



October 9, 2020

***VIA E-FILING***

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Pejepscot Hydroelectric Project (FERC No. 4784-095)  
Response to Comments on the August 11, 2020 Updated Study Report Meeting Summary,  
Requests for Modifications of Approved Studies, and Requests for New Studies.**

Dear Secretary Bose:

Topsham Hydro Partners Limited Partnership (Topsham Hydro) is the licensee for the 13.88-megawatt (MW) Pejepscot Hydroelectric Project (Project), FERC No. 4784. Topsham Hydro is pursuing a new license for the Project using the Federal Energy Regulatory Commission's (FERC or Commission) Integrated Licensing Process (ILP) as defined in 18 Code of Federal Regulations (C.F.R.) Part 5. In accordance with 18 C.F.R. §§ 5.15(c)(5) and 5.15(f), Topsham Hydro is hereby filing this response to stakeholder comments on the August 11, 2020 Updated Study Report (USR) Meeting Summary, requests for modification of approved studies, and requests for new studies.

**Background**

Topsham Hydro completed the following 16 studies as described in the Commission's July 3, 2018 Study Plan Determination (SPD) for the Project:

1. Water Quality Assessment;
2. Tailwater Benthic Macroinvertebrate Study;
3. Eel Monitoring Survey;
4. Evaluation of Spring Migration Season Fish Passage Effectiveness;
5. Evaluation of Fall Migration Season Fish Passage Effectiveness;
6. Fish Entrainment and Turbine Survival Assessment;
7. Desktop Analysis of the Potential Effectiveness of the Fish Lift for passing adult Atlantic Salmon;
8. Stranding Evaluation;
9. Sediment Storage and Mobility;
10. Large Woody Debris;
11. Largemouth and Smallmouth Bass Spawning Habitat Survey;
12. Wildlife and Botanical Resources Survey;
13. Recreation Facilities Inventory and Use Assessment;
14. Historic Architectural Survey;
15. Historic Archaeological Phase 1 Survey; and
16. Precontact Period Archaeological Survey.

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Topsham Hydro filed an Initial Study Report (ISR) with the Commission on July 12, 2019, pursuant to its regulations at 18 C.F.R. § 5.15(c)(1). The technical study reports for Study Nos. 1, 2, 8, 12, and 14 were filed as appendices to the ISR. Pursuant to 18 C.F.R. § 5.15(c)(2), Topsham Hydro held an ISR Meeting on July 23, 2019 to discuss the overall progress in implementing the study plan, data collected to date, variances from the SPD, and the results of the studies. Topsham Hydro filed an ISR Meeting Summary with the Commission on August 11, 2019. Topsham Hydro did not propose any modifications to ongoing studies or new studies. Stakeholders were afforded a 30-day period to provide comments on the ISR Meeting Summary, recommend study modifications, or propose new studies. No comments, study modifications, or new studies were requested by stakeholders.

On July 10, 2020, Topsham Hydro filed the USR pursuant to the Commission’s regulations at 18 C.F.R. § 5.15(f). The study reports for Study Nos. 3, 4, 5, 6, 7, 9, 10, 11, 13, 15, and 16 were filed as appendices to the USR. Pursuant to 18 C.F.R. §§ 5.15(c)(2) and 5.15(f), Topsham Hydro held a USR Meeting on July 22, 2020 to discuss the overall progress in implementing the study plan, data collected to date, variances from the SPD, and the studies. Topsham Hydro filed the USR Meeting Summary with the Commission on August 11, 2020. Topsham Hydro did not propose any modifications to ongoing studies; however, Topsham Hydro did recommend two new studies in the USR Meeting Summary in response to comments by several stakeholders regarding impediments to effective upstream passage at the Project. Specifically, Topsham Hydro proposed to conduct a Project Sound Study to investigate whether underwater sound at the Project is being produced at the magnitude and frequency band known to alter behavior of alosines that may be attempting to utilize the Project fish lift. Topsham Hydro also proposed to conduct CFD modeling of the internal portion of the Project fish lift as well as the tailrace area to assess the hydraulic conditions in these areas relative to alosine passage. Stakeholders were afforded a 30-day period to provide comments on the USR Meeting Summary, recommend study modifications, or propose new studies. Three stakeholders, as shown in Table 1 below, filed comments on the August 11, 2020 USR Meeting Summary, the technical study reports, and/or filed requests for new or modified studies.

**Table 1: Stakeholders filing comments on the August 11, 2020 USR meeting summary, the technical study reports, and/or filing requests for new or modified studies.**

Stakeholder	Filing Date
Trout Unlimited (TU)	August 10, 2020
National Marine Fisheries Service (NMFS)	September 10, 2020
United States Fish and Wildlife Service (USFWS)	September 11, 2020

In accordance with 18 C.F.R. § 5.15(d) of the Commission’s regulations, any request to modify an ongoing study must be accompanied by a showing of good cause why the request should be approved and must include a demonstration that: (1) the approved studies were not conducted as provided for in the approved study plan; or (2) the study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way.

Additionally, as further specified in 18 C.F.R. § 5.15(e), any new study requests must show good cause and a statement explaining: (1) any material changes in the law or regulations applicable to the information request, (2) why the goals and objectives of any approved study could not be met with the approved study methodology; (3) why the request was not made earlier; (4) significant changes in the project proposal or that significant new information material to the study objectives has become available; and (5) why the new study request satisfies the criteria under 18 C.F.R. § 5.9(b).

As provided in 18 C.F.R. §§ 5.15(c)(6) and 5.15(f), the Commission’s Director of the Office of Energy Projects will resolve any disagreements and amend the approved study plan (as appropriate) within 30 days of the date of this filing (i.e., on or before November 9, 2020).

### **Request to Modify Studies**

The NMFS and USFWS requested modifications to the Large Woody Debris (LWD) study stating that *“In its USR, the Licensee provided information regarding the total volume of LWD (and presumably other debris) disposed of from July 2019 to June 2020. However, the report did not contain any estimate of the number of logs equal or exceeding 4 inches in diameter and 6 feet in length. This size class of LWD is of particular importance, as it represents material that creates habitat structure and promotes channel-forming processes that enhance habitat heterogeneity. Absent this information, it is difficult or impossible to determine the scope of the project effect and thus, the necessity for and scope of any potential license conditions.”*

NMFS and USFWS proposed to modify the study plan by requesting that FERC require Topsham Hydro *to sample the contents of a 30-yard container to determine the number of logs equal or exceeding 4 inches in diameter and 6 feet in length. This sampling should occur at least twice; one sample immediately following spring flows and one sample following lower late-summer or early-fall flows. Utilizing the existing information on the removal of 30-yard containers, results of this sub-sampling should be sufficient to extrapolate the total amount of this relevant size class of LWD removed on an annual basis, while also providing some insight as to the seasonality of LWD recruitment.*

The objectives outlined within FERC SPD were to (1) record for one year the number of logs equal or exceeding 4 inches in diameter and 6 feet in length that Topsham Hydro collects and removes from the Project; (2) explain how Topsham Hydro handles, stores, and disposes of debris and LWD and any limits on those abilities; and (3) ultimately identify any potential alternative management strategies for LWD to improve fish and aquatic habitat downstream of the dam. As noted by NMFS and USFWS, Topsham Hydro did not record individual logs, exceeding 4 inches in diameter and 6 feet in length, removed from the Project, but instead estimated the total volume of debris by analyzing the number of containers removed from the site in one year. During the study period, Topsham Hydro removed approximately 150 cubic yards of debris from the site. As much of this debris would be smaller than the targeted LWD described in the SPD, Topsham Hydro’s estimate is conservative and the actual amount of LWD removed at the Project is somewhat less than the 150 cubic yards. Despite the resulting conservative estimate, Topsham Hydro was able to use this information to determine the scope of the Project effects and inform the development of Protection, Mitigation and Enhancement (PME) measures at the Project as it relates to LWD removal. Specifically, in the Final License Application (FLA), Topsham Hydro proposed to install a trash boom, as part of the proposed downstream fish guidance system. The trash boom will facilitate the sluicing of the majority of debris, including LWD, downstream past the Project, resulting in benefits to aquatic habitat in the Project tailwater and downstream reaches. As such, this additional information requested by NMFS and USFWS is unnecessary as the majority of LWD will now be passed downstream regardless of size class.

While not providing a precise estimate of LWD removed at the Project, Topsham Hydro believes that the LWD study provided useful information to inform the development of an appropriate PME measure at the Project to address LWD removal. Namely the recognition that LWD is being removed from the Androscoggin River under current maintenance activities, which will otherwise be ameliorated by Topsham Hydro’s proposal to install a debris boom that will sluice the vast majority of LWD downstream. The study, as conducted, therefore meets the overall objectives of the FERC SPD, and as such, the requested stakeholder modifications to the LWD study are unnecessary. For this reason, Topsham Hydro urges the Commission not to adopt the requested modifications to the LWD study.

## Request for New Studies

The NMFS and USFWS requested a new Anadromous Fish Upstream Passage Efficiency Study at the Project. Topsham Hydro previously completed this study [Study No. 4-Evaluation of Spring Migration Season Fish Passage Effectiveness] in 2019. However, NMFS and USFWS state that *“Our new study request is predicated on the following new information developed from our 2017 study requests: 1) information from the 2019 passage study; 2) new supporting information, in the form of a 2004 evaluation of the Pejepscot fishway efficacy, which was previously unreported by Topsham Hydro; and 3) a significant change in the project proposal – a new operational protocol for the fishway, defined in the Licensee’s August 31, 2020 Final License Application (FLA). None of this information was available to us previously and thus this new study could not have been requested at an earlier date.”*

The new “project proposal” that NMFS and USFWS refer to is Topsham Hydro’s PME measure, as proposed in the FLA, to modify the current lift cycle at the fish lift as follows over the term of the new license:

- April 15 to May 15 and following passage of the first fish at the downstream Brunswick Project, the lift will be operated once every two hours from 8 am to 6 pm;
- May 16 through June 15, the lift will be operated once every hour from 8 am to 6 pm;
- June 16 through July 1, the lift will be operated every two hours from 8 am to 6 pm; and
- July 2 through November 15, the lift will be operated once a day from 8 am to 6 pm following passage of salmon at Brunswick if not already identified passing through Pejepscot.

The current protocol is to operate the lift every two hours from 8 am to 6 pm during the April 15 to November 15 upstream fish passage season.

To clarify, this proposed modification to the lift cycle is a post-licensing PME measure to be implemented after license issuance, and was informed by the 2019 upstream fish passage study results. In stark contrast, a change in project proposal is typically reserved for items such as a major operational change at a Project. For example, if an Applicant were to initially propose run-of-river operation at the time of the PAD filing, and then change course during the relicensing study phase and propose peaking operation, this would constitute a major change in Project operation and the Applicant’s project proposal. In this example, the need for additional studies would be warranted to determine the Project effects associated with this *“significant change in the Project proposal”* as stipulated in 18 C.F.R. § 5.15(e)(4). The results of the new studies could then be used to inform necessary PME measures related to the newly proposed operation.

Therefore, Topsham Hydro believes it is incorrect to interpret the modified lift cycle PME measure as a significant change in the Project proposal in the context of 18 C.F.R. § 5.15(e). Further, NMFS and USFWS have not provided additional information or demonstrated that there is an added benefit or good cause in conducting a study of a proposed PME measure prior to its implementation during the next license term. Finally, as it pertains to passage efficiency PME measures, Topsham Hydro believes the most accepted and effective practice is to implement the PME measure(s) during the specified period during the new license term, then conduct post-license efficiency testing to determine the level of improvement from all related proposed PME measures adopted as part of the new license. This is precisely the path that Topsham Hydro has proposed at this Project with the modified lift cycle PME measure, as it will be implemented in the first passage after license issuance, followed by one season of

fish lift efficiency testing for adult river herring during the fourth full passage season after license issuance<sup>1</sup>.

Moreover, the FERC relicensing process is predicated on collecting baseline information at a given Project, determining potential Project effects that need to be mitigated, and then proposing PME measures to address known environmental impacts. Thus, it is not clear to Topsham Hydro how having the results<sup>2</sup> of the 2004 floy tagging study<sup>3</sup> of the fish lift would have influenced the NMFS and USFWS 2017 study requests. Firstly, it would seem as though their 2017 study request and associated objectives would have been unchanged, as the study conditions would have by necessity still reflected baseline conditions at the Project (i.e., with the current fish lift cycle in place). Secondly, the results of 2004 floy tagging study by their nature do not provide the level of detail (e.g., far field and nearfield lift effectiveness) in terms of fish movement compared to telemetry based fish passage studies. Thus the 2004 floy tagging study results would not have been able to determine a specific cause of the low efficiency exhibited, such as an infrequent life cycle or other factor, which could then have been used to further inform the NMFS and USFWS 2017 study request.

Finally, a study of lift cycle effects to fish passage success would be predicated on the assumption that none of the other issues that have been raised by the NMFS and USFWS as potential impediments to successful passage (i.e. sound and internal fish lift hydraulics) are valid. Topsham Hydro, as discussed elsewhere, is in fact proposing additional studies to determine the effects of these two potential issues on passage success. A repeat of any telemetry study ahead of a determination of the influence of these additional potential issues would be premature and inconclusive.

NMFS and USFWS further state that: *After multiple collaborative meetings with Topsham Hydro, we, the U.S. FWS and Maine DMR (the agencies) determined that neither the existing study results, nor existing information were suitable to determine with any confidence the mechanism or mechanisms responsible for the poor and ineffective passage.*

Topsham Hydro respectfully disagrees and believes there are several valuable conclusions that can be drawn from the results of the 2019 river herring and American shad study, when they are examined in more detail than simply focusing on the overall fish lift efficiency metric. First, relative to adult river herring, the study results indicate that the nearfield attraction effectiveness<sup>4</sup> was approximately 93%, while the overall fish lift effectiveness<sup>5</sup> was approximately 20%. These results indicate that the majority of adult river herring were entering the fish lift entrance; however, many were not completing passage through the fish lift. In this case, it would appear that the internal hydraulics of the attraction water system, the frequency of the lift cycle, or some other related internal factor such as underwater sound could be affecting behavior of adult river herring within the fish lift, resulting in a low overall passage

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<sup>1</sup> In years 1 through 3 of the new license term, Topsham Hydro also proposes to implement potential physical and/or operational PME measures, as necessary, to further address upstream passage efficiency at the Project, as necessary. These PME measures will be informed by the results of Topsham Hydro's proposed new CFD modeling and underwater sound studies, which are discussed below.

<sup>2</sup> Topsham Hydro has not been able to locate the full report for the 2004 study; however, the general results were described in the minutes of a meeting between the Project owners and resource agencies (see Appendix E-2 of the FLA).

<sup>3</sup> The 2004 floy tagging study showed that 23 of the 200 fish moved above Pejepscot for a fish lift passage efficiency of 11.5% for adult river herring. Similar floy tagging studies conducted in 1991 and 1992 demonstrated an average passage efficiency of 87% for adult river herring.

<sup>4</sup> Nearfield attraction effectiveness is the probability of an adult river herring to move from the nearfield/tailrace region into the downstream entrance of the fish lift.

<sup>5</sup> Overall fish lift effectiveness is the probability of an adult herring to move from the tailrace/nearfield region to the upstream exit from the fish lift.

efficiency. This study finding is the reason that Topsham Hydro has proposed to modify the current lift cycle as a post-licensing PME measure. It is Topsham Hydro's belief that a more frequent lift cycle will have an overall positive benefit to passage efficiency for all species, but may not be the only factor affecting passage success. In addition, the study results also support Topsham Hydro's proposal to conduct new studies related to CFD modeling of the internal fish lift and tailrace, as well as underwater sound studies as part of the relicensing process. These two new studies would add to the information base available and will likely inform additional post license PME measures relative to upstream passage of migratory fish at the Project.

Secondly, relative to American shad the 2019 study results indicate that that only 28% of the tagged sample fish approached the Project area (in contrast to the 79% of tagged adult river herring that approached the Project area), as most shad fell back after release, or only partially ascended the river reach to the Project. Topsham Hydro believes this is likely due to the extensive handling and transport of the test specimens, which were caught via rod and reel downstream of the Brunswick Project, negatively affected the desire of test fish to migrate upstream during the study. Ideally, test specimens are captured at a downstream Project, in a similar method used for the capture of the adult river herring used in the 2019 study. This would have resulted in far less handling of the test specimens. However, a sufficient number of American shad could not be attained at the Brunswick fishway in 2019, making less than ideal capture and handling methods the only possible means of acquiring a sufficient sample size of test fish. Without an appropriate means of acquiring test fish that does not require extensive handling, conducting an additional upstream American shad telemetry would likely result in similar fallback behavior and lack of upstream movement, which would compromise study results. Until a better method for acquiring test fish is devised, Topsham Hydro sees little value in conducting additional telemetry study related to American shad and particularly in light of the fact that Topsham Hydro is proposing new studies of potential impediments to passage. A repeat of the adult American shad telemetry study, without further investigating these issues, would be premature and unreliable. Finally, even though the 2019 upstream passage study showed that no American shad passed at the Pejepscot fish lift, historic annual shad counts at the Brunswick fishway and the upstream Worumbo fish lift indicate that shad do utilize the Pejepscot fish lift, despite their overall low numbers in the Androscoggin River (see Table 4.2.6-2 in Exhibit E of the FLA).

The USFWS and NMFS stated in their comments that *“Topsham Hydro did not collect data regarding the operation of the facility during the conduct of its Upstream Passage Study, including: elevation of the entrance gate, headloss at the entrance gate, elevation of water within the entrance channel, and total attraction water supplied via pumps. Absent this information, it is impossible to determine whether these basic operational parameters contributed to the poor and ineffective passage results, and therefore, results of this study are not sufficient to reasonably inform license conditions.”*

Topsham Hydro respectfully disagrees, as described above, the 2019 upstream passage study results for adult river herring were useful in informing PME measures (e.g., decreased lift cycle time), as well as identifying additional study needs (e.g., CFD modeling and sound study) to further investigate the effectiveness of the fish lift. With regard to the analysis of operational setting data at the fish lift, Topsham Hydro's proposed CFD modeling of the fish lift and tailrace will address this issue for existing conditions, as well as for any proposed modifications to the hydraulics of the fish lift. The CFD modeling of the fish lift will allow for the development of lift operational settings that meet the USFWS engineering guidelines as they relate to entrance gate and V-gate settings, as well as flow hydraulic properties within the lift.

Topsham Hydro believes that the 2019 upstream passage efficiency study provided useful information to inform the development of an appropriate PME measure, identified appropriate areas of new study related

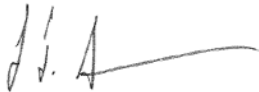
to CFD modeling and underwater sound, and for these reasons the requested new studies by stakeholders are unnecessary. Topsham Hydro urges the Commission not to adopt the requested new study.

### **Conclusion**

Topsham Hydro has carefully reviewed and considered all of the stakeholder comments. For the reasons described above, Topsham Hydro does not believe that any of the new studies, or modifications to the approved study plan requested by stakeholders, are warranted and respectfully requests that the Director consider Topsham Hydro's responses to these comments in determining whether it is appropriate to amend the approved study plan.

Topsham Hydro appreciates this opportunity to respond to comments and provide additional information to the Commission, and looks forward to continuing to work with agencies, Tribes, other relicensing participants, and FERC staff during the remainder of the ILP. If there are any questions regarding this request, please contact me by phone at (207) 755-5613 or by email at [Luke.Anderson@BrookfieldRenewable.com](mailto:Luke.Anderson@BrookfieldRenewable.com).

Sincerely,

A handwritten signature in black ink, appearing to read "L. T. Anderson", with a long horizontal flourish extending to the right.

Luke T. Anderson  
Licensing Manager  
Brookfield Renewable

Cc: Distribution List