

The Town of Bristol has been husbanding its alewife run in the Pemaquid River since the town was established in 1765. The history of the town also includes the construction of dams on the river; the most recent built in 1914. In 1974, in an effort to support the alewife run cut off by the current dam, the town constructed a fishway to allow alewife and other species passage to the lakes above in order to spawn.

Although the dam no longer serves an industrial purpose, it does provide the town and peninsula with three benefits: a readily available source of water for the fire department, community recreation in the way of a swimming hole, and help in maintaining water levels in the impoundment and lakes above. What the current dam and fishway do not provide is adequate passage for migrating fish and eel. The current ladder has major flaws. It works poorly in attracting fish to its entrance and has no way to effectively adjust water flow to a level that allows fish to swim its incline. It requires volunteer time and effort to somewhat mitigate its weaknesses. The Maine Department of Marine Resources suggests that the lake system above the dam could support over 600,000 fish. At its best, the current fishway allows a relatively small portion of fish to reach the river above the dam. Since volunteer counts started in 2013, the number of alewives able to make it to the top of the current ladder has ranged from estimates of about 14,000 to 133,000 fish.

The Bristol Mills Dam, which was built in 1914 and last repaired in 1994 and 2016, currently needs additional repairs in order for the dam to be considered in “satisfactory” condition based on Maine dam standards. Additionally, the existing fishway lacks adequate passage for alewives and other native fish species in the Pemaquid River. The town hired Wright-Pierce Engineering to develop a feasibility report that summarizes the current state of the dam and fish passage and develops options for the future of the site that would maintain or improve the existing services of the dam (water level control, firefighting water supply, and swimming) while improving fish passage.

The Bristol Dam Advisory Committee was formed in December 2016 at the request of the Town of Bristol Selectmen to oversee the process of a Feasibility Study to present various options for the future of the Bristol Mills Dam and fish passage at the site. During this process, the Committee has gathered information about the dam’s condition, human and natural features, water level controls, natural resources (including water birds and fish species), and important functions of the dam like providing a firefighting water supply and swimming area.

Water Level above the Dam

The Committee directed Wright Pierce Engineering early on in the feasibility study process to only develop options that maintain water level in the Pemaquid Marsh and all upstream lakes within the current water level range that the dam maintains. Accordingly, all three options developed by Wright Pierce maintain current water levels. The option that involves replacing the dam would construct rock weir structures that would control water level within the current range.

To ensure this, water level records have been gathered at multiple spots between the dam and well into Biscay Pond. Additionally, a detailed study of the depth to bedrock from the dam up to the outlet of Biscay Pond was undertaken. These data and reports can be found in the draft feasibility report in Section 3.

What are the options?

The feasibility report describes three options for dam and fish passage, which are detailed in Section 5 of the report. Option A involves the construction of a new fishway and repair to the

existing dam. Option B involves replacement of the dam with a new “nature-like” fishway, as well as associated enhancements to recreation in Ellingwood Park and development of a new firefighting water supply. Option C seeks a compromise position that involves a smaller dam at the existing location to maintain the current location of the firefighting water supply, while providing for fish passage with a variety of new nature-like structures and a section of Denil fishway.

The draft cost analyses for each of these options is outlined in Section 8 of the report. During the committee’s recent meetings with Wright Pierce, they asked for some revisions to this section that affect the costs. For Option A, the cost presented in the draft report includes work to finish repairing the existing dam and replace the current fishway with one that works better with less annual maintenance. This initial estimated cost is for a single “Denil”-style fishway \$440,000. Based on guidance by the US Fish and Wildlife Service, this initial fishway design is anticipated to pass only a portion (200,000 fish or one third) of the estimated run for the river. The fishway design allows for a second “twin” fish ladder to be built for an additional \$150,000-\$200,000. The twin ladders will provide passage for a larger portion of the run. Additional estimated future costs, which include annual maintenance to the dam and fishway, general operation, and future anticipated repairs, is \$400,000 to \$425,000.

For Option B, the dam would be replaced with a nature-like fishway and water level control that help at least 600,000 fish easily move up and down the river. A swimming area would be provided behind Ellingwood Park with swimming docks, and the boat launch area would be upgraded with more parking, a concrete boat ramp, spaces for boat trailer parking, and a circular drive. A dry hydrant for firefighting water supplies would be installed at Ellingwood Park, as well as the construction of a drive from Rt. 130 to the Benner Rd. for fire trucks. Nature like fish ways tend to cost less than Denil fishways and are preferred by funders of fish passage projects because they require less maintenance, provide more recovery potential, and eliminate complex and expensive dam/fishway systems that must be replaced at the end of their service life, which is about 50 years for a concrete fishway. As an arrangement of boulders that function as a retaining wall; they allow full passage of all kinds of fish and eel while maintaining, see examples behind Bristol Town Hall. The estimated initial cost is \$610,000 and estimated future costs are \$125,000.

Option C would reduce the height of the dam, and replace the current fishway with a fishway that will support at least 600,000 fish traveling upstream, and offer a swimming area behind Ellingwood Park. The dry hydrant would be maintained in its current location at the dam. The estimated initial cost is \$920,000 to \$1,260,000. One reason for the high cost is because of the poor structural integrity of the dam, the height could not simply be reduced by taking off the top portion. Instead, the dam would need to be taken down and a new dam built in its place. The estimated future costs are \$500,000 to \$750,000.

For all the options, the future costs are the estimated annual maintenance costs, estimated operational costs required at various intervals during that option’s life, and the estimated capital improvements that will be required over the next 50 years of each option’s future.

All meeting minutes, presentations, press releases, and information gathered by the Committee is available to the public both online and in a binder at the town office.