



United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 Westgate Center Drive
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November 7, 2022

MEMORANDUM

To: Rhode Island Chapter of The Nature Conservancy (TNC), Providence, RI
Attention: John O'Brien, Policy and Partnership Specialist

From: Bryan Sojkowski, P.E., Hydraulic Engineer, Fish Passage (USFWS)

Subject: Scope of Work for the Hunts Mill Fish Passage Design, East Providence, RI

The intent of this memorandum is to provide the design and construction details associated with fish passage alterations proposed at the Hunts Mill site, located on the Ten Mile River in East Providence, RI. Final design plans (attached in Appendix I) were developed by the Army Corps of Engineers (ACOE), New England District.

Background

The Hunts Mill site consists of an existing Denil fishway that resides on the right bank (looking downstream) of the spillway. The Ten Mile River was outfitted with three fishways (Omega, Hunts Mill, and Turner Reservoir) approximately 7 years ago. Since then, river herring have been witnessed returning to their spawning grounds within Turner Reservoir. However, Rhode Island Department of Environmental Management (RIDEM) staff have noted a bottle neck (i.e., fish struggling to move upstream causing them to stack up) just downstream of the Hunts Mill fishway due to a natural drop in the bedrock. The USFWS Fish Passage Engineering Team (FWS Engineering) was consulted via a contract with the Rhode Island Chapter of TNC to investigate various conceptual alternatives to mitigate the issue. In the Summer of 2020, the concept of integrating weirs on the river right channel was tested via placement of temporary sandbags. This information aided in fine tuning the number, and location of the weirs that were integrated into the final design. The ACOE utilized information from the in-river work, survey data, and other information collected at the Hunts Mill site to develop the final design plans. FWS Engineering as well as RIDEM, and TNC staff will be providing construction oversight.

Proposed Design Details

The intent of the proposed fishway design at Hunts Mill is to appropriately backwater the existing drop (approximately 3 ft) on river right (looking downstream) with 5 weirs for the purpose of providing effective upstream passage for river herring. River herring require ample swim-through depth (i.e., are not leapers like Atlantic salmon) and therefore a key element of this design is to offer a minimum submergence depth of 6 inches (more if possible). Submergence depth is measured from the water surface elevation within a given pool, down to the invert of the upstream low-flow notch.



Some pertinent design details are listed below:

1. Weirs – A set of five weirs are proposed to be installed downstream of the existing drop in water surface over the bedrock on river right. Per ACOE design plans, the weirs will be constructed using gabion baskets filled with substrate and topped with capstone rock (all recommended specifications provided by ACOE and attached in Appendix II). The selected contractor should consult with FWS Engineering, TNC and RIDEM staff to provide a detailed construction process, to be approved prior to the commencement of this work.
2. The weirs will span from the river right bank (consisting of a stone wall) to the rock outcrop that resides in the middle of the two existing channels. A sill (referred to within the ACOE plans as a “ledge spine”) will need to be constructed at various points along the rock outcrop to ensure flow is maintained within the pools (i.e., does not spill into the adjacent channel). Final location will be approved during construction by FWS Engineering, TNC, or RIDEM staff.
3. The maximum drop over the proposed weir structures is 0.5 ft.
4. The specific orientation, location, geometry, and other pertinent design features are provided in the attached final design plans. The low flow notches are intended to be a minimum of 1.0 ft deep, by 1.5 ft wide to ensure the minimum 6 inches of submergence depth is met.
5. Pools should be a minimum of 3 ft deep

Construction Details & Notes

- All work shall be performed in the Summer or Fall of 2023 (low flow period) and in accordance with the design plans.
 - Contractor shall conduct a pre-construction site assessment with FWS Engineering, RIDEM, and TNC personnel well in advance to the start of construction. All water diversion methods shall be approved by agency personnel.
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- ❖ All other construction notes and details have been provided by the ACOE and attached within Appendix I & II. FWS Engineering, TNC, or RIDEM staff should be consulted pertaining to any deviations from the attached design plans.