

Birch Stream NPS Watershed Management Plan

#2008RT28

Waterbody Name: Birch Stream
Location: Bangor – Penobscot County
Waterbody Status: Urban Impaired Stream, Impaired
Project Grantee: City of Bangor
Project Duration: June 2008 – June 2010
604(b) Grant Amount: \$90,000
Local Match: \$67,433



PROBLEM:

Birch Stream is a small stream (the natural portion is 0.5 miles long) that drains into Kenduskeag Stream and then the Penobscot River. It has a watershed area of 2.9 square miles and is estimated to be 33% impervious. The Bangor International Airport, Maine Air National Guard and several office facilities are located in the watershed.

Birch Stream has been monitored by the DEP Biomonitoring Program periodically since 1997. Monitoring indicated that the stream violated Class B aquatic life criteria, and it was placed on Maine's 303(d) list of impaired streams. In response to the September 11, 2001 attacks, the Department of Defense increased military flights and drastically increased the use of de-icing fluid. Large volumes of the untreated de-icer propylene glycol entered Birch Stream, which resulted in water quality impacts and odor complaints from residents living near the stream. To address this issue, the airport and Guard implemented systems for collecting the glycol for treatment. The stream was studied extensively in 2003 as part of the DEP "Urban Streams Project" and a TMDL report was developed and approved in 2007. Although the propylene glycol issue had been largely addressed, residual glycol, total suspended solids, thermal impacts and other stormwater contaminants needed to be addressed at the airport and in the rest of the watershed.

PROJECT DESCRIPTION:

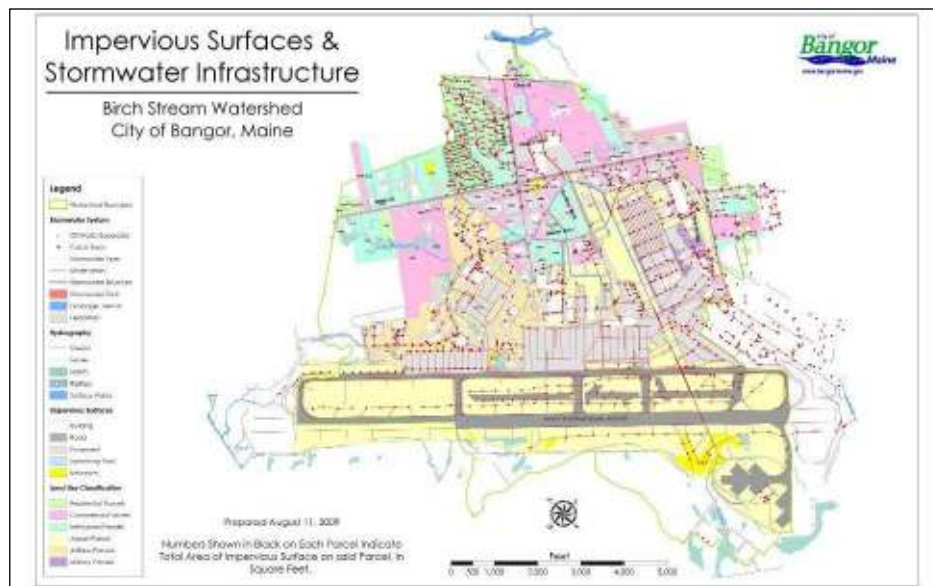
The purpose of this project was to develop a comprehensive watershed management plan for Birch Stream. Steps in the process included: mapping the watershed's storm systems (including property boundaries and impervious cover), studying the feasibility of a stormwater utility and developing a watershed management plan. In addition, conceptual designs were developed for the Bangor Airport and abutting properties. The resulting designs were included in the watershed management plan, as well as recommendations for the Airport Mall and other high priority commercial and retail properties.



Domestic Canal at Bangor Airport

PROJECT OUTCOMES:

- Project staff and consultants completed GIS mapping of impervious areas, stormwater infrastructure and watershed property boundaries (see map below).
- The project updated and revised a 1984 CH2Mhill *Stormwater Utility Feasibility Analysis*. The funding analysis provides a model to illustrate how a fair and equitable utility district fee system could be developed and implemented in the Bangor area.
- The *Birch Stream Watershed Management Plan* was completed in 2010, and it is expected to be approved by the Bangor City Council.
- A concept design report including 13 solutions was completed for the upper watershed. Eight of the solutions have since been installed with 2009 ARRA funding at a cost of \$2 million. Innovative solutions such as adding aeration through the use of wind mills and sub-surface wetlands were designed and installed, and will serve as demonstrations for other airports in cold climates.
- Water quality improvements have already been documented. Airport sampling shows significant decreases in biological oxygen demand since the ARRA projects were installed.



PROJECT PARTNERS:

Bangor International Airport
CH2MHill
James W. Sewall Company
Maine Air National Guard
Maine Army National Guard
SMRT, Inc.

CONTACT INFORMATION:

Mary Ellen Dennis, Maine DEP – (207) 287-7729, mary-ellen.c.dennis@maine.gov
Jeff Dennis, Maine DEP – (207) 287-7847, jeff.dennis@maine.gov
Wendy Warren, City of Bangor – (207) 992-4255, wendy.warren@bangormaine.gov

Suggested Citation:

Maine Department of Environmental Protection (2011) "Nonpoint Source Management Program 2010 Annual Report," Document# DEPLW-1205 2011. Augusta: MDEP.