

April 9, 2026

MDMR Comments on Brunswick Upstream Alternatives Matrix

On March 2, 2026, Brookfield (licensee) provided a preliminary upstream passage alternatives matrix and associated sketches to the agencies and stakeholders for review and comment. Brookfield scheduled a meeting to discuss the preliminary alternatives on March 5, 2026, which MDMR attended. MDMR has subsequently reviewed the alternatives and provides the following comments.

General Comments

Brunswick is the first dam on the Androscoggin River and is located at the head of tide. Thus, the Brunswick dam impacts all diadromous fish that return to the watershed on their migration to freshwater habitats upstream. It is critical that upstream and downstream passage measures implemented at the project have strong supporting information that indicates that they will perform as expected. Given the location of this site and the resulting effects on diadromous species, the licensee should evaluate alternatives that include multiple measures to provide safe, timely, and effective passage at the project. Examples could include but are not limited to providing two fishways at the project or combining multiple alternatives such as conducting turbine turndowns during the passage season to improve hydraulic conditions in the tailrace and favor attraction to new fishway entrance(s). At FERC-licensed hydropower projects, providing multiple fishway entrances or separate fishways is a common design practice because hydraulic conditions and fish behavior often require passage routes on both banks or at multiple locations to effectively attract and pass diadromous fish. For example, in the Connecticut River basin early, single fishway designs frequently failed to meet passage standards for American shad, leading to:

- Addition of multiple fishways (Turners Falls)
- Conversion to fish lifts (Holyoke)
- Repeated structural and hydraulic modifications (Vernon)
- In some cases, abandonment of ineffective ladders (Rainbow Dam).

As MDMR expressed in our comments on the Pre Application Document for the Brunswick Project, the fishway viewing area is an important public resource at the project. Designs for new fishways or fishway modifications should include facilities to operate and maintain public access to a viewing window (or equivalent viewing facilities) at the project.

Please include a comparison of upstream fishway capacities for target species across all of the alternatives identified.

During the March 5 meeting, stakeholders discussed observations of a “bubble wall” near the existing fishway entrance that was caused by Unit operations and was thought to prevent American shad from entering the fishway. This observation is supported by telemetry studies conducted by Normandeau Associated Inc., which showed that only 2.4% of tagged American shad entered the attraction flow field and none entered the fishway, and additional observations of fish behavior made by MDMR staff at the site. Given this information, all alternatives should address this interaction between the fishway entrance and the turbine discharges. One approach to address this interaction would be locating the fishway entrance downstream and away from the influence of the turbine discharges. Entrance location decisions should also be informed by the results of the 2026 telemetry study at the project.

Alternative U1: Fishway Modifications

MDMR agrees with Brookfield’s assertion that modifications to the existing vertical slot fishway are likely to have low/moderate effectiveness. While MDMR is okay with Brookfield including this alternative going forward, we reiterate that Brunswick is the first dam on the Androscoggin River, located at the head of tide. Thus, the Brunswick Dam impacts all diadromous fish that return to the watershed on their migration to freshwater habitats upstream. It is therefore critical that upstream and downstream passage measures implemented at the project have strong supporting evidence that they will perform as expected. Evidence available to MDMR does not support that modifications to the existing vertical slot fishway will address current impacts to passage at the project.

Alternative U2: New Vertical Slot Fishway

Like Brookfield’s engineering consultants, MDMR is concerned by the length of the fishway and the number of switchbacks in the current conceptual design, which may reduce effectiveness for American shad. Additionally, 18” is the **minimum** slot width recommended by the USFWS and larger slot widths (e.g., 24” or greater) may be more effective but would require additional fishway length. MDMR notes that there may be alternative vertical slot configurations that could increase slot width and reduce the number of switchbacks

During the March 5, 2026 call, Brookfield's consultants mentioned that this alternative would require the existing fishway to be shut down for multiple passage seasons. Please describe the rationale and necessity behind shutting down the upstream fishway for multiple upstream passage seasons. Shutting down the existing fishway and not providing any upstream passage at the project is not a practical or realistic expectation. For any alternatives that will impact the function of the existing fishway, including shutting it down entirely, the Licensee should provide a plan to provide temporary means of passage. For example, technologies such as a Fishheart system could be used to provide interim passage during fishway construction.

Alternative U3: New Fish Lift

Recent MDMR calculations suggest that the Androscoggin River to Lewiston Falls (including the Little Androscoggin and the Sabattus River) could support 171,125 American shad, 1,008,202 blueback herring, and 7,728,805 alewives. This, along with 600 Atlantic salmon should be the design population used for each alternative.

Issues at V-gate structures have been observed at other fish lifts in Maine¹. Please add this consideration to the effectiveness column. Additionally, lifts are not volitional and can experience shutdowns and be inoperable during portions of the passage season². Please add this consideration to the effectiveness column as well.

Please explain the rationale behind abandoning a portion of the existing fishway in place and provide more detailed information related to the structures proposed for abandonment if this alternative is pursued further. Remnant portions of the existing fishway that are below high tide may impact fish passage at a new facility. Portions of the fishway above high tide should not be abandoned as they will continue to decay into the river over time.

Alternative U4: New Fishheart System

MDMR is not supportive of this alternative at this time. We are not aware of any information to suggest that this system is effective for the target species and numbers of fish (i.e., millions) that could be present annually downstream of the project. The Brunswick project is the gateway to the rest of the watershed and MDMR is not comfortable relying on this experimental technology as a permanent solution for upstream passage at this project.

¹ Accession No. 20240116-5009

² Kearnan K, and J Waldman. 2024. Causes of Fish Lift Shutdowns on U.S. East Coast Hydroelectric Dams. Fisheries 49:9 403-411.

However, we may be supportive of an approach that utilized Fishheart as a temporary solution during construction of a permanent upstream fishway or as a measure to supplement other upstream passage measures.

Alternatives Not Considered

Please expand on the concern related to limited real estate available between the powerhouse and Shad Island in relation to a new fishway (vertical slot or fish lift) on the North side of the powerhouse.

The Nature-Like-Fishway (NLF) and Topsham side fishway alternatives should be analyzed and developed further during Phase 2 of the feasibility assessment. Although limited real estate was referenced as a reason that the NLF alternative was ruled out, two separate NLF concepts were presented during the March 5 meeting. One concept required modification of the river left shoreline along with potential property concerns, while the other could be constructed completely within the river channel. Given that an NLF is technically feasible at the site, there is no reason to remove it from consideration at this stage.

During the March 5, 2026 call, Brookfield criticized the NLF and Topsham side fishway because of the limited attraction flow compared to the project turbines. It is important to note that this issue could be addressed by providing sufficient attraction flow to the Topsham side of the river.

Similarly, Brookfield noted that the presence of the fish barrier dam and rock ledges would prevent fish from reaching a fishway in the spillway area. However, flows and ledge have been intentionally manipulated to prevent fish from being attracted to and accessing this area. Thus, assessing a fishway on river left would include the assumption that any fishway on river left would undo, or otherwise address, these modifications.