Appendix 18

Comments filed on the Draft WQC Order (August 2021)

a) United Steelworkers (July 27, 2021)
b) Senator Brad Farrin (August 2, 2021)
c) Representatives White and Madigan (August 11, 2021)
d) Christine Keller (August 13, 2021)
e) MDMR (August 18, 2021)
f) Kennebec Coalition (August 18, 2021)
g) Town of Fairfield (August 18, 2021)
h))Sappi (August 18, 2021)
i) BWPH Withdrawal of Shawmut WQC Application (August 18, 2021)

LOCAL 4-9

July 27, 2021

Kathy Davis Howatt
Hydropower Coordinator
Bureau of Land Resources
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Re: Shawmut Hydroelectric Project FERC No. 2322
Section 401 Water Quality Certification (DEP Application #L-19751-33-H-N)

Dear Kathy:

I am writing on behalf of my membership of 470 United Steelworker members that work at the Sappi Somerset Plant in Skowhegan. While many of my members are experienced outdoors men and women, they understand the balance between maintaining an environment that supports our fisheries and wildlife as well as their workplace. Statistics have shown that for every paper mill job, seven jobs in the outlying communities are also supported.

Our plant in Skowhegan has been extremely fortunate in that we have been able to attract significant capital improvements over the years which has helped us maintain our competitive edge in several markets. We have had to react to declining markets by diversifying and today continue to service several different markets in order to protect our assets and by extension our very jobs. Closing the Shawmut Dam would have extensive costs upwards of 50 million dollars in the beginning phases of the project with the potential for annual maintenance costs moving forward for years. From many of my members perspectives, spending our capital improvement funding should be focused on continuing to diversify to protect our jobs and maintain our competitive edge in the markets that we are successful in.

My members are also aware of effective fish passage facilities that have been cost effective with limited adverse effects as well as maintaining compliance with state water quality standards. I have also been contacted by IBEW members from Sister Locals that would be adversely affected by the loss of their jobs upon removal of dams in the State of Maine. On

behalf of my members that work at the Sappi facility, we ask that the Maine DEP support our jobs by not decommissioning the Shawmut Dam, but to construct fish passage ways as a means to support the recovery of diadromous fish in the local region.

Thank you,

C. Patrick Carleton
President, United Steelworkers Local 4-9

State of Maine
130th Maine State Senate

August 2, 2021

Melanie Loyzim, Commissioner
Maine Department of Environmental Protection

Via email: melanie.loyzim@maine.gov

Dear Commissioner Loyzim:

It is my understanding that your department is due to make a ruling on a water quality certification in relation to the relicensing of the Shawmut Dam on the Kennebec River within the next few weeks. I write to point out the significance of this certification and the extremely negative impacts that a failure to issue the new license would have on people and communities in the Kennebec River region.

The greatest impact of removing the Shawmut Dam would be the loss of jobs. This not only includes the employees who work at this facility, but also the SAPPI paper mill in Skowhegan, which the owners have said would be forced to close if the dam is removed.

Beyond the loss of 725 mill jobs and hundreds of others that depend on the mill, the Town of Skowhegan would lose its first, second, and sixth biggest property tax payers in SAPPI, Brookfield, and the Maine Water Company, altogether accounting for more than $1.5 million.

As to water quality specifically, the Federal Energy Regulatory Commission (FERC) recently issued a Draft Environmental Assessment for relicensing the Shawmut Dam. This assessment concluded that water quality related to the dam is consistent with state standards and would remain so going forward if the dam remained in place.

From the assessment: “Today, water quality at the Shawmut Project and those waters upstream and downstream are at levels that are consistent with the levels stipulated by state water quality standards. Kennebec River flows have also significantly benefitted from the coordinated operation of the upper basin storage reservoirs, reregulation of flows at the Williams Project, and run-of-river operation of all the lower river hydropower projects, including Shawmut (p.73).”

In addition, “Brookfield’s proposal to continue to operate in a run-of-river mode with impoundment fluctuations limited to no more than 1 foot below the normal reservoir level would result in infrequent and minimal disturbances to aquatic and riparian habitat.”

As you know, FERC regulates more than 2,500 dams, 102 of them here in Maine, so that its opinion on these matters is both experienced and expert.

Thank you for your attention to this matter. I have no doubt that you will give the decision regarding the certification your usual professional treatment.

Sincerely,

Sen. Brad Farrin

Maine State Senate District 3

HOUSE OF REPRESENTATIVES
2 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0002
(207) 287-1400
TTY: MAINE RELAY 711

August 11, 2021

Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0021

Re: Potential Shawmut Dam removal impacts

To whom is may concern:

We are writing to express our support for relicensing of the Shawmut Dam in the Kennebec River in Maine. The towns we represent, all of Waterville and part of Oakland, are close to the dam and it is of great importance to the people there. Of particular concern is the economic importance of the Sappi Mill, which relies upon the dam for its continued operation.

The removal of the dam, or even a dramatic lowering of water around it, would have a serious detrimental economic impact on the region. The Sappi plant is one of the largest employers in the area, and is also a major property tax payer. The plant depends on the dam for its freshwater intake and its wastewater systems, and without adequate water the plan cannot operate.

We are advocating acceptance of the FERC environmental assessment concerning the dam, as it would allow the mill's water intake and wastewater infrastructure to remain in operation. Any ruling which would call for the removal of the dam, or make major changes to it, would negatively impact the people and businesses who live and work in the surrounding communities.

Thank you very much for your consideration.

Sincerely,

Bruce A. White

Bruce White
State Representative

Colleen M. Madigan

Colleen Madigan
State Representative

CHRISTINE KELLER

SOMERSET COUNTY RESIDENT & TAXPAYER • miltoncpk@gmail.com

August 11, 2021

Federal Energy Regulatory Commission
Docket # P-2322-069

Regarding: **Proposed removal of Kennebec River dams**

I am writing to you in opposition of the proposal to remove Kennebec River dams in the municipalities of Skowhegan, Fairfield/Shawmut, Waterville and Winslow due to the catastrophic fiscal economic impacts in the entire central Maine region to include major business employers, tax-base/taxpaying residents, and those currently utilizing the existing resources recreationally and as waterfront owners - that will be negatively impacted if this were to proceed. The erosion and railroad destabilization are also contradictory to the preservation this initiative claims to support.

This proposal was put forth in an underhanded and nefarious manner to circumvent the required and appropriate process that should include all entities that will certainly be impacted. It is an outright falsehood to purport this has no fiscal impact, when indeed the toll to central Mainers would be in the multiple millions of dollars. Several municipalities only received notification just days before the original scheduled public hearing – not meeting the straight-face test or existing requirements. This is reprehensible for agents of the State > who swear the same oath of office - as the municipalities they seek to undermine.

- Dam removal proposals are being put forward as no financial or other impact to the municipalities - when in fact there's millions of dollars of impact to the taxable base that will be lost and cannot possibly be made up the alleged fishing/recreation this is purported to create, it is fiction at best.
- Major employers for the entire central Maine region will be crippled: Pan Am Railway, Sappi's & Hutamaki's cooling system would be above water level (millions of dollars to address), both Sappi & Hutamaki have approved & compliant river water system permits issued by the State of Maine; since when does one State agency seek to undermine the authority of a fellow State agency? Since when is this not considered fiscal impact?
- The Lockwood Bridge reconstruction design already underway that incorporates the dam in Waterville/Winslow > thousands of dollars have been spent in design and planning – to just be thrown out as no fiscal impact?
- The Railroad-owned tracks that service Sappi daily > that runs along and in some cases islands over the river will be irreparably destabilized, the comprehensive erosion that would ensue, and infrastructure this would destroy; unfathomable (considering proposal is being touted from an environmental perspective).
- The Skowhegan River Run project > a dozen plus years of investment in the tens of thousands, and time spent. Not to mention the clean energy "green" power that these dams generate. All this amounts to zero municipal impact? Talk about a slap in the face to the entire central Maine region.

The "additional" subsequent fishing licenses they purport will be issued - all to afford salmon access to the Sandy River in Norridgewock/Starks - won't be accessible nor practical with the lowered water levels. Exclusive few will have access opportunities due to primarily private owned waterfront.

And speaking of these private riverfront tax paying property owners - their waterfront property values will drop - not to mention those that have additionally invested in boats, float planes. Erosion will result in more homes being structurally jeopardized given the last dam removed resulted in landslides destroying homes and cemeteries that were falling down into the destabilized and eroding riverbanks. How quickly and conveniently the supporters of this devastation forget! What little money generated in fishing licenses this begets will not offset the millions of tax revenue dollars, central Maine's leading employers' expenses to modify, and property tax value losses for this.

Further - removing existing dams > that already generate power (exponentially far more that neighboring solar farms) - is counter to the many mandated green initiatives. I quite frankly can't understand how this could even be a consideration on the table given this is fully functioning existing infrastructure in our “green” footprint.
I'm all for wildlife preservation, but not counter-productive proposals - the pros of this proposal do not outweigh the many cons. Our region cannot sustain such catastrophic financial losses; expenses that will ultimately be placed back onto the taxpayers in several forms, will decimate our major employers/employee base, the funding is not replaceable – nor in line with sustainability or retention of Mainers who might be forced to leave the region is jobs desist.

Shepherding fish to the Sandy River is not the end all solution to save Atlantic salmon either – should dams be removed as proposed, there will be no water left in the Sandy River for them to access – this waterway is already shallow and would be reduced to no more than a trickle if dams were removed. Fishways will provide a much greater opportunity over removal.
Dam removal initiatives have been made based on idealisms, narrow agendas, and without any regard for the catastrophic fiscal and environmental impacts this would have for the Kennebec watershed & Central Mainers in totality – it is irresponsible, reckless – and severely lacking in facts and science.

We each are responsible for the footprint we leave - and pass forward to the future generations, Maine attempts to purport itself to be a leader in these matters of environmentally friendly ‘living green’, while energy and living costs rise exponentially. We’ve seen the exodus - Mainers can’t afford to live & recreate in our state economically, this lopsided fantasy proposal undermines on every level.

The focus should be turned to fishway implementation compliance; a matter that Brookfield Renewable has and continues to invest millions of dollar in.

We each have our part and responsibility in these economic and environmental matters to do what is right for Maine; her people, our businesses, our leading employers, and for our future generations. I thank you for your time and your careful consideration; please oppose this unrealistic proposal.

Respectfully Submitted,

Christine Keller
Municipal Employee, Lake Board Officer, Kennebec River boating/paddling enthusiast of Central Maine
Registered Voter & Taxpayer, and employee of the specific region that will be negatively impacted

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

August 18, 2021

Kathy Davis Howatt
Hydropower Coordinator, Bureau of Land Resources
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333

RE: Comments on Brookfield White Pine Hydro, LLC's Shawmut (FERC No. 2322) Hydroelectric Project

Dear Ms. Howatt:

The Maine Department of Marine Resources (MDMR) provides the attached supplemental comments for consideration in the water quality certification process. Of particular note, the University of Maine, in partnership with MDMR and others, has recently developed a bioenergetics model for migrating salmon using Kennebec specific data. The initial findings of that analysis and interpretations are provided. MDMR is also providing additional summarized information on fish passage delays and more comprehensive data on sea-lamprey passage considerations.

Please contact Gail Wippelhauser at gail.wippelhauser@maine.gov or at 207-904-7962 if you have any questions.

Sincerely,

Sean Ledwin, Director
Bureau of Sea-Run Fisheries and Habitat

Summary of Passage Delays at State of the Art Fishway at Milford

Studies conducted in the Penobscot River at the Milford Project show significant upstream passage delay of Atlantic Salmon similar to those that would likely occur at Shawmut. Upstream adult Atlantic Salmon studies were conducted by Black Bear Hydro Partners (BBHP; a subsidiary of Brookfield Renewable Energy Group) in 2014 and 2015 and concurrent studies were conducted by University of Maine (UM) in the same years at the Milford Project. In the 2014 BBHP study, delay times at Milford ranged from 1.9 hours to 36.9 days, but results were confounded by the fish lift being shut down for multiple periods during the study (ATS Species Protection Plan 2014 annual report filed with FERC March 24, 2015). In the 2015 BBHP study, 49 fish were tagged and 47 were included in the delay estimate. In 2015, delay times ranged from 2.5 hours to 35 days, with 17% of tagged fish passing within 48 hours and 46% within 1 week (ATS Species Protection Plan 2015 annual report filed with FERC May 31, 2016). In the 2014 UM study, 22 fish were tagged but only 10 were included in the delay estimate. In 2014, delay times at Milford ranged from 1.2 hours to 76 days, with 50% of tagged fish (n=10) passing within 48 hours and 70% of tagged fish passing within 1 week (Izzo 2016). In 2015, the UM study tagged 49 fish and found delay times ranged from 7.4 hours to 26 days, with 34.7% of tagged fish passing within 48 hours and 63.2% passing within 1 week (Izzo 2016). In 2018, Rubenstein (2021 Thesis Defense) found that the average approach time to Milford Dam was 4.0 days and 23 days spent below the dam before passing. In 2019, the approach time to Milford Dam was 4.0 days while delay time was 11 days. This fish lift is considered "state of the art" yet the false attraction and small entrance areas inherent at these large, complex sites, similar to Shawmut, will result in significant delays.

Pre-Spawner Mortality and Loss of Iteroparity from Fish Passage Delays for ESA Listed Salmon

Recent research by the University of Maine at Orono, in collaboration with MDMR, indicates that Atlantic Salmon delayed below both Lockwood Dam and Milford Dam experience substantially greater temperatures than they would if their migration to cold-water holding areas in the vicinity of spawning habitat was unimpeded. Exposure to these high temperatures, which often exceeded thermal stress levels for the species, is associated with increased metabolic costs, depletion of energy stores, and reductions in spawning success, survival, and rates of repeat spawning (Rubenstein 2021 Thesis Defense). The bioenergetic model developed for this project based on Lennox et al. (2018), field validation of the model, and actual Kennebec and Penobscot Atlantic Salmon lipid readings, temperature, run timing, and passage efficiency data suggests that the expected delays at these fishways are significantly reducing the probability of spawning success and iteroparity. This impact of delay is well established for sea-run species in the literature (Glebe and Leggett 1981; Jonsson et. al. 1997; Bowerman et. al. 2007; Martin et al. 2015; Fenkes et al. 2016).

This new information shows that reasonable estimates of delay at four dams based on similar fish lifts at Lockwood and Milford, which MDMR would expect would be similar to the Shawmut project, results in an increase in the number of fish that would run out of energy before spawning, presumably to die unless they abandoned their migration (Rubenstein 2021 Thesis Defense). The model estimated the resulting pre-spawn mortality based on Kennebec specific

temperatures was 6.8% for zero dams, 10.7% for one dam, 18.1% for two dams, 26.9% for three dams, and 45.5% for four dams. That translates to a 38.7% increase in pre-spawn mortality for fish traveling up to the Sandy River compared to a no dam scenario, a previously unquantified estimate. This effectively means more than one out of three returning adults would die prior to spawning because of delays caused by the dams. In addition, this research shows that reasonable estimates of delay at four dams result in a 65% decrease in the number of fish that would have the energy to recondition after spawning, which allows fish to return to spawn again in subsequent years, between the zero dam scenario and the four dam scenario. The ability to spawn multiple times is foundational to Atlantic Salmon populations across their range (Fleming 1996; Lawrence et al. 2016; Bordeleau et al. 2020). This estimate does not take into account downstream passage efficiency at hydro projects, which is an additive source of mortality. That added mortality of downstream passage was predicted by NOAA to be 49%-58% in their August 28, 2020 preliminary prescription for the Shawmut project. Combined impacts of upstream delays and poor downstream survival essential eliminate this important life history characteristic, further diminishing the chances of attaining self sustaining populations with four dams between spawning grounds in the Sandy River (Lawrence et al. 2016).

MDMR reran its Atlantic Salmon model using only smolt production in the Sandy River (0-4 dams; 97% downstream passage efficiency; marine survival of 0.0108; and either 96% upstream passage efficiency survival) at each dam or the estimated pre-spawn survivals resulting from passage delays (Rubenstein 2021 Thesis Defense). With all dams in place, the estimated mortality due to delays reduces the number of adult returns by 36% compared to Brookfield's proposal of 96% at each dam (Table 1). This is a significant loss that would likely preclude recovery prospects for Atlantic salmon just through this mechanism.

Table 1. Comparison of modeled adult Atlantic Salmon returns under Brookfield proposed passage efficiencies (i.e. survival) and with the pre-spawn survival as estimated by Rubenstein (2021). Smolt production is either: Low (1 smolt/100m2) or High (3/100m2).

Scenario	4 dams Low	4 dams High	3 dam Low	3 dam High	2 dams Low	2 dams High	0 dams Low	0 dams High
BREG 96/97 passage	87	262	105	316	125	376	189	918
Pre-Spawn Survival & 96/97	56	168	87	261	11	334	183	891
Decrease (%)	36	36	17	17	11	11	3	3

Dams are thus associated with and causal to increased mortality of post-spawn Atlantic Salmon, as reflected in the rates of repeat spawning in dammed rivers: repeat spawning rates in the Penobscot River (Maine, c.1%) and the St. Johns River (New Brunswick, 1.2%) are much less than in undammed systems (Maynard et al. 2018, Bordeleau et al. 2020). Because most repeat spawning Atlantic Salmon are female (Fleming 1996, Bordeleau et al. 2020), the loss of repeat spawning related to impacts of delays at dams translates into a direct reduction of potential egg production for the river system. Repeat spawners are larger and produce more eggs than maiden spawners; for example, in the Trinité River (Quebec) and Mirimichi River (New Brunswick), repeat spawners were estimated to produce nearly 2000 more eggs then maiden two sea-winter

females. Further, repeat spawners can buffer populations against years with high mortality of post-smolts at sea, as repeat spawners represented a greater proportion of the total Atlantic Salmon run in years when returns of maiden spawners were low (Bordeleau et al. 2020). Consequently, these older, larger, repeat spawning females are critical for population resilience (Hixon et al. 2014; Bordeleau et al. 2020) and reducing the persistent, fixed source of mortality for post-spawn Atlantic Salmon associated with delays at dams is imperative for population recovery. Given that delays at Milford and Lockwood dams both significantly exceed the proposed averaged 48-hour passage standard for upstream migrating adults, MDMR considers it highly likely that passage delays at Shawmut will also be long enough to produce biologically significant decreases in survival and the probability of repeat spawning. This new information demonstrates that the cumulative effects of these delays would certainly preclude the ability to recovery Atlantic Salmon in the United States. Lawrence et al (2016) found kelt survival is key to population persistence. Lawrence et al. (2016) found that *"As the number of dams increases from one to four, the probability of negative population growth increases four-fold. Kelt survival rate, number of dams, and smolt dam passage survival were all found to be significant factors in predicting population persistence. The present study suggests two primary conclusions: (i) dams are likely to have a negative influence on Atlantic salmon; and (ii) kelts have considerable and positive influence on population viability."* In addition, in their Augusta 28, 2020 preliminary prescription for the Shawmut project, NOAA predicted that the overall survival of kelts through the four projects cumulatively would be 42% to 51%, an incredibly low number of fish that would preclude the important life history trait of repeat spawning. The losses of smolts and kelts on the magnitude of what is expected, along with other impacts of these projects, make recovery of self-sustaining populations of salmon nearly impossible.

Summary of Existing Information on Sea-Lamprey Passage

On the Connecticut River, Castro-Santos et al. (2016) reported that 64% of entries into fish passage structures occurred at night (i.e., between sunset and sunrise); in fact, entry rates were as much as 24.4 times greater at night. In a study on the River Mondego, (Portugal), Pereira et al. (2016) found that most detections of Sea Lamprey in a vertical-slot fish pass occurred at night, i.e., between dusk and dawn (88% in 2014 and 75% in 2015). Data from fish passage facilities in Connecticut indicate that in the early part of the upstream migration period, lamprey enter fish passes exclusively at night. As the run progresses, however, lamprey may enter at any time (Steve Gephard, CTDEEP Fisheries, pers. Comm. Old Lyme, CT). At the Westfield River fish passage facility in Massachusetts, nearly all lamprey pass at night (Caleb Slater, Massachusetts Division of Fisheries and Wildlife. Pers. Comm. Westborough, MA). In 2020, lamprey passage occurred primary in the evening and early morning hours at the Milford fish lift (31/45 fish or 68.8%), with many of those occurring in the early morning (e.g. 1am EST) (Figure 1; MDMR, unpublished data). In 2021, DMR, USGS, and University of Maine found a similar pattern when tracking movement of 100 tagged fish in the Penobscot River, with data currently going through QA/QC. Given the strong propensity for lamprey to exhibit nocturnal movement patterns and demonstrated motivation to utilize upstream habitat, fishways should be operated at night to allow for lamprey passage. Lampreys do not necessarily hone to their natal streams and therefore we would expect lamprey to behave in a similar way in the Kennebec as we would in the Penobscot or Connecticut where nocturnal fish passage information is documented.

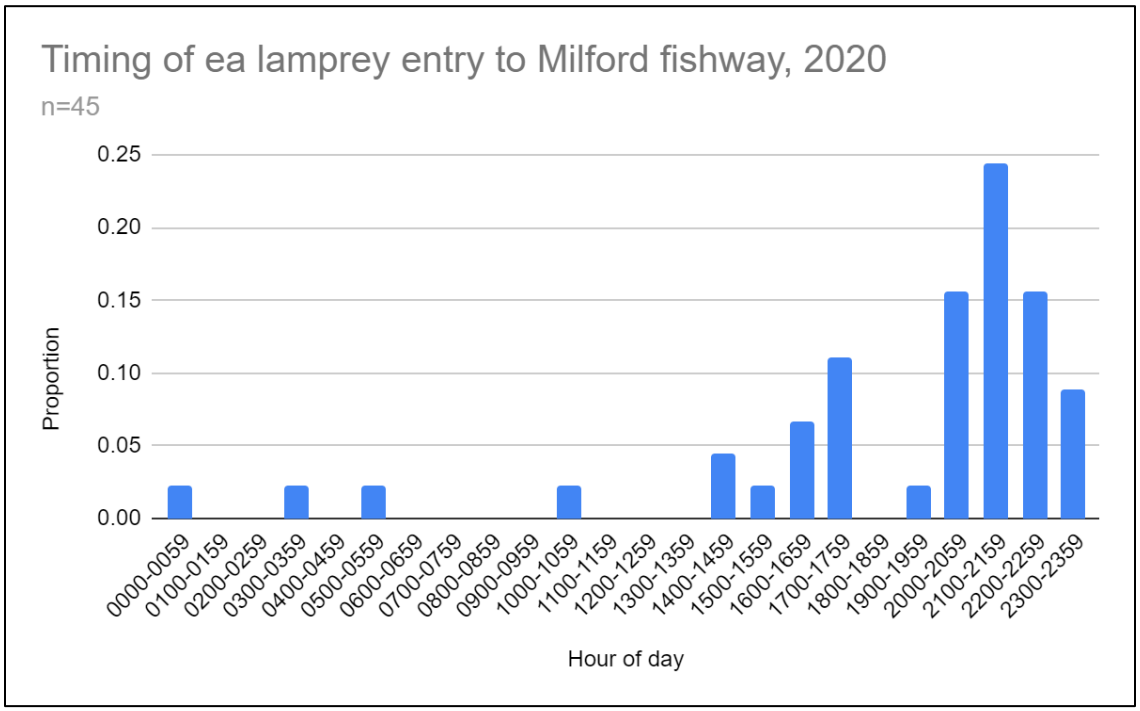

Figure 1. Sea Lamprey timing data from a 2020 Penobscot River tagging study, time of entry to the Milford fish lift.

Studies in the Penobscot demonstrate that lamprey are very well suited for upstream migration studies, where 100% of the tagged fish returned to the dam and 82% passed Milford. This year (2021) 100 lamprey were tagged with a preliminary estimate of 72% upstream efficiency and noted predominate nocturnal movement (QA/QC in progress). The 80% performance standard has been achieved at Milford so this request is reasonable. MDMR would anticipate a more than 80 times increase in lamprey reaching above the Weston project with nighttime operations (Table 10).

Table 10. Theoretical difference in Sea Lamprey returns using assumptions of 1) Milford returns with expansion for efficiency of 7,000 starting population, the 80% standard for upstream passage per project (Nighttime), and a 26.4% efficiency of passage (80% efficiency times 33% entry during daylight hours) with No Nighttime passage based on Penobscot and Connecticut entry timing. Results show a more than 80 times reduction in the number of lampreys above the Weston project using these assumptions.

	Motivated LP	Lockwood	Hydro-Kennebec	Shawmut	Weston
Nighttime	7000	5600	4480	3584	2867
No Nighttime	7000	1848	488	129	34

The Kennebec River below Lockwood has many thousands of Sea Lamprey, as MDMR crews and fishermen observe redd building annually just below Lockwood dam and thousands of redds at Six Mile Falls just upstream of the Sidney, Maine boat launch.

As previously reported, the efficiency of the Milford fishway was used as the benchmark for the performance standard and it is reasonable that fish passage efficiency would increase significantly if the fishways are operated at night, approximately 80 times using the example from Table 10. The obvious difference in counts of Sea Lamprey in the Kennebec (18 counted in 2021) vs Milford (5,776 in 2021) in recent years and predominance of nighttime movement in our 2020 and 2021 studies indicate that 24 hr operations are a major factor in providing for runs of Sea Lamprey into historic habitat. We also hypothesize that the lack of pheromones of lamprey ammocetes above the Lockwood Project reduces motivation (Bjerselius 2000) but that would immediately change if fish are passed upstream and can successfully spawn (e.g. a single spawning event can result in tens of thousands of juveniles).

MDMR's goal is to restore Sea Lamprey to historic spawning and nursery habitat in the Kennebec river drainage upstream of Lockwood Dam, particularly within the Sandy River. For the species to reach spawning habitat in the Sandy River, effective passage at all four dams is essential. Restoring Sea Lamprey to their historic range within the state is beneficial in and of itself and for the restoration and recovery of other sea run fish, particularly endangered salmon (Kircheis 2004). In watershed unrestricted by dams, Sea Lamprey are capable of reaching small, high-gradient, headwater streams (Nislow and Kynard 2009). They spawn in gravel-cobble substrate, and the spawning process results in streambed modification and sediment transport (Nislow and Kynard 2009; Sousa et al. 2012; Hogg et al. 2016). Sea Lamprey spawning activities condition the habitat for other species, including Atlantic Salmon, by removing fines and reducing substrate embeddedness (Kircheis 2004). Given the high degree of embeddedness in Maine streams due to past land use practices, the role of lamprey as "ecosystem engineers" is particularly important (Kircheis 2004; Sousa et al. 2012).

Anadromous Sea Lamprey also serve as a conduit of nutrients between marine and freshwater systems. Semelparous adults contribute marine derived nutrients (MDN) to rivers and are important sources of phosphorus in phosphorus-limited systems of New England, like Maine's Sedgeunkedunk Stream (Weaver et al. 2018, Nislow and Kynard et al 2009). Filter-feeding ammocetes, (the juvenile life stage that spends up to eight years in stream sediments), break down terrestrially derived nutrients in streams, and eventually export nutrients into the marine environment (Beamish 1980, Kircheis 2004; Nislow and Kynard 2009; Weaver et al. 2018). Sea Lamprey spawning occurs in late spring and early summer, thus pulses of MDN from post-spawn carcasses occur after canopy formation reduces light penetration to the stream and concurrent with the emergence of macroinvertebrates and Atlantic Salmon fry (Beamish 1980; Nislow and Kynard 2009; Weaver et al. 2015, 2016). Consequently, the influx of nutrients may help support stream food webs during a time when nutrients and energy flow are otherwise being limiting (Weaver et al. 2016). Further, Sea Lamprey are the sole semelparous species among the complex of sea run species that spawn in Maine's rivers. Gametes and metabolic waste from iteroparous species, such as Atlantic Salmon, river herring, and American Shad do serve as a

source of MDN, but carcasses of semelparous species are generally a more important source of nutrients, highlighting the importance of providing lamprey passage into critical habitat Atlantic Salmon (Moore et al. 2011; Nislow and Kynard 2009).

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Howatt, Kathy

From: Sean Mahoney <smahoney@clf.org>
Sent: Wednesday, August 18, 2021 3:16 PM
To: Howatt, Kathy
Cc: Nick Bennett; Landis Hudson (landis@mainerivers.org); jburrows; Jeffrey Reardon
Subject: Shawmut Project Draft Order comments
Attachments: Maine NGO comments on Shawmut Project Draft Order 8-18-21.pdf; DPugh cv Jan 2021.pdf; Shawmut_fact_sheet_3-17-11.pdf

Ms. Howatt,

On behalf of Atlantic Salmon Federation, Conservation Law Foundation, Maine Rivers and Natural Resources Council of Maine, attached please find comments on the Department's Draft Order, Brookfield White Pine Hydro LLC, L-19751-33-H-N. Also attached are two documents referenced in the comments as attachments. An electronic copy is also being sent to those on the Department's service list in this matter via bcc. Thank you for your attention to these comments.

Sean Mahoney (he/him/his) Executive Vice President-Conservation Law Foundation-53 Exchange Street-Suite 200-Portland, ME 04101-**P**:(207)-210-6439 ext 5012-**E**: smahoney@clf.org

August 18, 2021

Ms. Kathy Davis Howatt
Hydropower Coordinator
Bureau of Land Resources
17 State House Station,
Augusta, Maine 04333-00017

RE: Comments on Draft Order, Brookfield White Pine Hydro LLC, L-19751-33-H-N

Dear Ms. Howatt:

On behalf of the Atlantic Salmon Federation, the Conservation Law Foundation, Maine Rivers, the Natural Resources Council of Maine and the Kennebec Valley Chapter of Trout Unlimited (collectively, "Maine NGOs"), we wish to express strong support for the Department's Draft Order, Brookfield White Pine Hydro LLC, L-19751-33-H-N. The Draft Order, pursuant to Section 401 of the Clean Water Act (CWA), 33 U.S.C. § 1341, and Department Rules, including 06-096 CMR Chapters 579-581, denies the application of Brookfield White Pine Hydro LLC ("Brookfield") for a water quality certification in connection with the proposed relicensing and continued operation of the existing Shawmut Hydroelectric Project, P-2322 ("Project" or "Shawmut Dam"), located on the Kennebec River in the Towns of Skowhegan, Fairfield, Clinton and Benton, Kennebec and Somerset Counties, Maine. The Department's extensive analysis of the application makes clear that the continued operation of the Shawmut Dam will prevent the Kennebec River from meeting the water quality standards set by the Maine Legislature, and in particular those standards that apply to native fish species, especially the endangered Atlantic salmon and other sea-run fish.

The Maine NGOs submit these comments to address the Department's authority to reach this decision and to suggest some modifications to some of its findings that would have no effect on the Draft Order's conclusion but would more accurately reflect the nature and impacts of the Project's operations on the Kennebec River.

1. The Department Has the Legal Authority to Deny Brookfield's WQC Application

More than 15 years ago, the requirement under the Clean Water Act that owners and operators of hydroelectric projects obtain a water quality certification from the state where they operate the project when seeking to license or relicense that project under the Federal Power Act was unequivocally upheld by the U.S. Supreme Court. S.D. Warren Co. v. Maine Board of Environmental Protection, 547 U.S. 370 (2006). In S.D. Warren, the Supreme Court upheld the conclusions reached previously by the Department, the Board of Environmental Protection, the Maine Superior Court and the Maine Supreme Judicial Court that the operation of S.D. Warren's hydroelectric project on the Presumpscot River resulted in a discharge. That conclusion triggered Clean Water Act Section 401's requirement that before S.D. Warren's project could be relicensed by the Federal Energy Regulatory Commission, it needed to receive a certification from the state that the discharge would not violate the applicable water quality standards for the Presumpscot River. In analyzing the purpose and reach of Section 401, the unanimous opinion,

authored by Justice Souter, noted that "Section 401 recast pre-existing law and was meant to 'continu[e] the authority of the State … to act to deny a permit and thereby prevent a Federal license or permit from issuing to a discharge source within such State.' S. Rep. No. 92–414, p. 69 (1971). Its terms have a broad reach, requiring state approval any time a federally licensed activity "may" result in a discharge ("discharge" of course being without any qualifiers here), 33 U. S. C. §1341(a)(1), and its object comprehends maintaining state water quality standards, see n. 1, *supra."* 547 U.S. at 380.

Accordingly, it is well established that the Department has the legal authority to approve, approve with conditions or to deny an application for water quality certification based on an analysis of if and how a federally licensed activity resulting in a "discharge" can meet Maine's water quality standards. As set forth in the Draft Order, the Department's extensive analysis with respect to the continued operation of this particular Project is that the impact on native fish species is such that no conditions would allow the continued operation of, and discharge from, the Project to meet the applicable water quality standards for the Kennebec River. As such, the Department is required to deny the application.

2. **The Shawmut impoundment does not operate as a "run-of-river" facility**

Brookfield characterizes its Project as a "run-of-river" facility, but the reality is that the Project's operation more closely resembles a peaking system that has widely fluctuating flows at times in order to meet periods of peak energy use as opposed to the constant flows of a "run-of-river" system. The deviations from "run-of-river" operation at the Shawmut Dam are unlike any other dam on the lower Kennebec and the Department should clearly describe for the record those deviations and analyze the impacts of those fluctuations more closely. This will ensure that the record is correct without having an impact on the decision to deny the application.

Brookfield asserts that deviations from run-of-river operations are infrequent and insignificant, and that no minimum flow requirement should be required to protect aquatic resources if the project continues to operate as it has over the last several decades. The Department seems to accept this assertion based on a "desk top analysis" of reservoir elevations that found that deviations of greater than 6" from full pond occur only 4% of the time, and deviations of 1' occur only 1% of the time over a 6-year period. (Draft Order, Page 15.)

Brookfield's application for relicensing emphasizes multiple times that the project is operated in a run-of-river mode but acknowledges that this includes fluctuation of reservoir levels "within one foot of elevation 112.0'."[1] However, the application fails to discuss short term deviations in flow that are frequently observed by people who work and recreate on the Kennebec River below the Project. These deviations are reflected in data provided by Brookfield in its March 22, 2016 response to the Commission's additional information request. For example:

- "White Pine Hydro proposes no changes in the way the Shawmut Project is currently operated and will continue to operate the Shawmut Project as run-of-river such that Project outflows generally equal inflows, **on a daily basis**. To ensure run-of-river

[1] Brookfield. 2020. Shawmut Hydroelectric Project FERC Number 2322-060 Application for New License. Appendix E-6, Draft Project Operations Monitoring Plan. January. P. 2. FERC Accession Number 20200131-5356.

operation, White Pine Hydro proposes to maintain the impoundment level within 1 foot of the normal pond elevation of 112.0' during normal operations. Temporary and minor fluctuations while managing the pond level may occur while turning units on and off, opening gates, and inflating/deflating the rubber dam segments."[2] (Emphasis added.)

- "The Shawmut Hydroelectric Project (Project) operates as a run-of-river facility and the impoundment experiences little fluctuation during normal operations, maintaining the pond level within a foot of the normal full pond elevation of 112.0 feet U.S. Geological Survey (USGS) datum during normal operations."[3]

The application also acknowledges deviations from run-of-river flows, but does not describe their magnitude, frequency, or duration, nor does it indicate the conditions under which such deviations occur.

- "Total project outflow may vary as units, gates, and spillway mechanisms (i.e., rubber dam bladders or flashboards) are opened or closed to manage pond elevations within a run-of-river mode."[4]

River users in the reach below the Lockwood Dam (located about 6-7 river miles below the Project) including fishing guides, anglers, and state employees, have long observed flows that fluctuate on a short-term basis. For example, anglers and MDMR staff who boat in that reach observe that flows often change while they are on the river, in some cases allowing them to motor upstream from the Waterville boat launch to the base of Lockwood Dam, but dropping so low that shallow water precludes motoring back downstream via the same route.[5] Fluctuations in flow have also been observed by fishing guides who track flows on the USGS river gage at Sidney Maine.[6]

Brookfield concedes that these fluctuations are due to the operations at the Shawmut Dam. In correspondence between Kathy Howatt at the Maine DEP and Kevin Bernier at Brookfield, Mr. Bernier acknowledged fluctuations in flows are due to operation of the rubber crest control structure at Shawmut Dam.

- "[T]he May 27 to June 2 time period that you inquired about . . . illustrated the operation of the rubber dam sections at Shawmut to manage pond levels and flows during high inflow periods. The rubber dam cannot be operated in a partially inflated condition—it has to be either fully inflated or fully deflated. Thus, at certain flows when water needs to be spilled at Shawmut, the rubber dam needs to be operated to manage river flows and

[2] Brookfield. 2020. Shawmut Hydroelectric Project FERC Number 2322-060 Application for New License. Exhibit E, Environmental Report. January. P. E-3-10. FERC Accession Number 20200131-5356. Emphasis added.
[3] Brookfield. 2020. Shawmut Hydroelectric Project FERC Number 2322-060 Application for New License, January. Exhibit B, Project Operation and Resource Utilization. January. P. B-1. FERC Accession Number 20200131-5356
3. Brookfield. 2020. Shawmut Hydroelectric Project FERC Number 2322-060 Application for New License, January. Exhibit B, Project Operation and Resource Utilization. January. P. B-1. FERC Accession Number 20200131-5356
[4] Brookfield. 2020. Shawmut Hydroelectric Project FERC Number 2322-060 Application for New License. Exhibit B, Project Operation and Resource Utilization. January. P. B-1. FERC Accession Number 20200131-5356.
[5] Nate Gray, Maine Department of Marine Resources biologist and William Grenier, angler and Kennebec Valley Chapter TU member, personal communication with Jeffrey Reardon, TU.
[6] Richard Behr, Three Rivers Guide Service, personal communication with Jeffery Reardon, TU.

pond levels, i.e., the rubber dam is deflated to release the high flows and then re-inflated after an appropriate period of time to minimize impoundment drawdown.[7]

Flow fluctuations involving the rubber crest control structures are likely limited to periods of high flow, when river flow exceeds the hydraulic capacity of the turbines. But flow fluctuations are also frequently observed during periods of low flows, when operation of the rubber crest control structures is unlikely. The licensee's proposed operation is that "Project outflows generally equal inflows, **on a daily basis**"[8]—allowing considerably more flexibility than other projects on the lower Kennebec.

FERC requested that the Applicant provide additional information about fluctuations in reservoir levels and flows in its January 16, 2016 Comments on Pre-Application Document (PAD), Comments on Preliminary Study Plan, and Requests for Additional Information:

- "Section 4.1 of the PAD states that the impoundment experiences little fluctuation in surface elevation. In order to determine actual fluctuation, include historic data on reservoir levels to describe the daily, monthly, and annual elevations and fluctuations while operating under "run-of-river" operation in any study plans which will be developed." [9]

Brookfield responded in a March 22, 2016 Additional Information Filing. Attachment B of that document includes graphs of hourly headpond elevation, project discharge, and tailwater elevation from January 1, 2001 to December 31, 2015.[10] Attachment B-1 contains hourly operational data from the same period and a table of prorated Shawmut inflow.[11]

The graphs in Attachment B show more than two dozen periods of short-term fluctuations in project discharge of 1000 cfs or more that do not appear to be related to rapid fluctuations in project inflow or to high flow events that might cause deflation of the rubber crest control structure.[12]

More detailed examination of a few of these events selected at random clearly shows that operations frequently deviate from run-of-river flows with short term changes of 600 to 1000 cfs, often with repeated cycles up and down on consecutive days during periods of inflow below the

[7] June 19, 2014 Email from Kevin Bernier, Brookfield, to Kathy Howatt, DEP. June 19, 2014 Email from Kevin Bernier, Brookfield, to Kathy Howatt, Maine Department of Environmental Protection. Included as an attachment to the Kennebec Coalition's January 19, 2016 Scoping Comments on the Shawmut Project (P-2322). Included in the Application package in Appendix E-2, Relicensing Consultation Documentation. FERC Accession Number 20200131-5356.

[8] Brookfield. 2020. Shawmut Hydroelectric Project FERC Number 2322-060 Application for New License. Exhibit E, Environmental Report. January. P. E-3-10. FERC Accession Number 20200131-5356. Emphasis added.

[9] January 19, 2016 letter from Stephen Bowler, FERC, to Frank Dunlap, Brookfield. FERC Accession Number 20160119-3044.

[10] Brookfield. 2016. Additional Information of Brookfield White Pine Hydro LLC for Shawmut Project Relicensing under P-2322. Attachment B. Historic Flows and Reservoir Data. FERC Accession Number 20160322-5191.

[11] Brookfield. 2016. Additional Information of Brookfield White Pine Hydro LLC for Shawmut Project Relicensing under P-2322. Attachment B-1. FERC Accession Number 20160322-5191.

[12] Those events occurred during following approximate date ranges: July 5-12, 2002; July 17-27, 2003; July 2-6, 2004; October 20-28, 2004; November 3-26, 2004; July 1-4, 2005; July 15-23. 2005; September 27-October 8, 2005; August 5-19, 2006; September 1-30, 2006; October 4-10, 2006; June 17-27, 2007; July 30-August 7, 2007; August 20-September 16, 2007; September 10-23, 2009; June 20-27, 2010; October 4-15, 2010; July 22-August 20, 2011; October 22-November 1, 2011; January 9-22, 2012; February 5-17, 2012; July 8-16, 2012; January 18-February 1, 2013; September 16-30, 2013; October 1-10, 2013; December 3-15, 2013; October 29-November 22, 2014; July 29-August 15, 2015; October 10-20, 2015; November 5-15, 2015.

project's turbine capacity. For examples, see Table 1 below. [13]

Table 1: Observed Daily Flow Fluctuations at Shawmut Dam.

Date	Daily Minimum Discharge[44] (CFS)	Daily Maximum Discharge (CFS	Daily Difference (CFS)	Prorated Shawmut Inflow[45] (CFS)
June 20, 2010	2282	3312	1030	3228
June 21, 2010	2240	3288	1048	3465
June 22, 2010	2243	2904	661	3328
June 25, 2010	2203	3008	805	3195
July 8, 2012	3021	4661	1640	4396
July 9, 2012	3655	4513	858	4327
July 10, 2012	3642	4678	1036	4290
July 30, 2015	6304	7317	1013	6363
August 1, 2015	6257	7310	1053	6409
August 5, 2015	6243	7345	1003	6857

Straightforward arithmetic demonstrates that at the Shawmut Project, a 1310-acre reservoir that can be fluctuated by up to 1 foot, provides up to 1310 acre-feet (57,063,300 cubic feet) of stored water. That stored water—combined with instantaneous inflow—can be released through any combination of Shawmut's eight generating units, up to maximum station hydraulic capacity with all turbines running full at 6,690 cfs.

Table 2: Shawmut Dam Generating Unit Capacities[14]

Unit	Max Flow (CFS)
1	648
2	645
3	641
4	672
5	742
6	667
7	1312
8	1347
Total	**6674 cfs**

[13] Brookfield. 2016. Additional Information of Brookfield White Pine Hydro LLC for Shawmut Project Relicensing under P-2322. Attachment B-1. FERC Accession Number 20160322-5191. Daily maximum and minimum discharge data taken from hourly data in Excel file included in Attachment B-1 under column entitled "Project Discharge". Pro-rated Shawmut Inflow data taken from Excel file included in Attachment B-1 from column entitled "Prorated Shawmut Inflow".

[14] From NextEra. 2011. Shawmut Dam Fact Sheet. Attached as "Attachment A".

When flows are below the turbine capacity, it might be advantageous to take advantage of 6" or 1' of stored water to cycle units on and off in response to electricity demand, price or other considerations of the operator. Using even half the allowed fluctuation of one foot, 57,063,300 cubic feet of stored water, can support substantial periods of cycling, followed by a similar period of flows reduced below inflow to refill (assuming inflow remains about the same).

Table 3: Time to operate selected units with 6" or 1' reservoir fluctuation.

Unit	**Flow Per Unit**	**Hours in 6" of Storage**	**Hours in 12" of Storage**
Unit 1	648	12 hours	24 hours
Unit 8	1347	6 hours	12 hours

Units 2-6 would all be sustained for periods similar to Unit 1; Unit 7 would be similar to Unit 8. Any combination of units could be turned on or off, subject only to inflow and the 12" restriction on draw down. Assuming an average August inflow 4509 cfs, one could imagine cycling Unit 8 on and off. This would convert a steady flow of 4509 cfs below the dam into alternating cycles of 5856 cfs (1347+4509) and 3162 cfs (4509 – 1347). The impacts of such a fluctuation will increase as the number and hydraulic capacity of units that are cycled go up. Proportional to river flows, these fluctuations will increase in significance as inflows are reduced.

Table 4: % Flow Fluctuations from cycling smallest (Unit 3) and Largest (Unit 8) Turbines at Moderate and Low Flows.

	Moderate Flow: 5500			**Low Flow: 1947 cfs (Weston Min. Flow)**		
Unit	**Hydraulic Capacity**	**Min Flow**	**Max Flow**	**Min as % of Max**	**Min Flow**	**Max Flow**	**Min as % of Max**
Unit 3	**641**	**4859**	**6141**	**79%**	**1306**	**2588**	**51%**
Unit 8	**1347**	**4153**	**6847**	**61%**	**600**	**3294**	**18%**

There is clearly the capacity to support relatively large flow fluctuations— +/- 1000 cfs or more—that would have substantial impacts on downstream wetted habitat, fish passage at high gradient reaches, or fish attraction to fishways. This will be particularly true during extended periods of low baseflow, when the impacts of cycling even the smallest turbines with approximately 650 cfs capacities could result in significant flow variation at a time when conditions for migrating fish are already stressful. Notably, the flow fluctuations observed in the data Brookfield provided in response to FERC's information requests are frequently in the range of 600-1200 cfs, consistent with the capacities of Shawmut's smaller and larger units, respectively. (See Table 1, Column headed "Daily Difference".)

DEP's analysis in the Draft Order should be modified to address these kinds of short-term, but significant-in-magnitude, deviations from run-of-river operations that in practice make the Project more like a peaking project than a "run-of-river" one. The potential impacts of that operation on aquatic habitat below the Project, attraction flow to the fishways at the Project, or fish migration

in the Kennebec River between the Project and tidewater should be addressed accordingly. As set forth above, this information allows a more thorough assessment of how variable discharges from the Shawmut Project may affect downstream resources and uses on the Kennebec River. Anecdotal information from river users suggests these changes can impact boat access to some river segments, particularly the tailrace of the Lockwood dam. Variations in flow might also affect upstream and downstream salmon and clupeid passage at the Shawmut, Hydro-Kennebec, and Lockwood dams, and, if they occur during periods of extreme low flows or are of large magnitude, aquatic habitat as well – particularly spawning habitat for riverine spawners such as American shad, blueback herring and sea lamprey.

These fluctuations at the Shawmut Dam are especially worthy of further analysis as none of the other lower Kennebec dams licensed allow so much freedom to alter flows. Indeed, all of the other lower Kennebec River dams have specific FERC license or Water Quality Certificate terms to minimize flow fluctuations, and in all cases these are substantially more protective than the 1' of reservoir surface elevation proposed by the Licensee.[15]:

The Project is most similar to Weston: both have impoundments that are approximately12 miles long. Such a long reservoir, combined with the ability to make use of 12" of fluctuation in reservoir surface elevation, provide substantial opportunity for operational flexibility that could result in fluctuations in downstream flows. These are likely of relatively little consequence during periods of inflows that approach or exceed the hydraulic capacity of each project's generating units. But they could be significant during times when flows are substantially below the hydraulic capacity of the units. These deviations are constrained at the Weston project by the requirement for a 1947 cfs minimum flow. The applicant proposes no such constraint at Shawmut.

3. The Draft Order should be modified to be more consistent with Maine's most recent Integrated Water Quality Monitoring Report.

In its Draft Order, the Department states that "[b]ased on the evidence provided by the Applicant, the Department, applying its professional judgement through application of its Water Level Policy, determines the Shawmut riverine impoundment meets the applicable aquatic life and habitat criteria…" (Draft Order, P. 17).

However, according to DEP's most recent Integrated Water Quality Monitoring Report Appendices, the Shawmut impoundment is listed under "Category 3: Rivers and Streams with Insufficient Data or Information to Determine if Designated Uses are Attained (One or More

[15] At the Weston Dam, the licensee is limited to the same 1-foot variation from a full head pond elevation proposed for Shawmut, but this is coupled with a requirement for a minimum flow of "1947 cfs or inflow, whichever is less."[15] At the Hydro Kennebec Project, "instantaneous run-of-river" is required and the licensee . . . shall at all times act to minimize the fluctuation of the reservoir surface elevation by maintaining a continuous discharge form the project that approximates the instantaneous sum of all the inflow to the reservoir." And at the Lockwood Project, only a 6" deviation from full pond is allowed under normal operating conditions, and minimum flows are required into the bypass channel (50 cfs) and below the powerhouse during flashboard replacement (2114 cfs). Deviations from run-of-river flow are substantially constrained by the 6" limit on reservoir fluctuation and the very limited surface area of the Lockwood impoundment. See, FERC Order Issuing New License, P-2325, November 25, 1997, pp. 24-25, FERC Accession Number 19971201-0190 (Weston); FERC Order Issuing New License, P-2611. October 15, 1986, p. 6, FERC Accession Number 19861022-0033, (Hydro Kennebec); and FERC Order Issuing New License, P-2574 March 4, 2005, pp. 7-8, FERC Accession Number 20050304-3069, (Lockwood).

Uses may be Impaired)".[16] The Appendices further state, in reference to the segments of the Kennebec above and below the Shawmut Dam "Category 3 for potential aquatic life use impairment; insufficient data to delist: macroinvertebrate community attained Class C in 2004 but did not attain in 2002."[17]

DEP's final order should be consistent with its own Integrated Water Quality Monitoring Report. Moreover, removal of the Shawmut Dam would decrease sedimentation in the reach, lower temperatures, and improve oxygenation. This would increase assimilative capacity of the river and make it far easier for dischargers, such as Sappi, to attain water quality standards.

4. **The record does not support a finding that Brookfield's proposed Shawmut fishway was designed for an upstream passage rate of 95% for adult Atlantic salmon.**

Fishways are not designed to meet a certain passage standard or efficiency rate, nor does a fishway meeting USFWS standards reliably guarantee a particular passage standard or efficiency rate. Fishways are designed for capacity – pounds of fish to be lifted or passed, the size of hoppers, the rate hoppers can complete lift cycles, the size/width of fish ladders or of pools, etc. The *efficacy* of a given design – its ability to meet a certain passage percentage or efficiency rate– is never guaranteed because, as clearly stated in the USFWS Fish Passage Engineering Design Criteria manual (USFWS 2019), "The efficacy of any fish passage structure, device, facility, operation, or measure is highly dependent on local hydrology, target species and life stage, dam orientation, turbine operation, and myriad other site-specific considerations."[18]

Simply stating that a fishway will meet a standard does not mean that it will. Moreover, this particular fishway was not designed to meet a 95% passage standard; rather, it was designed to pass fish given the configuration of the dam and powerhouses in issue sized to pass the estimated capacity needs. The Draft Order should be modified to reflect this fact.

5. **Brookfield's downstream passage survival rate at Shawmut is not 93% as the company claims.**

The Draft Order states that "Based on a radio telemetry study of downstream fish passage structures and operations at the Shawmut facility, baseline survival of downstream migrating Atlantic salmon smolts averaged 93%." This is not correct and is based on Brookfield's greatly exaggerated downstream survival data.

On behalf of the Maine NGOs, Don Pugh, a fish passage expert with decades of experience, including many years at the S.O. Conte Anadromous Fish Research Center,[19] evaluated

[16] Maine DEP. 2018. 2016 Integrated Water Quality Monitoring Report. Appendices. P. 60. Accessed at https://www.maine.gov/dep/water/monitoring/305b/2016/28-Feb-2018_2016-ME-IntegratedRptLIST.pdf.
[17] Maine DEP. 2018. 2016 Integrated Water Quality Monitoring Report. Appendices. P. 60. Accessed at https://www.maine.gov/dep/water/monitoring/305b/2016/28-Feb-2018_2016-ME-IntegratedRptLIST.pdf.
[18] USFWS (U.S. Fish and Wildlife Service). 2019. Fish Passage Engineering Design Criteria. USFWS, Northeast Region R5, Hadley, Massachusetts at Section 1.3 p. 1-1.
[19] Mr. Pugh's curriculum vitae is attached to these Comments.

Brookfield's downstream smolt passage data from 2012 to 2015[20] [21] [22] [23]and identified two key factors that inflated smolt survival percentages.

First, Normandeau (Brookfield's consultant) inappropriately used paired release studies when analyzing the 2013 to 2015 data, paired release studies should only be used when there are at least 1000 fish.[24] Using this methodology with small numbers of Atlantic salmon smolts in the Kennebec, as Brookfield's consultant did, actually "creates fish" statistically, with calculated survival rates exceeding the number of fish that actually survived.[25]

Second, Brookfield inappropriately calculated overall downstream survival rates as the product of survival rates at each individual dam, which leaves out the highly significant impacts of the impoundments between the dams. Mr. Pugh analyzed the actual survival of individual smolts from 200 meters above the Weston Dam to the lowermost telemetry station below the Lockwood Dam. Only an average of 56% of smolts survived this multi-dam passage over the course of the four years of the Normandeau studies.[26] Even this low survival rate is likely an overestimate because Normandeau released smolts just above the Weston Dam, excluding the likely significant impacts on smolt survival of the 12 mile long Weston impoundment. Based on Mr. Pugh's calculations, Brookfield's contention that it can meet an "end-of-pipe" downstream passage goal of 88.5% is not just wishful thinking but also perilous for the future of the endangered Atlantic salmon.

Similarly, Mr. Pugh's analysis shows that average survival at the Shawmut dam between 2013 and 2015 was 78.3% as set forth in Table 5 below, not the 93% the Department appears to have accepted. Brookfield's claimed dam survival estimates for the Shawmut project of 96.3%, 93.6%, and 90.6%, for an average 93.5%,[27] overestimate actual survival of fish that pass the Shawmut project. For fish released above Shawmut passing to the telemetry station above the Hydro-Kennebec, survival was just 78.3%.

[20] Normandeau (Normandeau Associates, Inc.). 2013. Downstream passage effectiveness for the passage of Atlantic salmon smolts at the Weston, Shawmut and Lockwood projects, Kennebec River, Maine. Prepared for FPL Energy Maine Hydro LLC and The Merimil Limited Partnership.

[21]Normandeau (Normandeau Associates, Inc.). 2014. Evaluation of Atlantic salmon Passage at the Weston, Shawmut, Hydro Kennebec, and Lockwood Projects, Kennebec River and Brunswick Project, Androscoggin River, Maine, Spring 2013. Prepared for Brookfield White Pine Hydro LLC and The Merimil Limited Partnership.

[22] Normandeau (Normandeau Associates, Inc.). 2015. Evaluation of Atlantic salmon Passage at the Weston, Shawmut, Hydro Kennebec, and Lockwood Projects, Kennebec River and Brunswick Project, Androscoggin River, Maine, Spring 2014. Prepared for Brookfield White Pine Hydro LLC and The Merimil Limited Partnership.

[23] Normandeau (Normandeau Associates, Inc.). 2016. Evaluation of Atlantic salmon Passage at the Weston, Shawmut, and Lockwood Projects, Kennebec River and Pejepscot and Brunswick Projects, Androscoggin River, Maine, Spring 2015. Prepared for Brookfield White Pine Hydro LLC and The Merimil Limited Partnership.

[24] Zydlewski, J., D. Stich and D. Sigourney. 2017. Hard choices in assessing survival past dams – a comparison of single- and paired-release strategies. Can. J. Fish. Aquat. Sci. 74(2): 178-190.

[25] Kennebec Coalition. 2020. MOTION TO INTERVENE, WITH PROTESTS AND COMMENTS OPPOSING THE ISSUANCE OF A NEW LICENSE FOR THE SHAWMUT PROJECT NUMBER 2322-069, WITH RECOMMENDATION FOR ORDER OF PLAN FOR DECOMMISSIONING AND REMOVAL. P. 41. FERC Accession Number 20200831-5332.

[26] Kennebec Coalition. 2020. MOTION TO INTERVENE, WITH PROTESTS AND COMMENTS OPPOSING THE ISSUANCE OF A NEW LICENSE FOR THE SHAWMUT PROJECT NUMBER 2322-069, WITH RECOMMENDATION FOR ORDER OF PLAN FOR DECOMMISSIONING AND REMOVAL. P. 38. FERC Accession Number 20200831-5332.

[27] 2020. Kleinschmidt Associates. Brookfield White Pine Hydro LLC. Application for New License for Major Water Power Project – Existing Dam. Shawmut Hydroelectric Project (FERC Number 2322). January 30. P. E-4-52.

The numbers of smolt arriving at the Weston project and detected at the telemetry stations below the projects are from the study reports prepared by Normandeau Associates, Inc.[28] [29] [30] [31] Tables 12-15 and Appendix A in the 2012 report and Appendices C in the 2013 to 2015 reports list the number of fish that arrived at the Shawmut and Weston projects and that were detected below each of the projects, at the Hydro-Kennebec station, and at the lowermost telemetry station below the Lockwood dam. Mr. Pugh calculated survival as the number of fish detected at the lowermost telemetry station below Lockwood (Weston arrivals) or at the Hydro-Kennebec dam, divided by the number of smolts arriving at a project (Weston or Shawmut), times one hundred (See Tables 5 and 6 below). Fish that are released above Weston encounter the Weston dam and the downstream projects like naturally outmigrating smolts. This estimate is conservative when compared to wild smolts as it does not include the impact of the Weston impoundment.

Table 5. Number of smolts arriving at the Weston project and detected at the lowermost telemetry station below the Lockwood project and annual and combined survival rates.

Year	Arrive Weston	Detected Lowest Station	%
2012	**115**	**34**	**29.6**
2013	**100**	**70**	**70.0**
2014	**99**	**69**	**69.7**
2015	**98**	**59**	**60.2**
All	**412**	**232**	**56.3**

Table 6. Number of smolts arriving at the Shawmut project, number detected arriving at the Hydro-Kennebec station and the percent survival for each of three years and the combined survival.

Year	Arrive Shawmut	Detected Hydro-K	%
2013	**102**	**86**	**84.3**
2014	**100**	**82**	**82.0**
2015	**93**	**63**	**67.7**
All	**295**	**231**	**78.3**

[28] Normandeau (Normandeau Associates, Inc.). 2013. Downstream passage effectiveness for the passage of Atlantic salmon smolts at the Weston, Shawmut and Lockwood projects, Kennebec River, Maine. Prepared for FPL Energy Maine Hydro LLC and The Merimil Limited Partnership.

[29] Normandeau (Normandeau Associates, Inc.). 2014. Evaluation of Atlantic salmon Passage at the Weston, Shawmut, Hydro Kennebec, and Lockwood Projects, Kennebec River and Brunswick Project, Androscoggin River, Maine, Spring 2013. Prepared for Brookfield White Pine Hydro LLC and The Merimil Limited Partnership.

[30] Normandeau (Normandeau Associates, Inc.). 2015. Evaluation of Atlantic salmon Passage at the Weston, Shawmut, Hydro Kennebec, and Lockwood Projects, Kennebec River and Brunswick Project, Androscoggin River, Maine, Spring 2014. Prepared for Brookfield White Pine Hydro LLC and The Merimil Limited Partnership.

[31] Normandeau (Normandeau Associates, Inc.). 2016. Evaluation of Atlantic salmon Passage at the Weston, Shawmut, and Lockwood Projects, Kennebec River and Pejepscot and Brunswick Projects, Androscoggin River, Maine, Spring 2015. Prepared for Brookfield White Pine Hydro LLC and The Merimil Limited Partnership.

Brookfield proposes the whole river (end-of-pipe) survival as a multiplication of the immediate dam survival estimates at each project. But a more accurate picture of smolt survival would be gained by analyzing the number of fish that pass all four projects, as it accounts for project impacts in addition to dam passage. These impacts include increased water temperature in the impoundments[32] [33]; reduced migration speed through the impoundments[34] [35] [36] [37] [38] [39]; increased predation in the impoundment and tailraces[40] [41] [42] [43]; and the cumulative impacts of injury during dam passage[44] [45]. Each of these impacts can negatively affect survival. Outmigration must be considered as a complete movement past all four projects, not as the subset of only passage from the lower end of the impoundment to the base of a single dam. A direct analysis of smolt survival from arrival at the Weston project to detection below the Lockwood project accounts for these factors—and shows survival rates much lower than Brookfield reports.

Brookfield's analysis is further undermined by inappropriately using "paired release" analysis to determine survival in 2013, 2014, and 2015. The paired release analysis is designed to determine the 'natural', no dam in place, mortality from immediately above the dam to below it and adjust dam passage survival at the project to account for this 'natural' mortality. Again, a paired release analysis is not appropriate for the Kennebec studies as the sample sizes were too low. Multiple tables in the reports from 2013 to 2015 show a paired survival estimate greater than either survival for S1 or S2 (test release and tailrace release survivals) for both group releases and all releases combined for a project (e.g., Normandeau,2013 - Tables 40, 41 & 46: Normandeau 2015 - Tables 4-11 & 4-15). In essence, the paired release calculation in these instances 'makes' fish. Table 4-15 (Weston 2015 whole station survival estimates) combined releases survivals for S1

[32] Marschall, E., M.Mather, D.Parish, G.Allison, and J. McMenemy. 2011. Migration delays caused by anthropogenic barriers: modeling dams, temperature, and success of migrating salmon smolts.
Ecological Applications, 21(8), pp. 3014-3031.
[33] McCormick, S., D.Lerner, M.Monette, K.Nieves-Puigdoller, J.Kelly, and B.Bjornsson. 2009. Taking It with you when you go: how perturbations to the freshwater environment, including temperature, dams, and contaminants, affect marine survival of salmon. American Fisheries Society Symposium 69:195–214.
[34] Babin, A., M.Ndong, K.Haralampides, S.Peake, R.Jones, R.Curry, and T.Linnansarri. 2020. Migration of Atlantic salmon (*Salmo salar*) smolts in a large hydropower reservoir. Can. J. Fish. Aquat. Sci. https://doi.org/10.1139/cjfas-2019-0395
[35] Havn, T., E. Thorstad, M.Teichert, S.Saether, L.Heermann, R.Hedger, M.Tambets, O.Diserud, j.Borcherding, and F. Økland. 2018. Hydropower-related mortality and behaviour of Atlantic salmon smolts in the River Sieg, a German tributary to the Rhine. Hydrobiologia 805**,** 273–290.
[36] Holbrook, C., M.Kinnison, and J.Zydlewski. 2011. Survival of migrating Atlantic salmon smolts through the Penobscot River, Maine: a prerestoration assessment. Trans. Am. Fish. Soc. 140:1255–1268.
[37] Marschall, E., M.Mather, D.Parish, G.Allison, and J. McMenemy. 2011. Migration delays caused by anthropogenic barriers: modeling dams, temperature, and success of migrating salmon smolts.
Ecological Applications, 21(8), pp. 3014-3031.
[38] Norrgard, J., L.Greenberg, J.Piccolo, and M.Schmitz. 2013. Multiplicative loss of landlocked Atlantic salmon *Salmo salar* L. smolts during downstream migration through multiple dams. Rivers Research and Applications, Vol.29, no 10, pp. 1306-1317.
[39] Stich, D. M. Kinnison, J.Kocki, and J.Zydlewski. 2015. Initiation of migration and movement rates of Atlantic salmon smolts in fresh water. Can. J. Fish. Aquat. Sci. 72: 1–13.
[40] Blackwell, B. and F.Juanes. 1998. Predation on Atlantic salmon smolts by striped bass after dam passage. North American Journal of Fisheries Management 18:936–939.
[41] Jepsen, N., K.Aarestrup, F Okland, and G. Rasmussen. 1998. Survival of radio-tagged Atlantic salmon (*Salmo salar* L.) and trout (*Salmo trutta* L.) smolts passing a reservoir during seaward migration. *Hydrobiologia* **371/372:** 347–353.
[42] Havn, T., E. Thorstad, M.Teichert, S.Saether, L.Heermann, R.Hedger, M.Tambets, O.Diserud, j.Borcherding, and F. Økland. 2018. Hydropower-related mortality and behaviour of Atlantic salmon smolts in the River Sieg, a German tributary to the Rhine. Hydrobiologia 805**,** 273–290.
[43] Økland, F., Teichert, M.A.K., Thorstad, E.B., Havn, T.B., Heermann, L., Sæther, S.A., Diserud, O.H., Tambets, M., Hedger, R.D. & Borcherding, J. 2016. Downstream migration of Atlantic salmon smolt at three German hydropower stations. NINA Report 1203: 1-47.
[44] Holbrook, C., M.Kinnison, and J.Zydlewski. 2011. Survival of migrating Atlantic salmon smolts through the Penobscot River, Maine: a prerestoration assessment. Trans. Am. Fish. Soc. 140:1255–1268.
[45] Zydlewski, J., G.Zydlewski, and G.Danner.2010. Descaling Injury Impairs the osmoregulatory ability of Atlantic salmon smolts entering seawater. Trans. Am. Fish. Soc. 138:129-136.

and S2 are 0.888 and 0.850. The calculated paired release survival is 100.0% (S1 ÷ S2 * 100). Similarly, the 2013 report estimated Lockwood survival is 100% when both S1 and S2 are 0.95. In neither release did all fish survive yet the estimate is that all survived.

The Kennebec presents a particularly egregious example of the impact of impoundments – the still waters created by dams. Between Lockwood and the confluence of the Sandy River, 85% of the river is impounded – nearly 30 river miles from the upper end of the Weston impoundment to the Lockwood dam. NMFS clearly states that impoundments constitute a serious risk to Atlantic salmon in its 2013 Biological Opinion:

> Impoundments created by these dams limit access to habitat, alter habitat, and degrade water quality through increased temperatures and lowered dissolved oxygen levels. Furthermore, because hydropower dams are typically constructed in reaches with moderate to high underlying gradients, significant areas of free-flowing habitat have been converted to impounded habitats in the Kennebec and Androscoggin River watersheds Coincidently, these moderate to high gradient reaches, if free-flowing, would likely constitute the highest value as Atlantic salmon spawning, nursery, and adult resting habitat within the context of all potential salmon habitat within these reaches. [46]

Brookfield's analysis of downstream fish passage effectiveness for salmon for the years 2012 to 2015 does not consider any of the above effects. Rather it is designed to assess survival merely from arrival to below the dam. For the four projects combined, this is just over a half of a river mile, less than 2% of length of the four projects' impact on smolts.

In short, Brookfield's radio tagging studies greatly inflated downstream smolt survival rates at the Shawmut Dam and the other three dams. DEP's Draft Order should not credit Brookfield with achieving 93% passage at Shawmut. That actual passage rate was 78.3% or lower. The Department of Marine Resources stated it best when it noted that none of Brookfield's downstream passage "improvements", such as a guidance boom and unit cycling, can bridge the gap between reality and Brookfield's proposed downstream passage rate of 96%.

Conclusion

The Maine NGOs strongly support DEP's denial of water quality certification for the Shawmut Project. The denial falls well within the scope of its legal authority and is amply supported in the record by evidence that the "discharge" from the Project cannot meet the applicable water quality standards for the Kennebec River, particularly because of the harm it does to native fish species. However, we also urge DEP to modify and/or supplement its analysis to reconsider the facts regarding the following: (1) the Shawmut Project's impoundment is not in attainment with aquatic life standards; (2) operations at the Shawmut dam in are in practice more like a reservoir peaking facility than a "run-of-river" facility; (3) the proposed fish lift is not designed to meet a

[46] National Marine Fisheries Service (NMFS). 2013. Endangered Species Act Biological Opinion, Amendment of the Licenses for the Lockwood (2574), Shawmut (2322), Weston (2325), Brunswick (2284), and Lewiston Falls (2302) Projects. July 19, 2013. Page 46 [FERC Accession Number 20130723-0012].

95% upstream passage standard: and (4) the true downstream survival rate for salmon smolts is far lower than Brookfield claims.

Thank you for your consideration of these comments.

Very truly yours,

Sean Mahoney
Vice President
Conservation Law Foundation

cc: Nick Bennet, Natural Resources Council of Maine
John Burrows, Atlantic Salmon Federation
Landis Hudson, Maine Rivers
Jeffrey Reardon, Kennebec Valley Chapter, Trout Unlimited

Project Fact Sheet

Shawmut Project

General Information

Project Name:	Shawmut
FERC No:	2322
River:	Kennebec
License Expiration:	1/31/2021
Generating Capacity:	8.740 MW
Operation:	Run-of-River
Dam Height:	40 feet

Physiography

River Mile:	66
Drainage Area:	4,200 square miles
Avg. Annual Flow:	3,600 cfs

Reservoir

Storage Volume:	390 acre-feet (gross)
Surface Area:	1,310.0 acres
Length:	12.0 miles

WQ Classification

Reservoir:	Class C
Tailwater:	Class B

Minimum Flow Run-of river, 2,110 cfs minimum flow.

Project Generating Facilities

Number of Units: 8	Turbine Design/Type	Generator Rating	Hydraulic Capacity
Unit 1	Francis/ horizontal	0.750 MW	650 cfs
Unit 2	Francis/ horizontal	0.750 MW	650 cfs
Unit 3	Francis/ horizontal	0.750 MW	650 cfs
Unit 4	Francis/ horizontal	0.750 MW	650 cfs
Unit 5	Francis/ horizontal	0.750 MW	650 cfs
Unit 6	Francis/ horizontal	0.900 MW	650 cfs
Unit 7	Propeller/horizontal	2.200 MW	1,200 cfs
Unit 8	Propeller/horizontal	2.200 MW	1,200 cfs

Generating Unit Details

Units	Turbine Design/Type	Hydraulic Capacity	Rotation Speed (rpm)	Number of Blades/ Buckets	Francis Turbine			Propeller Turbine	Max Flow		Peak Flow		Min Flow	
					Runner Diameter Inlet (in)	Runner Diameter Outlet (in)	Runner Inlet Height (in)	Runner Diameter (in)	CFS	Effic. (%)	CFS	Effic. (%)	CFS	Effic. (%)
Unit 1	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	648	74	581	79	400	49
Unit 2	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	645	76	583	80	438	39
Unit 3	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	641	78	581	80	453	38
Unit 4	Francis/ horizontal	650 cfs	200.0	13 X 4	33	53.4 X 2	33.5 X 2	N/A	672	67	539	77	367	64
Unit 5	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	742	67	520	80	326	52
Unit 6	Francis/ horizontal	650 cfs	200.0	13 X 4	33	53.4 X 2	33.5 X 2	N/A	667	74	575	79	264	35
Unit 7	Propeller/ horizontal	1,200 cfs	900.0 speed increasers	3	N/A	N/A	N/A	108	N/A	N/A	1,312	74	N/A	N/A
Unit 8	Propeller/ horizontal	1,200 cfs	900.0 speed increasers	3	N/A	N/A	N/A	108	N/A	N/A	1,347	75	N/A	N/A

Other Project Features

Normal Station Head	23.0 feet
Spillway:	Spillway (1,135 feet), consists of 380 feet of hinged flashboards, 730 feet of rubber dam and a 25 foot wide log sluice near the center of the spillway section.
Spill Gate(s):	Log sluice (25 feet wide by 8 feet deep)
Bypass Section:	None
Forebay/Canal:	Intake consists of a head gate structure, a 240 feet long forebay, 10 foot wide by 7 deep Taintor gate, 6 foot wide by 6 foot high deep gate and unit intake trash racks.
Trash Racks:	
Location	Full depth trash racks located just upstream of units.
Rack Spacing	Units 1-6, 1.5 inches; Units 7-8, 3.5 inches
Bar Thickness	???
Velocity	Velocity to be calculated
Maintenance	Manually operated trash rake
	Trash gate located next to unit #6 (4 feet wide by 22 inches deep)
Trash Gate:	

Fish Passage Facilities

Upstream

Facility Type:	None, target fish species captured at Lockwood are transported above Shawmut.
Installation Date:	No earlier than May 1, 2012 based on 1998 KHDG settlement agreement
Operation:	N/A
Operation Season:	N/A
Design Capacity:	N/A
Design Flow:	N/A
Flow/Attraction Q:	N/A
Species:	Atlantic salmon, American shad, River herring

Passage Numbers:	Salmon	Shad	River Herring
	N/A (fish are currently trucked around Shawmut)	N/A (fish are currently trucked around Shawmut)	N/A (fish are currently trucked around Shawmut)

New/Additional Passage Plans:	No earlier than May 1, 2012 based on 1998 KHDG settlement agreement
Survival or Effectiveness Studies	N/A

Downstream

Facility Type:	Interim passage consists of an existing surface sluice which discharges into a 3 foot deep man made plunge pool. Sluice is located next to Unit #6 (4 feet wide by 22 inches deep). Fish can also pass via spill along the 1,135-foot-long spillway.
Installation Date:	2000
Operation:	N/A
Operation Season:	April 1 – December 30 annually
Design Capacity:	N/A
Flow/Attraction Q:	Sluice passes 30 to 35 cfs with all stoplogs removed. River flow in excess of the station capacity of 6,700 cfs is spilled via the rubber dam, hinged flashboards or log sluice.
Diversion/Screening:	None currently. New downstream bypass facility is in the design and agency consultation phase and will include angled racks leading to sluice gate.
Species:	Atlantic salmon, American shad, Alewife
New/Additional Passage Plans	New downstream bypass facility is in the design and agency consultation phase. New facility will include angled racks leading to sluice gate.
Survival or Effectiveness Studies	Will take place after the new bypass facility is installed.

Biological Studies

Instream Flow:	None
Water Quality:	None specific to Shawmut. WQ data for the Kennebec River is provided by the MDEP in the *2010 Integrated Water Monitoring and Assessment Report* available at: www.maine.gov/dep/blwq/docmonitoring/305b/2010/report.pdf and in *Kennebec River Modeling Report Final* dated April 2000, and *1998 Kennebec River Survey,* both available at: www.maine.gov/dep/blwq/docmonitoring/modelinganddatareports/index.htm).
Other Studies:	None

Attachments

1) Flow Data

   a) Monthly and Annual Flow Duration Curves
   b) Mean, Median, Q20 and Q80 flows
   c) USGS gage data web access address - Kennebec River at Bingham, near Madison, at North Sidney, and on Sebasicook River near Pittsfield

2) Project Aerial Photos

3) Fishway Photos – N/A

4) Project Design Drawings/Plans

5) Fishway Design Drawings Plans – Downstream fishway design is presently in the agency consultation phase.

6) WQ Classification & Standards

7) Description of Typical Turbine Operation generally run units 7 and 8 then 1-6 as needed.

8) High Water Guidelines

9) Reservoir Bathymetry - None

10) Fish Passage Effectiveness Studies (Bibliography) – None

TOWN OF FAIRFIELD

OFFICE OF THE TOWN MANAGER
19 Lawrence Ave, P.O. Box 149, Fairfield, ME 04937
Tel (207) 453-7911, Fax (207) 453-4280

August 18, 2021

Maine Department of Environmental Protection
Attn: Kathy Howatt
17 State House Station
Augusta, ME 04333-0017
Kathy.Howatt@maine.gov

Dear Ms. Howatt,

The Town of Fairfield received a copy of the DRAFT Maine Water Quality Program; Clean Water Certification, Shawmut Hydroelectric Project #L19751-33-H-N (DENIAL).

First, I want to want to thank the Department of Environmental Protection for their detailed review and concerns regarding the water quality of the sections of the Kennebec River around our community as it relates to fish habitat. We agree that strong water quality standards are important to sustaining life of so many species, not just the fish. Something the Town of Fairfield has recently been reminded of with the ongoing Per- and polyfluoroalkyl substances (PFAS) contamination problem happening throughout our entire community.

The second item is a question regarding the quality standards and whether they have been set to a level that failure is inevitable? If the Department were to use these same standards at all other dam locations across the state, how many of them would receive certification?

The concern is that while this document states "…that removal of the Shawmut Dam and the associated release of its impoundment is not proposed or considered in the water quality certification application…", Section 5. Public Comments, page 52. The questions then become "How does one achieve these standards if not with the removal of the dam. This question does not come from a thought process of "if we can't meet it, lower it" but a more practical position that 99% of 500 naturally reared adult salmon (as mentioned on page 35) is different than 99% of 500 farm raise adult salmon.

Thank-you for reading about our concerns and should you have any questions and wish to discuss this matter further, please don't hesitate to contact me.

Best Regards,

Michelle M. Flewelling, Town Manager

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August 18, 2021

VIA ELECTRONIC MAIL

Kathy Davis Howatt
Hydropower Coordinator
Bureau of Land Resources
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Re: Shawmut Hydroelectric Project FERC No. 2322
Section 401 Water Quality Certification (DEP Application # L-19751-33-H-N)

Dear Kathy:

Please accept these comments on behalf of Sappi North America, Inc. ("Sappi") on the draft water quality certification order for the Shawmut Hydroelectric Project. Sappi objects in the strongest terms to the draft order, which proposes to deny certification on the basis that the proposed upstream fish passage is estimated to be 96% effective, rather than 99% effective. Because we understand that 99% effectiveness is not achievable at this site (and the draft order fails to address that issue), the logical result of such a denial would be removal of the Shawmut Dam. As we have stated previously, removal of the Shawmut Dam would have potentially devastating economic effects on Sappi's Somerset Mill, its employees, and its suppliers, and thus a similarly devastating impact on the surrounding communities whose economies rely to a large extent on the Somerset Mill. Therefore, and because the applicable water quality standards do not require 99% effective upstream fish passage (which is not based on science), we request that DEP revise the draft order so that it grants water quality certification for the operation of the project as proposed, and as approved by the Federal Energy Regulatory Commission (FERC) in the Draft Environmental Assessment (DEA) issued on July 1, 2021.

The draft certification order dismisses Sappi's concerns with the following statement, on page 52: "removal of the Shawmut Dam and the associated release of its impoundment is not proposed or considered in the water quality certification application before the Department and the comments do not address the elements of Maine's water quality standards reviewed herein." This statement is wrong on both points.

First, although removal of the Shawmut Dam has not (of course) been proposed, removal of the dam *must* be considered as a likely outcome of denial of the certification. DEP cannot simply bury its head in the sand about this issue. You ignored our comments because dam removal is not directly at issue, but it is the logical conclusion and, as we have noted in our previous comments, dam removal could result in shutting down the Sappi Somerset mill.

Second, Sappi's comments did in fact address the elements of Maine's water quality standards, stating as follows: "we are asking MDEP, in connection with its consideration of Brookfield's application for water quality certification, to conclude that the adverse impacts of removal of the Shawmut Dam would greatly outweigh any potential benefit to fish habitat, and that requiring Brookfield to construct effective and cost-effective fish passage facilities – as described in the DEA – would ensure compliance with state water quality standards, to the extent such water quality standards can be interpreted to require fish passage at the Shawmut Dam." Those comments directly addressed the elements of Maine's water quality standards at issue in the certification order.

The water quality standards at issue are found at 38 M.R.S. § 465(3)(A) and (C). Paragraph A provides that "Class B waters must be of such quality that they are suitable for the designated uses of . . . habitat for fish and other aquatic life. The habitat must be characterized as unimpaired." Paragraph C provides that "Discharges to Class B waters may not cause adverse impact to aquatic life in that the receiving waters must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community." Both of those standards require the DEP to balance competing uses of the waters, and to consider in that balancing analysis upstream economic impacts such as those Sappi would suffer in the event of dam removal.[1] Specifically, paragraph A uses the word "suitable," which necessarily requires a balancing of other uses in making the subjective "suitability" determination. Paragraph C uses the word "sufficient," which also necessarily requires a balancing of other uses in making the subjective "sufficiency" determination.

In other words, as we wrote in our prior comments, DEP must consider whether the adverse impacts of removal of the Shawmut Dam (flowing from denial of the certification) would outweigh any potential incremental benefit to fish habitat of requiring slightly more effective fish passage, and whether requiring Brookfield to construct effective and cost-effective fish passage facilities – as described in the DEA – would ensure compliance with state water quality standards. We believe the answer is clear – the DEA-approved fish passage meets water quality standards, given the balancing analysis required here and the very small differential (3%) between the effectiveness proposed (96%) and the effectiveness DMR desires (99%), and the fact that the higher percentage likely is not even achievable. The draft order, however, fails to undertake that required balancing analysis. In fact, the draft order entirely ignores the ramifications for the dam, and for Sappi and other stakeholders, of a denial of certification.

[1] In addition to the estimated cost of replacement water intake and discharge facilities, as evidenced by documentation we have previously supplied to you for inclusion in this administrative record (see our March 29, 2021 letter to FERC, copied to you), it has become clear since our prior comments that it is unlikely replacement process water intake facilities could even be designed and constructed to provide the water needed to operate the Somerset Mill. See the letter from TRC Consulting and the affidavit of James P. Brooks, attached hereto as Exhibit A and Exhibit B, respectively. Also, there would be significant permitting obstacles to construction of such a replacement intake system. For example, would the wells needed for such a replacement system meet the significant groundwater well standards in 38 M.R.S. § 480-D(10), which include a requirement of no unreasonable impact on waters of the State, water-related natural resources, and other users?

Basing the denial on a 3% differential in effectiveness is arbitrary[2] and contrary to DEP's historic practice. The arbitrariness of this difference is demonstrated by DEP's practice in other contexts of finding compliance with water quality standards when modeling or calculation shows substantial compliance rather than 100 percent compliance, such as decisions that are within the margin of error or testing capability. It is entirely inappropriate to ascribe a rigid numeric value to a narrative criterion without having gone through notice-and-comment rulemaking.

As further evidence of the arbitrariness of a 99% upstream passage efficiency requirement, I attach as Exhibit C a letter from Bill Ball, the President and founder of Acheron Engineering Services and a professional engineer with extensive experience in fish passage at hydropower dams. Mr. Ball makes the following key points:

- The 99% standard is not reasonable and science-based.
- DEP has not acted consistently with its prior practice or the practice of fisheries agencies in issuing the draft denial.
- Denying certification based on a difference of 3% in proposed fish passage efficiency is arbitrary, because it ignores the much greater variability in methodology used to measure that efficiency.
- The regulatory standard established by DEP should not be any higher than the estimated efficiency of a restored riverine system without the dam in place, and the failure to address that issue in the draft denial is a significant failure.
- Nowhere does DEP address the normal annual variation in fish passage effectiveness; with a 99% standard, there is no way to account for any natural variation. Every year, the licensee must achieve either 100% or 99% effectiveness. This is unreasonable and not based on science.
- It would appear that DMR's 99% effectiveness recommendation is a sham intended to result in dam removal.
- Given the lack of science and engineering to support the draft denial, it seems clear that DEP is simply deferring to DMR's desire to have the lower Kennebec River dams removed; DEP normally bases its decision on science and this draft denial seems to be an aberration.

In summary, the draft denial is not based on science or good engineering practice.

[2] Although the water quality statutes vest the DEP with significant discretion, that discretion is not unlimited. The DEP must at a minimum undertake the balancing analysis discussed above. To the extent the DEP interprets the law to vest it with discretion to deny certification based on a 3% difference in the effectiveness of upstream fish passage – without undertaking a rulemaking to provide a rationale for that small distinction – the statutes that purport to provide that virtually unlimited discretion are void for vagueness because they allow DEP to make arbitrary and capricious determinations. *See, e.g., Rangeley Crossroads Coalition v. Land Use Regulation Commission*, 2008 ME 115, ¶ 12 (statutes are void for vagueness when they fail "to furnish a guide which will enable those to whom the law is to be applied to reasonably determine their rights thereunder, and [which will assure] that the determination of those rights will not be left to the purely arbitrary discretion of the administrat[ive agency]."); *Kosalka v. Town of Georgetown*, 2000 ME 106 (quantifiable standards are necessary so the applicant in not required to guess what level of conservation is necessary, and so decision makers do not need to "make legislative-type decisions based on any factor they independently deem appropriate.").

As we also suggested in our prior comments, the water quality standards do not even require fish passage at the Shawmut Dam. This is because the standards are directed only at water quality, not the physical attributes of the river channel, such as the presence of a dam. As noted above, Paragraph A provides that "Class B waters must be of such quality that they are suitable for the designated uses of . . . habitat for fish and other aquatic life." Paragraph C provides that "the receiving waters must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community." The focus clearly is on water quality, not physical obstructions in the water. There are separate laws to deal with those non-water quality-related issues – the Federal Power Act (FPA) for FERC-licensed dams,[3] and the Maine Fishway Law (12 M.R.S. § 12760) for other dams and artificial obstructions. Whether or not the DEP *may* require fish passage, however, it *should* not, in this case, require passage with an estimated efficiency that would render the dam uneconomic (if it is achievable at all) or that would (by virtue of being uneconomic or impossible to achieve) result in denial of water quality certification. In other words, because DEP at a minimum has discretion whether to require fish passage at all it also has flexibility to decide how effective such passage should be, if DEP does require it -- particularly when the difference between cost-effective passage (96%) and passage that is not achievable (99%) is so small. And 99% effectiveness is rarely achieved even at sites that are entirely natural, with no artificial obstructions.

In short, we request DEP to address these deficiencies by revising the order to grant certification of the project and its fish passage as proposed.

Thank you for your consideration of these comments.

Sincerely,

Matthew D. Manahan

Enclosures
cc: Hon. Janet Mills
James Brooks
Briana O'Regan, Esq.

[3] The FPA requires that FERC must consider whether the hydropower project is best adapted to a comprehensive plan for, among other things, protection, mitigation, and enhancement of fish (included related spawning grounds and habitat), that FERC must consider the recommendations of state and federal agencies regarding protection of fish and wildlife (16 U.S.C. § 803(a) (FPA § 10(a))), and that the FERC license must include conditions to protect fish and wildlife, based on the recommendations of state and federal agencies (16 U.S.C. § 803(j) (FPA § 10(j))). Also, FERC must require construction of fishways that are prescribed by the U.S. Fish and Wildlife Service (16 U.S.C. § 811 (FPA § 18)).

EXHIBIT A

14 Gabriel Dr.
Augusta, ME 04330

T 207.620.3800
TRCcompanies.com

August 18, 2021

Mr. James Brooks
Environmental Manager
Sappi Somerset Mill
1329 Waterville Road
Skowhegan, ME 04976

Sent Via Email: james.brooks@sappi.com

Subject: Comments on MDEP's Draft Denial of Shawmut Hydroelectric Project
Kennebec River Study at Sappi Somerset Mill
TRC Project No. 429681

Dear Jim:

TRC Environmental Corporation (TRC) is providing this letter to Sappi in conjunction with your comments on the Maine Department of Environmental Protection's (MDEP) August 11, 2021 draft order denying the water quality certification application for the Shawmut Hydroelectric Project, owned by Brookfield White Pine Hydro LLC (Brookfield).

TRC was retained by Sappi in February 2021 to provide a brief conceptual analysis of the potential impacts on the Somerset Mill if the Shawmut dam downstream of the mill were to be removed. On March 11, 2021, TRC provided Sappi with a report of conceptual alterations to the Somerset Mill that could be constructed if the Kennebec River levels were to drop an estimated 15 to 20 feet as a result of the dam removal; the report did not address the actual feasibility of those options. Sappi included this report with its comments to the Maine Department of Marine Resources (MDMR) proposed fisheries management plan amendment for the Kennebec River, and a MDMR public hearing that was scheduled for February 16, 2021.[1] In our March 11 report, TRC provided Sappi with two conceptual options to modify the mill's water intake system:

- Option 1 – In-River Basin: Construct a new pump house with a new in-river basin footprint of approximately 500 feet by 500 feet.

- Option 2 – Vertical Well Caissons: Construct five to six new vertical well shafts (or caissons, each 8 to 10 feet in diameter) on the riverbank, with lateral perforated pipes tunneled horizontally below the Kennebec River.

Additional modifications to the mill's outfall pipe system, diffuser, and foam tank were also described in our report to allow for continued operation of the mill. TRC's conceptual cost opinions for modifications to the Sappi Mill are on the order of $52 to $55 million.

While the options TRC presented in our March 11 report are theoretically viable, much more additional study and design would be required to demonstrate viability for Sappi. For example, subsurface ground and bedrock surveys would need to be conducted to characterize the soils that could be encountered. Detailed engineering design analyses would need to be completed and reviewed by Sappi before proceeding further.

[1] The MDMR public hearing was rescheduled for March 15, 2021 due to inclement weather on February 16.

Mr. James Brooks
Sappi
August 18, 2021

As part of the March 11 report, TRC provided a preliminary environmental permitting matrix of possible local, state, and federal permits that could be required for the conceptual piping modifications based on TRC's expertise. However, no contact has been made with any permitting authority regarding the viability of these options. Importantly, TRC noted that permitting requirements may alter the conceptual design modifications, and additional time and design with permitting authorities is required.

TRC included in our report only the conceptual costs to obtain environmental permits, but we did not comment on the likelihood of obtaining such permits. TRC stands by our report conclusions that the permitting processes may significantly change one or both of the conceptual options, requiring additional design work by Sappi. In fact, one or more of the permitting agencies could deny these proposed options, which would severely limit Sappi's ability to continuing mill operations. If Sappi cannot obtain the necessary water to supply the mill's operation, the mill will have to close.

In conclusion, if a MDEP denial of the Brookfield water quality certification results in the removal of the Shawmut dam, Sappi will be required to design, permit, and construct major modifications to its water intake and diffuser systems, and it is entirely possible that no such system could be designed, permitted, and constructed to provide sufficient water to meet the mill's demand. There are significant technical and permitting hurdles that would need to be crossed by Sappi, and all of these hurdles present significant risk to the continued operation of the Somerset mill.

If you have any questions regarding this information, please do not hesitate to contact me at 207-313-3675 or mbergeron@trccompanies.com.

Sincerely,

Mark Bergeron, P.E.
Environmental Operations Leader - Maine

EXHIBIT B

STATE OF MAINE
BEFORE THE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

AFFIDAVIT OF JAMES P. BROOKS

I, James P. Brooks, being first duly sworn, hereby depose and state as follows:

1. I am the Environmental Manager for Sappi North America Inc.'s Somerset Mill in Skowhegan, Maine. I have over 37 years of combined environmental management experience as an environmental regulator in Maine state government and as an environmental manager in the private sector, including the paper industry.

2. The Sappi Somerset Mill is an integrated pulp and paper making operation where we manufacture coated free sheet papers, packaging and specialty papers, and bleached Kraft pulp. The mill is capable of producing 1,700 tons of pulp and 2,800 tons of paper products per day and receives over 200 truckloads of wood products per day.

3. The Kennebec River is the only water source for the mill, and we use an average of 30 million gallons per day (MGD) for processing, cooling, and fire protection at the facility.

4. TRC Consulting has concluded that removal of the Shawmut Dam would lower the impoundment by 15-20 feet, so that the water level would be well below Sappi's water intake structure and would require significant modifications to the mill's water intake system and wastewater discharge outfall and diffuser.

5. TRC has estimated that it would cost in excess of $50 million to remediate these impacts but, in my opinion, it is unlikely replacement process water intake facilities could even be designed and constructed to reliably provide the water needed to operate the Somerset Mill.

6. TRC's analysis came up with two shallow water withdrawal concepts: (1) a trench water extraction system, and (2) a series of deep well caissons with lateral water

extraction pipes under the river. The latter concept would draw through the sediment below the river to the wells; the extraction creates a hydrological flow.

7. Based on information and belief, the Nine Dragons (ND) mill in Old Town, Maine has a shallow water trench withdrawal system in the Penobscot River, which was installed in 2011 as a result of lower water levels due to the removal of a nearby dam. But the ND mill withdraws only 10-11 MGD, while the Somerset mill draws three times as much water – 30 MGD. Further, the ND mill has significant problems with its shallow water withdrawal system (e.g., ice and debris), enough so they are planning to abandon it and replace it with a piped water source originating from a dam approximately two miles upstream from the mill location.

8. Our research has shown that the caisson well option has been installed mostly where there is a significant amount of sediment at the base of the water source. Based on the information we have, we believe there are significant areas of ledge (in addition to a limited amount of sediment) in the Kennebec River adjacent to the Somerset Mill. The installation of caisson wells could possibly create hydrogeologic flow in bedrock water, but that would likely result in local well water impacts because most homeowners have drilled wells and extract water from cracks in the bedrock. It is unlikely, in my opinion, that the caisson well option would provide sufficient water for Sappi's needs.

9. I believe that the caisson well option also is unlikely to be able to extract the volume necessary for the mill; the caisson systems we researched were sized in the 10-12 MGD range, for desalinization and power plant operations – not for 30 MGD paper mills.

10. I am not aware of any other paper companies with comparable process water intake systems.

11. If the Shawmut dam were removed, the existing wastewater diffuser would be above the lower water levels (estimated to be 4 to 6 feet). A new diffuser would have to be redesigned and placed downstream to a lower elevation and underneath the river water flow (we believe the width of the river would shrink by approximately 200'). Because of the shallowness of the water, other protective features (ripraps with cleaners) would also be designed to require more frequent maintenance and cleanings. All of this represents an expensively engineered system with significantly higher operating costs.

DATED: August 17, 2021

James P. Brooks

STATE OF MAINE
SOMERSET, SS. August 17, 2021

Personally appeared before me the above-named James P. Brooks and made oath that the above-stated facts are true based upon his own personal knowledge, or his information and belief.

Before me,

Holly L.
Notary Public/Attorney-at-Law

Holly Saberi
Notary Public, State of Maine
My Commission Expires 5/17/2026

EXHIBIT C

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

August 17, 2021

Mr. James P. Brooks
Sappi North America, Inc.
1329 Waterville Road
Skowhegan, ME 04976

Re: Draft WQC, Brookfield White Pine Hydro LLC, Shawmut Hydroelectric Project #L19751-33-H-N (DENIAL)

Dear Jim:

In accordance with your request, Acheron has reviewed the draft denial issued by the Maine Department of Environmental Protection (MDEP) of the Water Quality Certification (WQC) application for the Shawmut Hydroelectric Project, FERC P-2322 (Shawmut), on the Kennebec River in Fairfield, Maine. The project is owned by Brookfield White Pine Hydro LLC (Brookfield). Our understanding is that Brookfield has applied to the FERC for renewal of the license for the Shawmut facility and, as part of the renewal application process, has also applied to the MDEP for a WQC. On August 11, 2021 the MDEP released a draft denial of a WQC for the project. Without a WQC from the MDEP, FERC will be required to deny the new license. Denial of the new license for the Shawmut Project likely would necessitate surrender of the project license and potential future removal of the dam and its related appurtenances.

The principal reason for the denial of the WQC is related to passage efficiency for Atlantic salmon at the Shawmut project. Our understanding is that Brookfield has proposed to install a fish lift at the Shawmut Project. The licensee's estimated efficiency of fish survival (efficiency) is 96%. The MDEP has concluded in the denial of the WQC that the fish passage facilities must guarantee a passage efficiency of 99%.

The following are some of the issues raised by the MDEP's denial of the WQC for the Shawmut Project.

1. **Precedent:** We are not aware of any WQC previously issued by the MDEP that required a passage efficiency of 99%, or even a certain fish passage performance standard. However, we understand that fish passage standards have been prescribed elsewhere in Maine by federal fisheries agencies, including 95% upstream/96% downstream on the Penobscot River (Milford Dam), 90% at Ellsworth Dam on the Union River, and 95%/96% proposed/prescribed for the Pejepscot Dam on the Androscoggin River. These percentages are in line with what has been proposed by Brookfield and accepted by FERC in its draft Environmental Assessment.

Brookfield proposes to construct a new upstream anadromous fish lift adjacent to the 1912 powerhouse to provide volitional upstream passage for approximately 1,540,000 blueback herring, 134,000 alewife, 177,000 American shad, and 12,000 Atlantic salmon. Brookfield estimates that the proposed fish lift and related facility will achieve an adult salmon upstream survival standard of 96% for the Shawmut Project and accumulative adult upstream survival standard of 81.4% for the four lower Kennebec River projects combined. Brookfield further proposed to conduct up to two years of qualitative passage effectiveness studies using up to 20 adult salmon to evaluate the performance of the new fish lift. Once sufficient numbers of returning adult salmon are available (i.e., approximately 200 fish), Brookfield proposed to conduct a quantitative adult salmon upstream passage study to evaluate the cumulative upstream passage effectiveness of the fish passage facilities at the Shawmut Project and the other three lower Kennebec River projects. (We have assumed that both Brookfield and the MDEP are equating survival to passage effectiveness.)

The MDEP must establish standards for any license, permit, or WQC that are reasonable and based on sound science. The MDEP has not used a reasonable and science based standard in this instance, and has not acted consistently with its prior practice or the practice of fisheries agencies.

2. **Compliance Monitoring:** Whenever MDEP establishes a standard or limit in any license, permit, or WQC, MDEP also must establish a testing protocol to measure compliance with that standard. MDEP has not established a testing protocol in this instance, because it has denied certification. It is, however, common practice to measure fish passage effectiveness (survival) with a pit tag study.

   Pit tag studies, as with any other type of compliance monitoring method, have a certain precision or variability. Fish passage effectiveness, or efficiency, is estimated by measuring the number of fish passing some upstream point compared to the number of fish passing a downstream point. In a pit tag study, the downstream value is the number of fish fitted with pit tags and released. The upstream measurement is typically accomplished electronically using a pit tag detection system.

   Pit tag studies have certain factors that influence the accuracy of the estimates. Factors include:
   a. Expiration of fish samples due to the stress of trapping, handling, and pit tag insertion,
   b. Predation of some fish within the natural riverine habitat,
   c. Expiration of some fish due to natural causes,
   d. Loss of fish by fishermen, either inadvertent or intentional,
   e. Flows in the river that can impact passage in the natural habitat,
   f. Lack of stamina by some fish to swim from the release point to the exit of the lift,
   g. Loss of some fish due to exhaustion that is unrelated to man-made activities, and

h. Failure to record pit tab numbers at the upstream monitoring station due to failure of tags to transmit properly or the monitoring equipment to detect every tag correctly.

What the testing is trying to measure is the total number of fish that successfully navigate from point A to point B, find the entrance to the fish lift, and are successfully deposited upstream. It is reasonable to assume that 100% of the fish that enter the trap are deposited upstream. The variables are related to the fish finding the entrance to the trap plus the variables inherent in the study methodology. The product of the upstream value divided by the downstream value (passage efficiency) is influenced by all of these factors.

It is not uncommon for the losses caused simply by the study methods and procedure to be in the range of 10% to 15%. In other words, if 5 different pit tag studies were conducted in a given stretch of river, it is more likely than not that the results of 5 different studies will vary over a range of 10% to 15% because of all the variables inherent in study. A paper by Patrick J Connolly[1] of the USGS Western Fisheries Research Center, Columbia River Research Laboratory in Cook, Washington, addresses this very issue. Mr. Connolly estimated that the tag detection system used in his study had an 85% detection efficiency. Pit tag detection is just one of the factors that affect the overall efficacy of a pit tag study.

Thus, denying certification based on a difference of 3% in proposed fish passage efficiency is arbitrary, because it ignores the much greater variability in methodology used to measure that efficiency.

3. **Alternatives Analysis:** Nowhere in the draft denial do we find any discussion of alternatives. One potential option is of course removal of the dam and the hydroelectric generating facilities at the Shawmut Project. Every natural riverine system presents challenges to the upstream migration of fish species. The question is: what would the natural impediments to upstream fish migration likely be and what is the estimated efficiency of upstream migrants in a restored Kennebec River system if the Shawmut Dam were removed? It is unreasonable to assume that the natural efficiency would be 99%. There are a multitude of factors that adversely affect fish migration. The regulatory standard established by the MDEP should not be any higher than the estimated efficiency of a restored riverine system without the dam in place, and the failure to address that issue in the draft denial is a significant failure.

In addition, nowhere does the MDEP address the normal annual variation in fish passage effectiveness. Annual variations in river flow, temperature, dissolved oxygen, predation, and

[1] Chapter 7, Guidelines to Indirectly Measure and Enhance Detection Efficiency of Stationary PIT Tag Interrogation Systems in Streams, U.S. Geological Survey, Western Fisheries Research Center, Columbia River Research Laboratory, Cook, Washington, USA.

other factors all contribute to large variations in the effectiveness of fish passage. Simply put, fish passage effectiveness will vary from year to year. With a 99% standard, there is no way to account for any natural variation. Every year, the licensee must achieve either 100% or 99% effectiveness. This is unreasonable and not based on science.

Thus, it would appear that DMR's 99% effectiveness recommendation is a sham intended to result in dam removal. This conclusion is supported by DMR's comments to DEP, in which DMR indicated that the estimated 96% efficiency of Brookfield's proposed fish lift will not be achievable because periodic false attraction flows may result in some Atlantic salmon not being able to locate the fishway entrance. This point, however, applies to all engineered fish passage systems, not just the one proposed here by Brookfield, so this comment makes clear that DMR knows that there is no engineered system that could achieve DMR's 99% efficiency recommendation, either. Which means that what DMR really wants is dam removal, as demonstrated by DMR's withdrawn Kennebec River Fisheries Management Plan amendment earlier this year.

In summary, the draft denial is not based on science or good engineering practice. Given the lack of science and engineering to support the draft denial, it seems clear that DEP is simply deferring to DMR's desire to have the lower Kennebec River dams removed; DEP normally bases its decision on science and this draft denial seems to be an aberration.

Sincerely,
Acheron Engineering Services

William B. Ball (Signature)

William B. Ball, PE
President

Brookfield
Renewable

August 18, 2021

Kathy Davis Howatt
Hydropower Coordinator
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Re: ***Shawmut Hydroelectric Project FERC No. 2322-060 (the "Project")***
***Section 401 Water Quality Certification (DEP Application # L-19751-33-H-N*) (the "*WQC Application*")**

Dear Ms. Howatt:

Brookfield White Pine Hydro LLC hereby withdraws its August 28, 2020 application for water quality certification, a step we feel is necessary given the apparent confusion around the details and status of Brookfield's application with the Federal Energy Regulatory Commission (FERC) for a new license for the Project.

Brookfield greatly appreciates the Department's efforts processing our water quality certification application for the Shawmut Project over the past year. Unfortunately, based on our evaluation of the draft Order denying our WQC Application provided on August 11 ("Draft Order"), it is clear that the Department's review did not account for a number of significant developments that have occurred since Brookfield submitted its WQC Application. In particular, the Department's singular focus seems to have been Brookfield's January 31, 2020 FERC license application, but that application no longer reflects the protection, mitigation, and enhancement measures expected in a new FERC license for the Project.

The Department's review did not account for the significant changes and additions to the proposal over the last twelve months, as well as additional analyses that have been developed by Brookfield and other agencies during that time. These include, for example, FERC's Draft Environmental Assessment (DEA) issued on July 1, 2021, Brookfield's draft Biological Assessment (BA) and Species Protection Plan (SPP) filed with FERC on May 31, 2021, and the fish passage prescriptions provided by the federal departments of the Interior and Commerce that will become mandatory conditions in the new license. Previous Department decisions, in contrast, have considered FERC DEA analyses as well as required measures such as Section 18 prescriptions. Yet the Department's review simply did not account for these significant changes and, as a result, the Draft Order does not reflect the proposed project as it

Brookfield
Renewable

currently stands. For example, Section 1.I of the Draft Order lists a summary of twenty-two Proposed Operation and Protection, Mitigation and Enhancement Measures—yet our review found that six of these measures have been amended or superseded and that several new measures are not adequately described.

It is unclear to Brookfield whether the Department has reviewed and analyzed whatever data and methodology underlies the recommendations of the Department of Marine Resources (DMR). The DMR has submitted detailed recommendations to the Department which claim to be based on exacting analysis, but it appears that none of the underlying analysis or data on which those recommendations are based is part of the administrative record underlying the Department's draft decision on the WQC Application. We therefore request that the Department gather this data from DMR and share it with Brookfield and make it part of the record so it may be critically assessed in the context of our forthcoming new application for water quality certification.

Given the complexity of the parallel federal regulatory processes as well as the limited amount of time to update and clarify the administrative record, Brookfield withdraws DEP Application # L-19751-33-H-N. Brookfield will file, within the next 60 days, a new application for Water Quality Certification reflecting the substantial revisions resulting from the DEA as well as the BA and SPP filed subsequent to our previous application. This new application will clearly lay out the updated proposal to reflect mandatory conditions and additional Brookfield-proposed measures, provide additional analyses, and reflect new regulatory developments affecting the Project from the last year. Finally, we understand that the submission of a new application will start a one-year period for the Department's review under the Clean Water Act and we would not take a contrary position.

Please feel free to contact me by phone at (207) 755-5605 or by email at Randy.Dorman@BrookfieldRenewable.com.

Sincerely,

Randall Dorman
Licensing Manager
Brookfield Renewable U.S.

cc: Ms. Kelly Maloney, Brookfield Renewable
Ms. Wendy Bley, Kleinschmidt Associates