Session C5- Acushnet River fish passage restoration project

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Acushnet River Fish Passage Restoration Project
Concept to Completion
Project Partners

Massachusetts Division of Marine Fisheries
Boston, Massachusetts

NOAA Restoration Center
Gloucester, Massachusetts

Other Project Partners:
Coalition for Buzzards Bay (Sawmill Dam)
New Bedford, Massachusetts

Town of Acushnet, MA
Project Background

New Bedford Harbor designated a Superfund Site by USEPA in 1983

New Bedford Harbor Trustee Council (NBHTC) formed in 1991
  • Commonwealth of Massachusetts
  • U.S. Department of Commerce (DOC)
  • U.S. Department of the Interior (DOI)

The Commonwealth’s designated Trustee is the Secretary of Environmental Affairs of the Executive Office of Environmental Affairs (EOEA), with assistance provided by its departments and divisions.

The National Oceanic and Atmospheric Administration (NOAA) is designated as the DOC’s trustee responsible for damage assessment and restoration.

DOI is represented by the U.S. Fish and Wildlife Service.


The NBHTC identified the restoration of living resources and, in particular, anadromous fisheries habitat in the Acushnet River as a plan goal.
**Restoration Objectives**

Restore 8.1 miles of the Acushnet River for river herring (blueback herring and alewife)
New Bedford Reservoir Dam

- Originally constructed in 1867 as water supply for New Bedford, MA
- Granite spillway 11 feet high, 50 feet in length
- Spillway crest elevation 47 feet (NGVD29)
New Bedford Reservoir Dam
Denil Fishway

- Designed by MA DMF with assistance from USFWS
- Constructed in 2002 with funding from New Bedford Harbor Cleanup Fund
- 264 feet long by 3 feet wide (inside)
- 26 baffles 5 feet high
Project Overview

Acushnet River Dam Removal Feasibility Study (Milone & MacBroom 2003).

Expanded Environmental Notification Form (E-ENF) submitted June 2003.

EA Contracted to NOAA to:

- Prepare Preliminary Engineering Design – Plan Set to support permitting.
- Prepare and Submit Single Environmental Impact Report (SEIR) for Sawmill Dam.
- Prepare and Submit Permit Applications – State and Federal.
- Prepare Environmental Assessment (NEPA).
- Construction Support – Onsite inspection, review contractor submittals, resolution of design changes, review of fabrication drawings, and progress inspections.
Sawmill Dam

- Originally constructed in 1746 as milldam
- Current version constructed in 1920
- Concrete spillway 5.5 feet high, 118 feet in length
- Spillway crest elevation 10.53 feet (NGVD29)
Hamlin Street Dam

- Originally constructed in 1746 as a milldam
- Stone, water powered cotton mill constructed in 1799
- Burned down around 1830 and rebuilt in 1831
- Burned down again in 1854
- Current structure consists of roadway with 5 box culverts
Design Considerations

Maximize Restoration Potential
Minimize Impacts to Impoundment Water Surface Elevations and Associated Wetlands
Design Considerations

- Design flow representative of the hydrology during migration season 1 March through 30 June
- Hydraulic design based on three common baseflow conditions excluding storm events (i.e. minimum, average, and maximum)
- Acushnet River is ungauged
- Extensive baseflow estimation was conducted by both EA and USFWS. Ultimately design flows selected by consensus

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<thead>
<tr>
<th></th>
<th>Sawmill Dam</th>
<th>Hamlin St Dam</th>
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<tbody>
<tr>
<td>Minimum</td>
<td>13 cfs</td>
<td>11.5 cfs</td>
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<tr>
<td>Average</td>
<td>65 cfs</td>
<td>56.1 cfs</td>
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<tr>
<td>Maximum</td>
<td>105 cfs</td>
<td>93.9 cfs</td>
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- Step increases limited to 0.8 – 1.0 feet
- Maximum Design Velocity \( \leq 3 \) feet/second through each notch
- Minimum depth through each notch of 8 inches
- Hamlin St headpond water surface elevation \( \geq 16.5 \) feet \( @75 \) cfs
Design Considerations (Sawmill Dam)
Design Considerations (Hamlin St Dam)
## Permit Process

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<td>Secretary’s Certificate of Phase I Waiver of Single Environmental Impact Report (SEIR)</td>
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<tr>
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## Permitting Time Line

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Permitting Issues

SEIR for Sawmill Dam Submitted on 30 March 2006

Secretary’s Certificate of Acceptance Issued 17 May 2006

Chapter 253 Dam Safety Permit Issued 26 January 2007 (Eight Months Later)
Construction

Nine Bids received on 28 March 2007
Construction Contract Awarded to MAS Building & Bridge, Inc.
Pre-Construction Conference held 13 June 2007.
Pre-Construction submittals during 1st 30 days.
Site preparation at Sawmill Dam initiated on 12 July 2007 with E&S controls.
Weir construction at Sawmill Dam initiated on 27 July 2007 and concluded 31 August 2007 with water controls removed!
Site preparation at Hamlin Street initiated on 13 August 2007.
Garden Wall and Weir construction at Hamlin Street initiated on 16 August 2007 and concluded 10 September 2007 with final grouting of upstream weir.
Upstream weir at Hamlin Street replaced in August 2008 due to unsuitable foundation material!
Lessons Learned

Select qualified contractor
Lessons Learned (continued)

Be prepared for unknowns

Daily communication

Construction schedule
Lessons Learned (continued)

Contractor communication and coordination
Lessons Learned (continued)

There will be problems!
Both sites seeded in October and plantings completed in November.

NOAA and MA DMF initiated monitoring of fish passage starting in Spring 2008.

The Project is working and passing fish, as planned! An average of about 300 river herring were passing prior to construction. Total of 977 in the first year after construction, 1,699 in 2009, 2,703 in 2010, and 3,679 in 2011.