City of Old Town and PIN to ensure that public safety concerns are addressed with such a trail in the vicinity of Milford Dam, e.g., ensuring that recreationists remain upstream of the boater barrier and away from the steep and rocky shoreline and riverbed immediately downstream of the dam on the west (Old Town) side of the river.

Each of the parties agreed with this approach and to work collaboratively on a canoe portage trail on the west (Old Town) side of the Penobscot River; such a portage would be located on City of Old Town property and outside of the Milford FERC Project boundary.