CBWES Inc.

CB Wetlands & Environmental Specialists

Smith Gut Salt Marsh Restoration Project

Smith Brook is a tributary to Merigomish Harbour near Lower Barneys River in Pictou County. Nova Scotia Route 245 crosses Smith Gut, the lower tidal component of the system, via a 50 m long causeway. Previous to the installation of three 2.1 m diameter culverts in 2006, a single wooden box-culvert (1.37 m wide by 1.52 m high) on the western end of the causeway, restricted tidal flow and fish passage to the upstream component of the system. The goal was to restore the natural hydrology to the 2.2 ha (approximate) of potential tidal wetland habitat immediately upstream of the causeway. There is a six-year monitoring program associated with this project.

Monitoring Program: 2006 – 2012

Location: Pictou County, Nova Scotia

Client: Nova Scotia Department of Transportation & Infrastructure Renewal (NSTIR)
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Project Managers: Tony M. Bowron
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Key Personnel: Jennie Graham (CBWES)
Dr. Danika van Proosdij (SMU[1])
Dr. Jeremy Lundholm (SMU)

Project Details:

In August 2006, the NSTIR undertook construction activities to restore tidal flow to Smith Gut, an estuarine embayment of Merigomish Harbour, Pictou County, NS. The restoration of tidal flow, and ultimately of salt marsh habitat, to this site fulfills a compensation requirement (like-for-like estuarine habitat) noted in NSTIR's HADD Compensation Proposal and Fisheries Act-Section 35(2) HADD Authorization for the Lower Eel Creek Bridge Replacement Project. Restoration activities consisted of the replacement of the existing tidally restrictive wooden box culvert (1.37 m X 1.52 m) with three round concert culverts (2.1 m diameter), resulting in a five-fold increase in flow capacity.

[1] SMU – Saint Mary's University

CBWES was commissioned by NSTIR in the fall of 2006 to develop and implement the post-restoration monitoring program. In December of 2006, a digital elevation and hydrological survey were conducted by CBWES. Between June 2007 and February 2008, the first year of post-restoration monitoring was carried out, collecting data on the indicators listed below. A year-one report has been produced on these indicators and their progression towards restoration success.

Long-term Monitoring Program:

A long-term (six-year) pre- and post-restoration monitoring program for the Smith Gut restoration project was developed by CBWES. The monitoring program utilized for this project was adopted and adapted by CBWES from a set of regional protocols (The Global Program of Action Coalition for the Gulf of Maine Regional Monitoring Protocol[2],[3]) developed for use as part of tidal wetland restoration projects in the Gulf of Maine and Bay of Fundy.

Indicators used to assess this project:

Geospatial Attributes
- Digital Elevation Model
- Habitat Mapping

Hydrology
- Hydroperiod
- Water Table Depth
- Water Quality

Soils and Sediments
- Pore Water Salinity
- Soil Characteristics
- Sediment Accretion and Elevation

Vegetation

Nekton

Benthic and Other Aquatic Invertebrates

Project Reports:

1. Bowron, T.M. and N.C. Neatt. 2007. Elevation Survey of the Smith Gut Salt Marsh Restoration Site. Report Prepared for Nova Scotia Department of Transportation and Public Works. CB Wetlands & Environmental Specialists Report No. 2
2. Bowron, T.M., N.C. Neatt, J.M. Graham, J. Lundholm and D. van Proosdij. 2008. Post-Construction Monitoring (Year 1) of the Smith Gut Salt Marsh Restoration Project. Report Prepared for Nova Scotia Department of Transportation and Infrastructure Renewal. CBWES Inc. Publication No.9

*Electronic copies of project reports are available at: www.gov.ns.ca/tran/enviroservices/enviroSaltMarsh.asp or by contacting CBWES at info@cbwes.com

[2] Neckles, H.A. and M. Dionne. (eds.) 2000. Regional Standards to Identify and Evaluate Tidal Wetland Restoration in the Gulf of Maine. A GPAC Workshop. Wells National Estuarine Research Reserve, Wells, ME.

[3] Neckles, H.A., M. Dionne, D.M. Burdick, C.T. Roman, R. Buchsbaum, and E. Hutchins. 2002. A Monitoring Protocol to Assess Tidal Restoration of Salt Marshes on Local and Regional Scales. Restoration Ecology, 10(3): 556 – 563.