



Maine Department of Environmental Protection

Nonpoint Source Management Program 2010 Annual Report



Working Together for Clean Water



March 2011

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From the Watershed Director

By Don Witherill

Last November, our Department hosted the annual Watershed Managers Roundtable in Augusta. As has been the case in recent years, it was a forum for many folks (close to 60) to share stories and get caught up with colleagues in the field. We heard presentations on a wide array of issues, including urban streams, lake watershed planning, low impact development and outreach work. During the course of the meeting, we also heard a lot of concerns about the future of environmental protection work in Maine. With all the recent press about the need for regulatory reform and smaller budgets, it's understandable that folks in the watershed management field are concerned about all aspects of environmental work, both at the state and national level.

We recently learned that the U.S. Government Accountability Office (GAO), which works for Congress, is embarking on a review of the effectiveness of Section 319 of the Clean Water Act (319 Program), which funds much of the nonpoint source work that we report on each year. That review is expected to run into the fall of this year. Further, the recently released budget from President Obama includes a substantial cut in funding for the 319 program for federal fiscal year 2012. In addition, the U.S. Environmental Protection Agency will be conducting its own review on the effectiveness of the 319 Program and will be reporting back to the Office of Management and Budget. Meanwhile, closer to home, the new administration will also be evaluating the effectiveness of state programs, including those with federal funding.

What are we to make of all this evaluation? The short answer is the same as it's always been. We need to continually demonstrate our program's effectiveness. More than ever before, we must show that dollars invested in Maine's Nonpoint Source Program are providing high value. This brings me to the main purpose of this Annual Report. Year after year, through a collaborative effort between the staff here at DEP and our many partners around the state, we have been producing top quality work. The past year was no exception, as the following pages illustrate. We are proud to hold up the results of project work completed in 2010.

Demonstrating program effectiveness in this field is a challenging task. As is pointed in the pages that follow, preventing pollution of lakes, streams and coastal waters is far more cost effective than the long term investments needed to restore waters once they become polluted. And yet, we can more convincingly show "measureable results" when an impaired water is cleaned up. Overcoming this bias toward restoration over protection may well be our biggest challenge as we seek funding support in the future.

We know from past surveys that clean water is a priority for Maine people. We welcome scrutiny of our Nonpoint Source Program and believe that it has been, and continues to be, a very worthwhile investment to protect Maine's clean water. We will continue to do what we can to get our message out about the importance of this work. This report is a significant part of that effort.

*Don Witherill directs the Division of Watershed Management
at the Maine Department of Environmental Protection, where he has served for 32 years.*

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A. Nonpoint Source Management Program Summary

Nonpoint Source Pollution (NPS), also known as polluted stormwater runoff, is one of today's biggest threats to healthy lakes, rivers, streams, estuaries and wetlands. When it rains or the snow melts, the water running off our driveways, parking lots, yards, farm fields, forestry operations and industrial sites carries small hitch-hiking pollutants. The pollutants include soil particles, nutrients from fertilizers or animal waste, bacteria from failing septic systems or animal waste, toxics from dripped or spilled petroleum products or household hazardous waste all washed during storm events into our local water ways. Due to NPS pollution, 32 lakes in Maine do not meet water quality standards, and about 250 lakes may be impaired in future years because of increasing development in their watershed. NPS pollution also impairs the water quality of many streams and coastal waters.

Since 1990, the United States Environmental Protection Agency (EPA) has provided funds under Section 319(h) of the Clean Water Act to help States and Tribes address their most pressing NPS pollution problems.

The Maine Department of Environmental Protection (DEP) administers and has overall coordination responsibility for Maine's Nonpoint Source Pollution Program (38 MSRA 410), a significant portion of which is funded with Section 319 Clean Water Act grants. NPS program services are guided by the *Maine Nonpoint Source Program: Program Upgrade & 15 Year Strategy* adopted in 1999. DEP helps communities and watershed groups assess water quality problems and take action to reduce or remove nonpoint source pollution. DEP especially values and relies on Section 319 funds to provide financial assistance for locally-driven watershed projects to help protect or improve Maine's lakes, streams, rivers and coastal waters.



DEP helps watershed groups assess problems and reduce polluted runoff.

This report summarizes Maine DEP's Nonpoint Source Program activities and accomplishments in 2010.

B. 2010 Highlights - Maine DEP NPS Program

DEP received \$2,247,623 in federal fiscal year 2010 funding from EPA under Section 319(h) of the Clean Water Act. These funds were used for programs designed to identify, prevent or reduce NPS pollution problems. DEP provided technical assistance to local watershed groups and education and outreach programs for various audiences including developers, building contractors, municipal officials, teachers and the general public. About 40% of FFY 2010 Section 319 funds were passed-through to organizations for NPS projects or programs. DEP provided technical and financial assistance for 49 NPS Watershed Projects to help protect or improve lakes, streams and coastal waters. Also, DEP used Section 319 funds to support the Maine Volunteer Lake Monitoring Program, Nonpoint Education for Municipal Officials (NEMO), the Maine Clean Marina and Boatyards Program and other DEP programs.

2010 Highlights - Maine DEP NPS Program

1. Locally led restoration work over 13 years treated numerous erosion sites and reduced polluted runoff in the watershed of Highland Lake, a 623 acre lake in Falmouth and Windham. Water clarity has gradually stabilized and now the lake meets water quality standards, prompting Maine DEP to remove the lake from the CWA section 303(d) impaired waters list in 2010. The restoration of Highland Lake was highlighted on the EPA's "Nonpoint Source Program Success Stories" website (www.epa.gov/owow/nps/Success319).

2. Twenty (20) NPS Watershed Projects funded through the NPS Grants program in previous years were successfully brought to completion. DEP provided technical assistance and granted \$1,218,827 of Federal Clean Water Act funds for these projects. Grantees, partners and landowners contributed matching funds or services valued at \$1,259,245. See Section F (page 22) for summaries of projects.
3. NPS Watershed Implementation Projects - Conservation practices (BMPs) were installed to reduce polluted runoff in 14 lake and 2 stream watersheds: Annabessacook Lake, China Lake, Dexter Lake, Duckpuddle Pond, Forest Lake, Hancock and Sand Ponds, Highland Lake, McWain Pond, Mousam Lake, Nequassett Lake, Pleasant Pond, Raymond Pond, Square Pond, Togus Pond, Cove Brook and Spruce Creek.
4. NPS Watershed Implementation Projects completed in 2010 reported estimated reductions in the amount of sediment and phosphorus loading to lakes or streams. In total, pollutant loading was reduced by about 694 pounds of phosphorus and 694 tons of sediment per year - equivalent to 60 dump truck loads of sediment.
5. NPS Watershed Survey Projects were completed for 2 watersheds: Cochnewagon Lake and Cobbosseecontee Stream. NPS surveys find, describe and prioritize NPS pollution sources in a watershed and recommend BMPs needed to reduce polluted runoff.
6. Watershed-based management plans to restore impaired streams were being prepared for: Capehart Brook (Bangor); Capisic Brook (Portland); Pleasant River (Gray); Red Brook (Scarborough); Trout Brook (South. Portland); and Whitten Brook (Skowhegan). The City of Bangor completed a watershed-based plan for Birch Stream.
7. Ten (10) NPS Watershed Projects were funded through DEP's annual NPS Grants request for proposals competitive grant process. Projects will begin work early in 2011.
8. Over 1,100 people (contractors, engineers, consultants, site evaluators, municipal officials and landowners) participated in DEP's Nonpoint Source Training & Resource Center training programs to learn methods to prevent NPS pollution. One hundred and eighty three (183) new individuals were certified in erosion and sediment control practices through the DEP Contractor Certification Program.
9. DEP worked with the Pesticides Control Board and Casco Bay Estuary Partnership to produce a second TV stormwater/NPS ad known as "Ducky II". The ad encourages people to reduce their use of lawn care products, particularly fertilizer. Stormwater runoff washes excess fertilizer from lawns into streams or ponds, which often causes lower water quality.
10. Maine NEMO co-hosted the National NEMO Conference in Portland, September 2010. The three-day event included presentations and workshops onsite design with Low Impact Development (LID), nitrogen removal, climate change, social marketing, and four field trips. This event was attended by 185 people. NEMO is an educational program for land use decision makers that addresses the relationship between land use and natural resource protection, with a focus on water resources, nonpoint source pollution, and stormwater runoff.
11. DEP Issued 78 LakeSmart Awards and 58 recognition certificates. Total LakeSmart Award properties to date are 343. The LakeSmart program was established in 2002 to promote a new norm for shorefront and watershed development by recognizing property owners who stop erosion, manage stormwater, maintain their septic system, leave native vegetation or plant vegetation along shorelines, minimize lawns and reduce fertilizer and pesticide use.

C. Nonpoint Source Management Program

1. Overview: Maine NPS Management Program

Maine's Nonpoint Source Water Pollution Management Program (38 M.R.S.A. §410-I) helps restore and protect water resources from NPS pollution. The basic objective of the NPS program is to promote the use of state agency-defined "best management practice guidelines" (BMPs) to prevent water pollution. The overall aims of Maine's NPS Water Pollution Control Program are as follows:

- **Clean Water.** Prevent, control, or abate water pollution caused by nonpoint sources so that beneficial uses of water resources are maintained or restored and waters meet or exceed their classification standards.
- **Using Best Management Practices.** Best Management Practices are widely used in all Maine's watersheds to minimize transport of pollutants or excessive runoff from the land into surface or ground waters.
- **Locally Supported Watershed Stewardship.** Local community awareness results in commitment to maintaining or improving the condition of local water resources through citizen action. Watershed stewardship meets community needs and maintains beneficial uses of local water resources.
- **Compliance with Applicable Laws.** Regulated activities comply with existing State and Federal laws and rules that relate to control of nonpoint source water pollution.

DEP administers the NPS Program in coordination with EPA and other federal, state and local governmental agencies and non-government organizations. Seven State agencies share responsibility for coordinating and implementing NPS programs: Departments of Agriculture Food and Rural Resources; Conservation, Forest Service; Transportation; Economic and Community Development; Health and Human Services, Division of Environmental Health; Marine Resources and the State Planning Office.

State agencies conduct programs that: (1) implement State laws or rules requiring people to comply with performance standards governing certain land use activities to protect water quality; and (2) promote voluntary use of BMPs. Maine's NPS agencies have working arrangements with other State and federal agencies, municipalities, non-governmental organizations, and business sector associations to help control or prevent nonpoint source water pollution.

Statewide regulatory programs implement several laws that control potential sources of NPS pollution, including: the Stormwater Management Law; the Site Location of Development Law; Erosion and Sedimentation Control Law; the State Subsurface Wastewater Disposal Rules; the Natural Resources Protection Act; Land Use Regulation in Unorganized Territories; Pesticide Control laws; the Mandatory Shoreland Zoning Law; the Nutrient Management Act; and the Forest Practices Act.

Maine's lead NPS agencies encourage voluntary actions by governments, organizations, industry and individuals to prevent or minimize the discharge of NPS pollutants. Program resources are assigned to support efforts to improve and protect waters that are threatened or impaired by NPS pollution. Maine's lead NPS agencies provide technical assistance and information about BMPs to agencies, municipalities, businesses and individuals. The NPS Training and Resource Center at DEP provides information and technical training on usage of BMPs. DEP administers grants to help fund NPS Water Pollution Control Projects to prevent or reduce water pollution caused by nonpoint sources.

This report summarizes annual work accomplished by DEP. It does not summarize annual NPS work by Maine's other lead NPS agencies.

2. Protecting Clean Waters

Maine has significant water quality protection and restoration challenges and relatively limited resources for NPS programs. DEP prioritizes and balances the use of available NPS resources to protect or restore lakes, streams and coastal waters. Prevention of water pollution is a daunting challenge as our watersheds face increased development pressures over the years. DEP has learned that prevention of water pollution is far more feasible and less expensive than restoration of an already impaired waterbody. Therefore, DEP has invested a considerable portion of available NPS resources into protecting threatened waters.

Protecting Maine's clean waters can be accomplished by local residents with technical and financial assistance from DEP and other partners. Local stewardship is needed for any project, plan or outreach effort to really take hold because they can increase local involvement in watershed management activities.

Maine has many capable and determined watershed stewardship groups and Soil and Water Conservation Districts (SWCD) working to protect watersheds and clean water. DEP invests considerable staff resources into supporting these groups and helping them carry out their goals and objectives. Some of the activities and projects that DEP supported in 2010 include the following:

- **Watershed Surveys** – DEP provides technical assistance and project oversight to local groups that conduct volunteer watershed surveys without 319 grant funding. In 2010, DEP provided assistance for surveys of the Kezar Lake (Lovell), Quimby Pond (Rangeley) and Milton Pond (Lebanon, ME and Milton, NH) watersheds.
- **Watershed Roundtable** – Over 60 watershed managers from state agencies, municipalities, watershed organizations and SWCDs attended the DEP's 8th annual Watershed Managers' Roundtable. This informal, day-long event provides an opportunity for networking, sharing lessons learned and discussing common problems in both rural and urban watersheds across the state.
- **Youth Conservation Corps** – The DEP provides technical assistance and training to the nine (9) YCC programs throughout Maine. These YCC programs hire high school students to install buffers, erosion controls and other conservation practices in lake and river watersheds. Most of these programs originally started as part of 319 grant projects, but communities worked to find local funding to continue the programs after the grants ended.

In 2010, the DEP hosted the 2nd annual YCC Roundtable, where program staff and organizers from all the YCC programs had a chance to discuss common challenges, program budgets and unique elements of each program. DEP also coordinated two hands-on workshops for YCC technical staff to learn about and install common conservation practices.



Local watershed stewardship offers the best hope for sustaining action to protect and restore Maine's lakes, streams, rivers and coastal waters.

3. Restoring Impaired Waters

State and federal water quality laws require that waters attain their assigned water quality classification standards. DEP monitors water quality conditions of Maine's rivers, lakes and coastal waters to determine if the public can use the waters for designated uses, such as recreation, swimming, fishing, shellfish harvesting, and drinking water supply, and the waters can support healthy habitats for fish and wildlife.

DEP places waters that are found to be degraded (i.e., not supporting its designated uses and not attaining water quality standards) on a list of impaired waters. Restoring impaired waters involves three steps:

- **Assessment.** DEP must establish a pollution allocation (Total Maximum Daily Load - TMDL) for each impaired waterbody, in accordance with Section 303(d) of the Clean Water Act. A Total Maximum Daily Load assessment provides an estimate of how much pollution from point sources (e.g., industrial and municipal wastewater treatment plants) and nonpoint sources (e.g., runoff from urban land use, agriculture, roads, forestry, etc.) needs to be reduced in order to meet state water quality classification standards.
- **Watershed-Based Planning.** Preparation of a watershed-based plan is needed to describe overall actions needed in a watershed to help restore water quality. A watershed-based plan meeting EPA's nine minimum elements of watershed planning is required before receiving 319 funds for a NPS Watershed Project to help restore an impaired waterbody.
- **Implementing Pollution Reduction Measures.** Communities, agencies and individuals take action to apply conservation practices or best management practices (BMPs) to eliminate or control sources of nonpoint source pollution. Usually work needs to be conducted over 5 to 10 years or more to restore an impaired waterbody. DEP provides technical and limited financial assistance to help communities improve watersheds and restore waters.

Three NPS Impaired Lakes Restored

In 2010, DEP removed Duckpuddle Pond (Nobleboro), Highland Lake (Windham) and Threecornered Pond (Augusta) from Maine's Clean Water Act Section 303(d) impaired waters list. DEP found water quality has gradually improved over the 10 years ending in 2008, and the ponds now meet Class GPA water quality standards. Phosphorus and sediment reductions resulting from NPS watershed projects and other watershed stewardship work over many years contributed to the improved water quality.

Highland Lake Section 319 NPS Program Success Story

Following 13 years of sustained watershed work to reduce polluted runoff, Highland Lake's (Windham) water quality has gradually stabilized, and it now meets Class GPA water quality standards. Maine DEP removed the lake from the Clean Water Act Section 303(d) impaired waters list. DEP congratulated the Highland Lake Association and Cumberland County Soil and Water Conservation District (SWCD) for their dedicated work and important accomplishment. Highland Lake was highlighted on the EPA's "Nonpoint Source Program Success Stories" website (www.epa.gov/owow/nps/Success319). The EPA site features NPS-impaired waters that have achieved documented water quality improvements due to Section 319 or other funding sources dedicated to solving NPS impairments. Refer to pages 7 – 8 to read the two-page Highland Lake NPS Success Story.

The Highland Lake NPS success story demonstrates that communities can substantially reduce polluted runoff to improve their lakes, streams or coastal waters. Citizen-led watershed stewardship groups, fueled in part with grant funds and guided by watershed professionals from SWCDs, DEP or other organizations can successfully improve water quality. However, reducing polluted runoff from watersheds requires sustained action over many years. DEP invests considerable staff resources to help local watershed groups get organized and informed and then engage their community to cultivate watershed stewardship. Building local capacity offers the best hope for sustaining actions to protect or improve our lakes, streams, rivers and coastal waters over the long term.

TMDL Assessments

DEP completed and received EPA approval for TMDL reports in Aroostook County on Prestile Stream and Dudley Brook. These TMDLs covered macroinvertebrate, habitat and dissolved oxygen impairments and used a regional watershed water quality model (AVGWLF) developed for New England States by

NEIWPC in 2008. AVGWLF is a land use runoff model that estimates nutrient loads for nitrogen, phosphorus and sediment in these agricultural watersheds. This model also has an add-on tool, called PREDICT, that is a BMP load reduction calculator. This tool takes the AVGWLF results and enables users to apply virtual agricultural BMPs and estimate the reductions that would enable attainment of recommended TMDL goals. PREDICT modeling results were used in both the Prestile and Dudley Watershed Based Plans. This approach could be used for other waterbodies with nutrient related impairments.

TMDL Assessments are complete for 43 other waterbodies. Of these, 31 lakes and five streams are impaired primarily due to nonpoint sources. Seven rivers and streams are impaired primarily by point sources. For more information, go to www.maine.gov/dep/blwq/docmonitoring/tmdl2.htm.

Watershed-Based Plans

DEP used 319 funds to help communities develop watershed-based plans meeting EPA NPS guidance for seven NPS impaired watersheds. A watershed-based plan is intended to be a strategic plan for actions needed over a 5 to 10 year time-frame to achieve the load reductions called for in a TMDL to restore an NPS impaired waterbody. The plan is not a detailed tactical work plan, such as a two-year work plan for a NPS Watershed Project.

- The City of Bangor completed a watershed-based plan for Birch Stream in Bangor.
- Watershed-based plans were being prepared for: Capehart Brook (Bangor); Capisic Brook (Portland); Pleasant River (Gray); Red Brook (Scarborough); Trout Brook (South. Portland); and Whitten Brook (Skowhegan).

Implementation

DEP allocates a portion of Section 319 funds for NPS Watershed Projects to implement BMPs that reduce pollutant loads to help restore impaired waters. During 2010, Section 319 funds helped sustain or startup NPS Watershed Projects to apply conservation practices (BMPs) in the following ten watersheds to help restore impaired waters.

Annabessacook Lake (Monmouth)
China Lake (China)
Christina Reservoir (Fort Fairfield)
Duckpuddle Pond (Nobleboro)
Highland Lake (Windham)

Long Pond (Belgrade)
Pleasant Pond (Gardiner)
Sabattus Pond (Sabattus)
Spruce Creek (Kittery)
Togus Pond (Augusta)



Algal bloom on Webber Pond in Vassalboro



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Maine

Community-based Erosion Control Efforts Stop Water Quality Decline

Waterbody Improved

In the 1980s and 1990s, Highland Lake showed troubling signs of declining water quality that threatened the loss of the lake's brown trout fishery. Excessive soil erosion throughout the watershed contributed to significant declines in water clarity and dissolved oxygen levels, prompting the Maine Department of Environmental Protection (DEP) to add Highland Lake to Maine's 1990 Clean Water Act (CWA) section 303(d) list of impaired waters for aquatic life support. Locally led restoration work over the past 13 years has addressed significant erosion sites and reduced polluted runoff. Highland Lake water clarity has gradually stabilized and now meets water quality standards, prompting the Maine DEP to remove the lake from the CWA section 303(d) impaired waters list in 2010.

Problem

Highland Lake, a 623-acre lake in the towns of Windham and Falmouth and near Portland, Maine, attracts homeowners, boaters and anglers with its eight miles of scenic shoreland and warm and cold-water fisheries. The lake has a watershed area of 8.4 square miles and a mean depth of 25 feet. There are about 900 homes in the watershed, including about 300 homes along its developed shoreline. The lake's hand-carry public boat launch makes it an accessible and popular destination for visitors.

Beginning in the 1980s, erosion became more prevalent in the Highland Lake watershed due to changes in land use, especially the conversion of forest to developed land. These changes increased polluted runoff and caused a gradual decline in water quality. Stormwater runoff eroded soil from both the newly developed and existing developed lands, and moved sediment with attached phosphorus into the streams flowing to the lake. Excess phosphorus "fertilized" the lake, causing an increase in trophic state (biological productivity) followed by reduced water clarity and dissolved oxygen.

Maine's water quality standards require that lakes have a stable or decreasing trophic state, subject only to natural fluctuations. In Maine, a lake's trophic state is based on measures of chlorophyll *a*, Secchi disk transparency (clarity), concentration of dissolved oxygen and total phosphorus concentration.



Figure 1. Homeowners and volunteers planted over 1000 shrubs, trees and groundcovers to reduce polluted runoff.

Average annual Secchi disk transparency readings (measures of water clarity) in Highland Lake during the 1990s were about one meter less than during the 1980s due to increased algae and sediment. Dissolved oxygen levels deep in the lake declined, threatening the lake's brown trout fishery. In 1990 Maine DEP designated Highland Lake as impaired for aquatic life support on Maine's CWA section 303(d) list.

The total maximum daily load (TMDL) assessment developed for Highland Lake in 2003 identified suburban residential properties as the largest source (60 percent) of phosphorus. Highly developed shoreland areas with numerous homes and networks of gravel-surface roads increased stormwater runoff and erosion. Private roads accounted for nearly half of the water quality impact sites (42 percent). The TMDL estimated that the annual external loading of phosphorus needed to be reduced by about 24 percent to attain state water quality standards.

Project Highlights

In 1997, outreach to landowners began with a watershed survey that documented 104 erosion sites including private camp roads, town roads and residential properties. The Highland Lake Watershed Management Plan (1999) described actions needed to restore the lake. From 1999 to 2010, best management practices (BMPs) were installed at numerous erosion sites. Cost share agreements with public and private landowners resulted in BMPs being installed at priority nonpoint source sites on 42 private and public roads to stop excessive erosion and sediment from thousands of feet of gravel surface roads. A residential matching grant program prompted 51 landowners to install erosion control practices including plantings, waterbars, infiltration steps, rain gardens and riprap (see Figure 1).

Technical staff provided assistance to landowners during more than 300 site visits. The Highland Lake Youth Conservation Corps (YCC) installed BMPs on 176 sites in the watershed and generated remarkable community interest in reducing polluted runoff to the lake. Landowners learned how to care for their lake through extensive outreach efforts, including: camp road, septic system and raingarden workshops; Highland Lake Association newsletters and Web site; *Cruise the Buffers* boat rides, which toured examples of good and poor lake shore buffers; a *Guide to Living Responsibly in the Highland Lake Watershed*; watershed boundary signs; annual *State of the Lake* meetings; and a watershed forum for the community to plan for the lake's future.

Results

After 13 years of restoration projects, including installing erosion control practices, the amount of sediment and phosphorus exported to Highland Lake has declined significantly. Through 2009, pollutant loading was reduced by an estimated 278 tons of sediment and 1,070 pounds of phosphorus per year. After declining significantly from 1980 to 1998, water clarity stabilized (Figure 2) as watershed partners implemented erosion control efforts. The water quality data trend from 1998 through 2009 indicates a persistent stabilization of trophic state, and now Highland Lake meets Maine's water quality standards. As a result, Maine DEP removed Highland Lake from its 2010 CWA section 303(d) list of impaired waters.

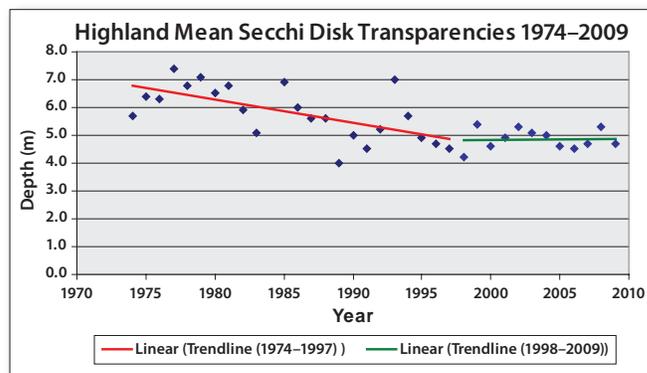


Figure 2. Highland Lake Mean Secchi Disk Transparencies from 1974 to 2009. Annual mean depth readings from 1974 to 1998 indicate a trend (red line) toward reduced water clarity. Secchi readings from 1998 to 2009 indicate a trend (green line) toward stable water clarity.

Partners and Funding

Cumberland County Soil and Water Conservation District (CCSWCD) and the Highland Lake Association (HLA) collaborated to raise awareness about the impacts of polluted runoff and to help the community implement erosion and sediment control practices. CCSWCD prepared a watershed management plan and provided extensive technical assistance, outreach services, grants administration and projects management. HLA advocated for the lake, persuading landowners and neighborhoods to do erosion control work and supporting development and funding of the YCC. The towns of Falmouth and Windham provided substantial YCC operational funds. Other key partners included Maine DEP, Maine Department of Transportation, Casco Bay Estuary Partnership and the U.S. Environmental Protection Agency (EPA).

From 1999 to 2010, partners used approximately \$970,000 to install erosion control practices at polluted runoff sites in the watershed. An EPA CWA section 604(b) grant (\$10,500) funded the watershed survey. In 1999 Maine DEP provided \$206,975 in state bond funds for a priority watershed project that fueled the start-up of work in the watershed. From 2004 to 2010, EPA provided \$339,865 in CWA section 319 grant funds for two watershed implementation projects (Phases 2 and 3). The three grants attracted local matching contributions exceeding \$380,000 from landowners, the towns of Windham and Falmouth and the HLA. Lake Stormwater Compensation Funds through Maine DEP also provided \$36,033.



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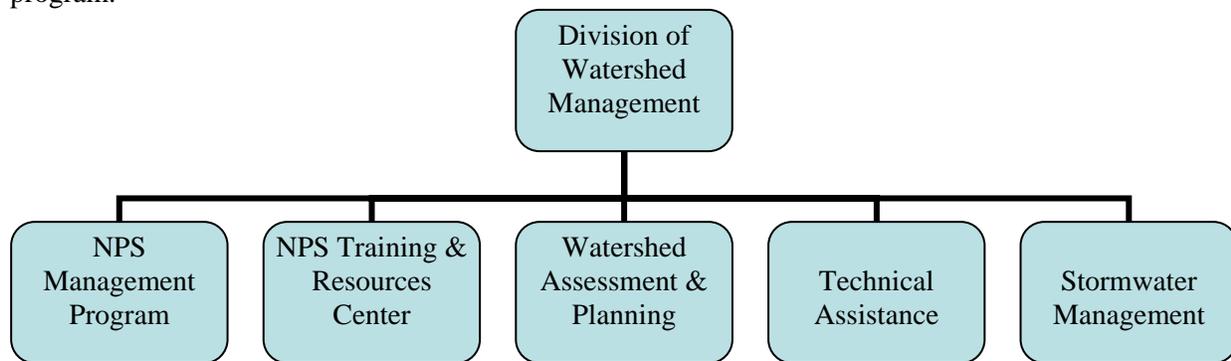
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D. DEP NPS Program & Work Activities in 2010

1. Overview – Watershed Management Division

DEP's Division of Watershed Management administers NPS program services and watershed management. The Division is organized into five sections. The Nonpoint Source Management Program section administers the 319 grant program. The Nonpoint Source Training Center provides training to contractors, consultants and others and provides education and outreach. The Watershed Assessment and Planning section provides stormwater technical assistance and watershed management planning and assistance, and manages the Stream Team and Volunteer River Monitoring Program. The Technical Assistance section provides technical review of permit applications and maintains or develops Best Management Practices guidelines. The Stormwater Management section provides coordination for implementation of the federally delegated Maine Pollutant Discharge Elimination System (MEPDES) program.



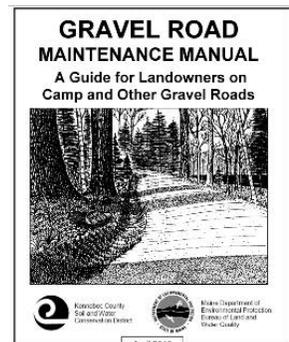
2. Progress Report on DEP and Partner Initiatives

DEP led or participated in several ongoing NPS initiatives in 2010. The following section reports on these efforts.

Lake Camp Roads

Many of the over 12,000 miles of private gravel camp roads in watersheds of Maine's Great Ponds are poorly maintained and eroding sediment into Maine lakes. In 2009, several of the recommendations of the *Lake Camp Road Report: An Evaluation of Ways to Reduce the Impact of Camp Roads, Driveways and Boat Launches on Lake Water Quality* (December 2008) were implemented. In 2010, work continued:

Gravel Road Maintenance Manual – *The Gravel Road Maintenance Manual: A Guide for Landowners on Camp and Other Gravel Roads* was updated to be more user-friendly and include new BMPs and technical guidance.



Unpaved Private Road Pilot Project – The “Unpaved Private Road Pilot Project”, which was designed using the LOGIC model, began in spring 2010. The pilot project will evaluate whether providing technical assistance to landowners results in improved maintenance of gravel roads to prevent sedimentation of lakes and streams. SWCD staff will work with landowners to form road associations and work with several other existing road associations to evaluate gravel road conditions and prepare road

maintenance and repair plans. The outcome of this assistance will be compared to roads where landowners attended a workshop on forming a road association or received DEP manuals, but did not receive technical assistance.

- In August, 48 people attended two DEP workshops on how to form a road association. An attorney with experience with road associations presented information about types of road associations and answered a host of questions. Another two workshops will be held in 2011.
- Landowners on three roads were chosen for assistance with forming a road association. In 2011, work with these individuals will continue, and several others will be chosen for both assistance in forming road associations and for technical assistance with road evaluation.

Lake Camp Road Report, Gravel Road Maintenance Manual, and other camp road resources are available at <http://www.maine.gov/dep/blwq/docwatershed/camp/roads/index.htm>.

Long Creek Watershed Management District

Background - Long Creek flows through the highly developed Maine Mall area in South Portland. The watershed covers 3.45 square miles and extends into parts of Scarborough, Portland and Westbrook. The stream has been degraded over time due to increases in stormwater runoff and pollutants coming from the parking lots, roads, rooftops and other developed areas in the watershed. As a result, the creek is listed as one of 31 Urban Impaired streams in Maine.



Underdrained soil filter system installed at Mall Plaza

From 2007-2009, watershed municipalities, businesses and other stakeholders developed the *Long Creek Watershed Management Plan*. In response to a 2008 petition filed by the Conservation Law Foundation, the EPA announced that watershed parcels with stormwater discharges from one acre or more of impervious area would need a NPDES stormwater permit from the DEP. In August 2009, municipalities of South Portland, Portland, Westbrook and Scarborough executed an interlocal agreement to create the Long Creek Watershed Management District (District). Most of the watershed properties subject to the EPA order have since joined the District and are contributing to a coordinated restoration effort.

Construction Projects - Several stormwater management projects were completed in 2010 with funding from the American Recovery and Reinvestment Act of 2009 (AARA or Stimulus) and District assessments. The District also started planning for 2011 construction projects.

- **Mall Plaza** - The Mall Plaza stormwater retrofit project in South Portland was completed in two phases. Phase I was completed during the summer with Stimulus funding. The project installed an underdrained soil filter that treated 11 acres of parking lot and roof runoff. Phase II took place in the fall when proprietary holding tanks were installed to treat 3.5 acres of roof and parking lot runoff. Phase II was funded by the District with assessments collected from participating businesses.
- **Darling Avenue** - A Stimulus-funded stormwater retrofit project was completed on Darling Avenue in South Portland. The work included installation of Filterra tree boxes to filter polluted runoff and the regrading and stabilization of road shoulders and open ditches to eliminate existing erosion. Vegetated buffers were constructed to treat some of the polluted runoff generated from parking lots.
- **Colonel Westbrook Industrial Park** - A landscape architect was hired to prepare planting plans to stabilize streambanks and restore shade and cover along a stretch of the North Branch where the channel runs through a lawn in the Colonel Westbrook Industrial Park. This section of stream has

collapsing streambanks and high summer water temperatures due to lack of deep-rooted streamside vegetation and overhanging branches.

Long Creek Watershed Management District and Permit Development – The Board of the newly-formed Long Creek Watershed Management District met seven times in 2010. Actions by the District pertaining to implementing the watershed management plan included:

- Established a Participating Landowner Agreement and Memorandum of Agreement for each landowner;
- Established and collected fees for stream restoration and water quality monitoring;
- Hired maintenance services for vacuum sweeping of roadways and parking lots and catch basin cleaning; and
- Reviewed and approved many of the landowner agreements required under the DEP General Permit for the post-construction discharge of stormwater from buildings and parking lots etc. of more than one acre.

Long Creek information is available at <http://www.restorelongcreek.org>.

Bangor Urban Impaired Stream Restoration Projects

Background – The City of Bangor has five streams that appear on Maine DEP’s Urban Impaired Streams list. In 2004 and 2008, the City received DEP NPS (319) grant funding to develop watershed management plans for two of these streams, Penjajawoc Stream and Birch Stream. Both plans recommended installing engineered stormwater retrofits and implementing stream channel restoration to improve water quality. This planning work enabled Bangor to prepare a successful application to receive a \$3,000,000 combination ARRA grant and loan for work in the watersheds.

Birch Stream Projects – Birch Stream begins at the outfall below the Airport Mall in Bangor, but its watershed includes Bangor International Airport and the Maine Air National Guard complex. Key stressors that have contributed to Birch Stream’s impairment are de-icing fluid residuals (propylene glycol); toxicants including Gasoline Range Organics and Diesel Range Organics; sediments; and thermal impacts. Three contracts were awarded to mitigate impacts of stormwater that discharges to Birch Stream.



International Canal - stone check dam with bio-filter below

- **International Canal** - The International Canal receives runoff from the main aviation aprons of the airport facility and is the most polluted according to water quality data. The project installed sediment checkdams in the channel followed by four aeration systems and four sub-surface wetland treatment cells to allow biological breakdown of the propylene glycol and treat stormwater.
- **Domestic Canal** - The Domestic Canal served as a stormwater retention area for runoff from the main airport runway and other developed areas. The shallow, standing water in this 2,000 foot long canal warmed up before discharging to Birch Stream. This project reshaped the channel bottom and lowered base water levels to reduce thermal impacts and minimize open water in the canal.
- **Bio-Retention Swales** - The main entrance to the airport is a four lane divided highway, which, prior to the project, discharged untreated stormwater to Birch Stream. Bioretention swales were installed to provide stormwater treatment and attenuation, and 120 trees were planted in the median to provide some nutrient uptake and shading.

Penjajawoc Stream Projects - Penjajawoc Stream is a small stream that originates north of Stillwater Avenue and runs through the developed areas of Stillwater Avenue, the Bangor Mall, and Hogan Road to its confluence with the Penobscot River. Penjajawoc Stream currently does not meet Class B water quality criteria. The City of Bangor received a Stimulus loan for six stormwater remediation projects within the Penjajawoc Stream watershed. The projects, outlined below, are aimed at improving the water quality of this stream and helping to bring the watercourse into attainment with the State water quality classification criteria.



Hogan Road - Installation of bioretention swale media

- **Bangor Mall** - The Bangor Mall storm drainage system was modified within the Bangor Mall Blvd. right-of-way to create a dry weather groundwater discharge point directly into Penjajawoc Stream. The project will help maintain stream baseflow, lower stream temperature, and avoid possible contamination with runoff stored in an existing wet pond.
- **Penjajawoc Stream Channel** - The stream channel was reconstructed between Bangor Mall Blvd. and I-95 to decrease the channel cross-sectional area and to restore it to an alignment that more closely mimics natural conditions. Plantings were also added to provide shading and increase wildlife habitat.
- **Hogan Road** - This project replaced a drainage ditch that collects approximately two acres of parking lot runoff with an under-drained grass bioretention swale and a Storm Tech treatment system. Approximately 1,200 square yards of existing impervious pavement was also replaced with pervious pavement. These systems will provide stormwater treatment and cooling prior to discharge to Penjajawoc Stream.
- **Lower Hogan Road** - This contract installed a Storm Tech stormwater treatment system that will provide subsurface stormwater treatment and filtration before discharging to Penjajawoc Stream.
- **Eastern Maine Community College** - This project installed 18,000 square feet of pervious pavement in an extended parking area. The pervious pavement will reduce the volume of stormwater discharged to Penjajawoc Stream, thereby reducing impacts of increased water temperature and pollutants.
- **Stillwater Avenue** - Five tree filter boxes were installed at the Bangor Mall to remove pollutants from roof and parking area runoff.

More information is available at http://www.bangormaine.gov/cs_newstormwater.php.

3. Summaries of Statewide NPS Programs

DEP directly funds several ongoing programs and projects using 319 funding. Some of these programs are carried out by DEP staff and others are implemented by partner organizations. The following pages include descriptions of each program and accomplishments in 2010.

LakeSmart

The LakeSmart program was established in 2002 to promote a new norm for shorefront and watershed development by recognizing property owners who stop erosion, manage stormwater, maintain their septic system, leave native vegetation or plant vegetation along shorelines, minimize lawns and open recreation areas, and reduce fertilizer and pesticide use. Trained LakeSmart evaluators from local watershed groups or Soil and Water Conservation Districts visit properties and evaluate four categories. Properties that score high in all four categories are certified as LakeSmart properties and receive signs to place prominently on the shorefront and/or road frontage. Properties that score high in one to three categories receive recognition certificates and are encouraged to work toward full LakeSmart status.



Accomplishments in 2010:

- Issued **78** LakeSmart Awards and another **58** recognition certificates to individuals that received high marks in at least one to three of the four evaluation categories. Total LakeSmart Award properties to date are **343**.
- **Screeners Pilot Program** – This is the second year of a three-year pilot program with the Congress of Lake Associations to test using volunteers to screen perspective properties. This year **22** volunteers were trained as screeners on **9** pilot lakes. Screeners visit properties, provide limited technical assistance and recommend award-quality lakes to the certified evaluators. This approach is expected to save money as well expand the spread of the program.

For More Information:

Barb Welch, Maine DEP – (207) 287-7682, Barb.Welch@maine.gov
 LakeSmart website – <http://www.maine.gov/dep/blwq/doclake/lakesmart/index.htm>

Maine Clean Boatyards and Marinas Program

The Clean Boatyards and Marinas Program is a partnership between the Maine State Planning Office, Maine Marine Trades Association and other industry, state and federal agencies and environmental organizations. The program promotes best management practices in boatyards and marinas. Participants conduct a facility self-assessment in five areas of concern: stormwater runoff management, erosion, sedimentation control; boat maintenance and repair/ fueling activities/petroleum control; waste recycling, disposal and storage; and boat pumpouts and sewage. The program provides technical assistance, conducts verification visits and publicly recognizes facilities that meet award standards.



The Saxton family of Dolphin Marina accepts their Clean Marinas award.

Accomplishments in 2010:

- Designated **3** new facilities, and recertified **5** facilities. Conducted verification visits at **4** additional facilities that will continue to work towards certification.
- Distributed boater education packets to the New York Yacht Club Cruise, Portland Yacht Club opening event and the Navtronics Open House.

- Distributed boater education packets and bilge socks at Maine Boat Builders Show in March and Maine Boats, Homes and Harbors Show. Conducted a clean boating workshop at the Maine Boats, Homes and Harbors Show and staffed a booth at the Dolphin Marina National Marina Day Open House.
- Conducted informational visits at **3** facilities and distributed informational packets at the Maine Marine Trades Association Annual Meeting, other events and upon request.
- Updated brochures and program materials to reflect new information and BMPs.

For More Information:

Gerry Tiernan, Maine Marine Trades Association – (207) 773-8725, gtiernan@mainemarinetrades.com
 Clean Marinas Website – www.mainemarinetrades.com/clean_marinas/default.asp

Maine Lakes Biomanipulation

The project aims to improve water quality on East Pond, an impaired lake at the head of the Belgrade Lakes chain, by reducing introduced white and yellow perch and black crappie fish populations in the pond. This targeted fish removal may enhance zooplankton populations and ultimately result in higher water transparencies due to increased consumption of blue-green algae by zooplankton. Phase I of the project assessed water quality conditions and fish assemblages in East and downstream North (control) ponds. Phase II (fish removal) started in East Pond following ice-out in 2007, and was continued during the spring of 2008 through 2010 (and will continue in spring 2011).

Accomplishments in 2010

- Trap-netting removed a total of **6 tons** of targeted fish species (compared to 10 tons in 2007, 2.3 tons in 2008 and only 1.6 tons in 2009). 83% of the catch by number was made up of white perch (compared to 88% in 2007, 57% in 2008, and 62% in 2009), along with 13% yellow perch and only 4% black crappie. Released non-target fish species (golden shiner, white sucker, chain pickerel, black bass, sunfish, brown bullhead, American eel, and a few trout) comprised only 1% of the catch (compared with 2% in 2007, 10% in 2008 and 6% in 2009).
- Completed bi-weekly water quality sampling (May-October) for total phosphorus, chlorophyll-a, water transparency, dissolved oxygen-temperature profiles, and phytoplankton and zooplankton assemblages in both East and North Ponds, with assistance from University of Maine (Orono) project M.S. graduate student, Kristin Ditzler, and project technician, Dennis Anderson. Kristin successfully defended her Master’s thesis in spring 2010 and is now working on her Ph.D. with Professor Saros.
- Assessed fish assemblages in East and North Ponds on a monthly basis (July to September) using a standardized combination of active fishing gears including: pre-dusk sinking gill netting, expert baitfish angling, and night-time beach seining. Quenton Tuckett, Ph.D. student from the University of Maine, Orono, and fish technicians tagged and released 2,050 white perch for mark-recapture studies and estimated the adult white perch population as **4,844** in 2010 (compared to 11,055 in 2009, 10,629 in 2008, and 22,267 in 2007).
- An early ice-out (end of March) and warmer summer climate resulted in a productive growing season and multiple nuisance algal blooms on East Pond. Prior to this, preliminary results indicated that nuisance blue-green algal blooms still occurred in East Pond; however, bloom prevalence had shifted



to late August and September. Hence, there appeared to be some improvement in water quality in terms of the length of time during the summer when water quality/clarity standards were achieved.

For More Information:

David Halliwell, Maine DEP – (207) 287-7649, david.halliwell@maine.gov,
 Melissa Evers, Maine DEP – (207) 287-2838, Melissa.Evers@maine.gov
 Biomanipulation Project Website - www.maine.gov/dep/blwq/doclake/biomanipulation/index.htm
 Article in NALMS LakeLine <http://www.maine.gov/dep/blwq/doclake/biomanipulation/lakeline08.pdf>

Maine Nonpoint Education for Municipal Officials (NEMO) Program

Maine NEMO provides outreach to municipal officials on how land use decisions are linked to water quality in their towns. NEMO is based at the office of the Partnership for Environmental Technology Education (PETE) in South Portland. The Maine State Planning Office Coastal Program and the Department of Health and Human Services Drinking Water Program also provide program funding.



Boat tour for municipal officials on the Salmon Falls River

Accomplishments in 2010:

- Conducted **26** NEMO presentations attended by **812** people.
- Co-hosted the National NEMO Conference in Portland in September 2010. This three-day event included presentations and workshops on site design with Low Impact Development (LID), nitrogen removal, climate change, social marketing, and several field trips to UNH, Long Creek, Wells Reserve and an LID walking tour. This event was attended by **185** people.
- Provided input to the LID and Infiltration subcommittee discussions for Chapter 500 revisions.
- Assisted EPA Region 1 with Impervious Cover (IC) Total Maximum Daily Load (TMDL) data collection.
- Obtained EPA wetlands grant with State Planning Office for the Bangor Area Suitability of Development Study to utilize keypad polling and Community Viz to determine community values and optimal development scenarios for the seven town region. This project also integrates the Greenprinting Project by Trust for Public Land done in the region.
- Participated in the Salmon Falls Collaborative including presentations to the Acton Wakefield Watershed Alliance, presentation at the workshop event in October, follow-up and participation on the communication committee, and presentations in South Berwick resulting from the workshop exposure. Provided shoreland zoning and LID information for municipal officials on three boat tours along the Salmon Falls River.
- Provided assistance to regulated Municipal Separate Storm Sewer System (MS4) communities including training for Sabattus Public Works, LID presentations at the Bangor Area Garden Show, and sharing materials with Bangor Area Stormwater Work Group.
- Assisted Berwick Water District with ideas for recycling backwash water, decreasing turbidity in the river and decreasing discharge to sanitary sewer.
- Partnered with Wells National Estuarine Research Reserve to offer and advertise multiple training opportunities. Co-Chaired the 2010 Maine Water Conference.

For More Information:

LaMarr Cannon, PETE – (207) 771-9020, lcannon@maine.rr.com
 Don Witherill, DEP – (207) 287-7725, Donald.t.witherill@maine.gov
 Maine NEMO Website – www.mainenemo.org

Maine Nonpoint Source Training and Resource Center

The Maine Nonpoint Source Training and Resource Center’s primary focus is to provide training to various groups throughout the state to help them prevent nonpoint source pollution. In addition, the Center maintains an inventory of NPS publications and DVD lending library, and acts as a clearinghouse for information on nonpoint source pollution and best management practices. Administrative assistance to the Center is provided by the Joint Environmental Training Coordinating Committee (JETCC), who coordinates course registration, the assemblage of training materials and other administrative tasks.



Accomplishments in 2010:

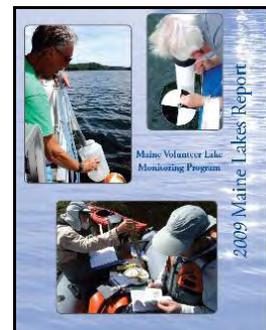
- Provided training to **510** participants in erosion and sediment control practices for contractors, and certified **183** additional individuals in the Voluntary Contractor Certification program.
- Coordinated a workshop on Stormwater Management and Climate Change to promote the concept of adaptation to designers, municipal officials and other groups: **132** participants.
- Coordinated training on the installation, design, and inspection of septic systems: **279** participants.
- Coordinated an Exam Review course and exam for the Certified Professionals in Erosion and Sediment Control resulting in **6** new individuals becoming CPESC certified. There are currently over **60** individuals certified in Maine, more than any other state in New England except New Hampshire.
- Provided training to **131** individuals on LakeSmart landscaping and the evaluation of gravel roads.
- Distributed over **62** copies of publications and **7** DVDs from the Center’s Lending Library

For More Information:

Bill Laflamme, DEP – (207) 287-7726, william.n.laflamme@maine.gov
 NPS Training Center Website – www.maine.gov/dep/blwq/training/index.htm

Maine Volunteer Lake Monitoring Program (VLMP)

319 funding primarily supports the educational aspects of the VLMP including training volunteer monitors to collect quality data, producing three newsletters and one Annual Report per year, and, holding an annual meeting to share information about lake water quality issues. Volunteers monitor assigned lakes twice a month for 5-6 months of each year, enter data into electronic format, and assist in the local coordination of VLMP activities. The total match generated by the volunteers more than doubles the 319 funding level.



Accomplishments in 2010:

- Produced the *2009 Maine VLMP Annual Report*, which reported that during 2009 volunteers obtained 3,884 Secchi transparency readings; 16,781 dissolved oxygen readings; 1,341 total phosphorus samples; and 591 chlorophyll-a samples. These data were collected from **438** lake stations on **356** lakes representing over 42% of Maine's lake surface area.
- Produced **three** newsletters and convened the 2010 Annual Meeting, which was attended by more than **95** people.
- Trained more than **26** new volunteers for transparency and **9** for dissolved oxygen, for a total of **466** volunteers certified to obtain Secchi transparency data and another **138** volunteers certified to collect both transparency and dissolved oxygen data. Recertified more than **40** volunteers for transparency, more than **59** volunteers for dissolved oxygen and **107** volunteers on the website using the Virtual Secchi Recertification tool.
- Encouraged collection of transparency readings on days that the Landsat satellite passed Maine.
- Reached a level of **604** certified volunteer water quality monitors in the program monitoring **516** lake basins in Maine at the end of 2010.

For More Information:

Linda Bacon, DEP Project Manager – (207) 441-0462, Linda.C.Bacon@maine.gov
Scott Williams, VLMP – (207) 783-7733, Scott.Williams@MaineVLMP.org
VLMP Website – www.mainevolunteerlakemonitors.org/

Maine Volunteer River Monitoring Program and Stream Team Program

The Volunteer River Monitoring Program (VRMP) is a new program that began in 2009. The VRMP provides quality assurance services, training, volunteer certification, data archiving, and annual water quality report services.

The Maine Stream Team Program (MSTP) assists local citizens and grassroots organizations interested in being stewards of their local streams. A “stream team” is a group of individuals that have banded together to learn about and protect their local stream or river. The program serves as a clearinghouse of stream-related information, acts as a catalyst for networking and partnering amongst local stream and river groups, and provides training opportunities to advance stream protection efforts. Because VRMP/MSTP staff directed most of their time toward the VRMP Program in 2010, limited time was spent on the MSTP this year.



VRMP Accomplishments in 2010:

- The VRMP completed its second year. New training videos are being developed and the program continues to evolve.
- Trained and certified/recertified volunteers associated with **nine** volunteer organizations on a number of Maine streams and rivers.
- Water quality data report completed in December 2010.

MSTP Accomplishments in 2010:

- Completed stream habitat/geomorphology reports for Bangor streams and Sheepscot River tributaries.
- Continued to work with municipalities, SWCDs and other partners to develop watershed management and restoration strategies for Long Creek (South Portland), Red Brook (Scarborough), and Whitten Brook (Skowhegan).
- Provided limited technical assistance and educational outreach to a variety of stream teams and watershed councils and coalitions around the state.

For More Information:

Mary Ellen Dennis, DEP – (207) 287-7729, mary-ellen.c.dennis@maine.gov

Stream Team Website – www.maine.gov/dep/blwq/docstream/team/streamteam.htm

VRMP Website – www.maine.gov/dep/blwq/docstream/vrmp/index.htm

Statewide NPS Outreach

This NPS Outreach program disseminates information to raise awareness and move people toward more environmentally friendly behaviors. The program partners with organizations with similar target audiences and similar BMPs such as LakeSmart, YardScaping and ThinkBlueMaine as well as youth and educators through the Children’s Water Festivals and Envirothon. The program taps into social marketing techniques to increase effectiveness.



Accomplishments in 2010:

- Supported the Southern and Northern Maine Children’s Water Festival, which reached approximately **1,400** students and their teachers. AmeriCorps educators reached an additional **1,000** students with watershed protection messages in classroom presentations, Lake Days and other events.
- Distributed **four** issues of the Nonpoint Source Times, which recently completed its 19th year of publication. Available at www.maine.gov/dep/blwq/newslet/npstarchiv.htm
- Partnered with the Pesticides Control Board and Casco Bay Estuary Partnership to produce a second TV stormwater/NPS ad known as Ducky II. The ad encourages people to reduce their use of lawn care products, particularly fertilizer. Stormwater runoff washes excess fertilizer from lawns into streams or ponds, which often causes lower water quality.
- Started a three-year partnership with the Maine Association of Conservation Districts (MACD) and the local Districts to pilot two outreach efforts to reduce water quality impacts from unpaved private roads. **Two** forming road association workshops were held in 2010, and technical assistance was provided to **three** roads to form a road association and to **one** road association to evaluate their road and develop a road maintenance plan.

For More Information:

Kathy Hoppe, DEP - (207) 760-3134, kathy.m.hoppe@maine.gov

NPS Outreach Website – www.maine.gov/dep/blwq/doceducation/nps/

E. NPS Grants Program

1. Overview of Nonpoint Source Water Pollution Control Projects

DEP administers a NPS grants program to offer Section 319 grant funds for watershed-based projects that take actions to help restore or protect lakes, streams, or coastal waters that are impaired or considered threatened by polluted runoff. Through the NPS Grant Program, DEP issues grants to local project sponsors who provide a minimum of a 40% match to the grant funds. NPS projects help local communities identify water pollution sources in watersheds and take action to restore or protect clean water. DEP issued grants to help fund three types of watershed-based projects:

- **NPS Watershed Project.** Project focuses on implementing actions within an entire watershed to improve or protect a waterbody. The project is designed so that BMPs are implemented in a manner that leads to a significant reduction in NPS pollutant load to a waterbody. The load reduction is intended to improve or protect water quality of a waterbody. A NPS Watershed Survey (or other NPS assessment of equivalent detail) is needed to design and implement this type of project.
- **NPS Watershed Survey.** Project focuses on finding, describing and prioritizing NPS pollution sources in a watershed, and recommending BMPs for treating identified NPS sites to reduce polluted runoff. NPS Watershed Surveys provide essential information for planning and implementing NPS Watershed Projects.
- **Watershed-Based Plans.** A watershed-based plan is intended to be a strategic plan for actions needed over a 5 to 10 year timeframe to achieve the load reductions called for in a TMDL to restore an NPS impaired waterbody.

2. NPS Water Pollution Control Projects Funded in 2010

DEP provided grants for 16 NPS watershed projects. Fourteen projects received grants in January based on the outcome of the annual NPS Projects Request For Proposals DEP issued in April 2009. Six projects continued implementing BMPs on-the-ground in a 2nd or 3rd phase.

Project Title	Grantee	Project #	Grant	Match
Beech Hill Pond Watershed Survey	Hancock County SWCD	2009PP10	12,899	8,800
Branch Lake Watershed Improvement Project - Phase II	Hancock County SWCD	2010RR01	54,184	36,230
Christina Reservoir Watershed Improvement Project	Central Aroostook County SWCD	2010RT18	60,785	49,939
Coldstream Pond NPS Watershed Survey	Penobscot County SWCD	2010RR15	9,600	8,020
Dexter Lakes NPS Watershed Project Phase III	Penobscot County SWCD	2009RR12	25,000	18,000
Dyer River Watershed NPS Survey Project	Sheepscot Valley Conservation Association.	2010RT16	13,000	10,000
Little Sebago Lake Conservation Project - Phase III	Cumberland County SWCD	2010RR02	95,391	73,395
McLean Brook Watershed BMP	St. John Valley SWCD	2010RR03	39,312	26,484

Implementation Project				
Nickerson Lake Conservation Project - Phase I	Southern Aroostook County SWCD	2010RR04	64,789	43,910
Pattee's Pond Watershed NPS Reduction Project - Phase I	Town of Winslow	2010RR05	59,450	51,470
Sabattus Pond Watershed Project - Phase III	Androscoggin Valley SWCD	2010RT06	77,066	93,402
Spruce Creek Watershed Improvement Project - Phase II	Town of Kittery	2010RT07	79,780	101,346
Thompson Lake Watershed Improvement - Phase III Otisfield	Thompson Lake Environmental Association.	2010RR08	61,189	40,976
Upper Pushaw NPS Watershed Survey	Penobscot County SWCD	2009PP18	11,540	8,000
Williams Brook Survey & Prestile Stream Citizen Storm Watchers	Central Aroostook County SWCD	2010RT17	9,126	19,279
Total			\$688,674	\$599,877

3. Request for Proposals: FFY 2011 Grants for NPS Pollution Control Projects

DEP continued to target a portion of funds for projects to restore waters that have a relatively higher restoration potential. Restoring NPS-impaired waters is a national priority of the EPA Section 319 program. EPA requires that states allocate Section 319 funding for restoration projects and document restorations as national NPS success stories. To qualify as a success story, an impaired waterbody must be partially or fully restored due to actual NPS control or restoration efforts. To help meet Section 319 program objectives, DEP developed a list of impaired waters in Maine that have a relatively high potential to be either fully or partially restored in the next five years. The NPS RFP reserved funds (\$220,000) for NPS projects intended to help restore NPS impaired waters that have a relatively high potential to be partially or fully restored within five years.

In April, DEP issued the annual NPS RFP and in May DEP received 22 proposals requesting about 1.28 million dollars. This strong response demonstrates many local community-based partnerships value clean water and are prepared to start or continue work to reduce polluted runoff. A review committee evaluated and scored the proposals. In July DEP announced the 10 highest ranked projects to be funded with FFY 2011 319 funds. DEP worked with grantees to adjust work plans as needed to secure approved grant agreements (contracts). Grants were planned to enable start-up of projects by February 2011.

Results - Request For Proposals FFY 2011 Grants for Nonpoint Source Water Pollution Control Projects

Project Type	Funds Requested	Funds to be Awarded
NPS Watershed Implementation Project	\$1,209,344 18 proposals	\$502,973 7 proposals
NPS Watershed Survey	\$67,181 4 proposals	\$56,128 3 proposals

NPS Projects to be Awarded Grants by February 2011

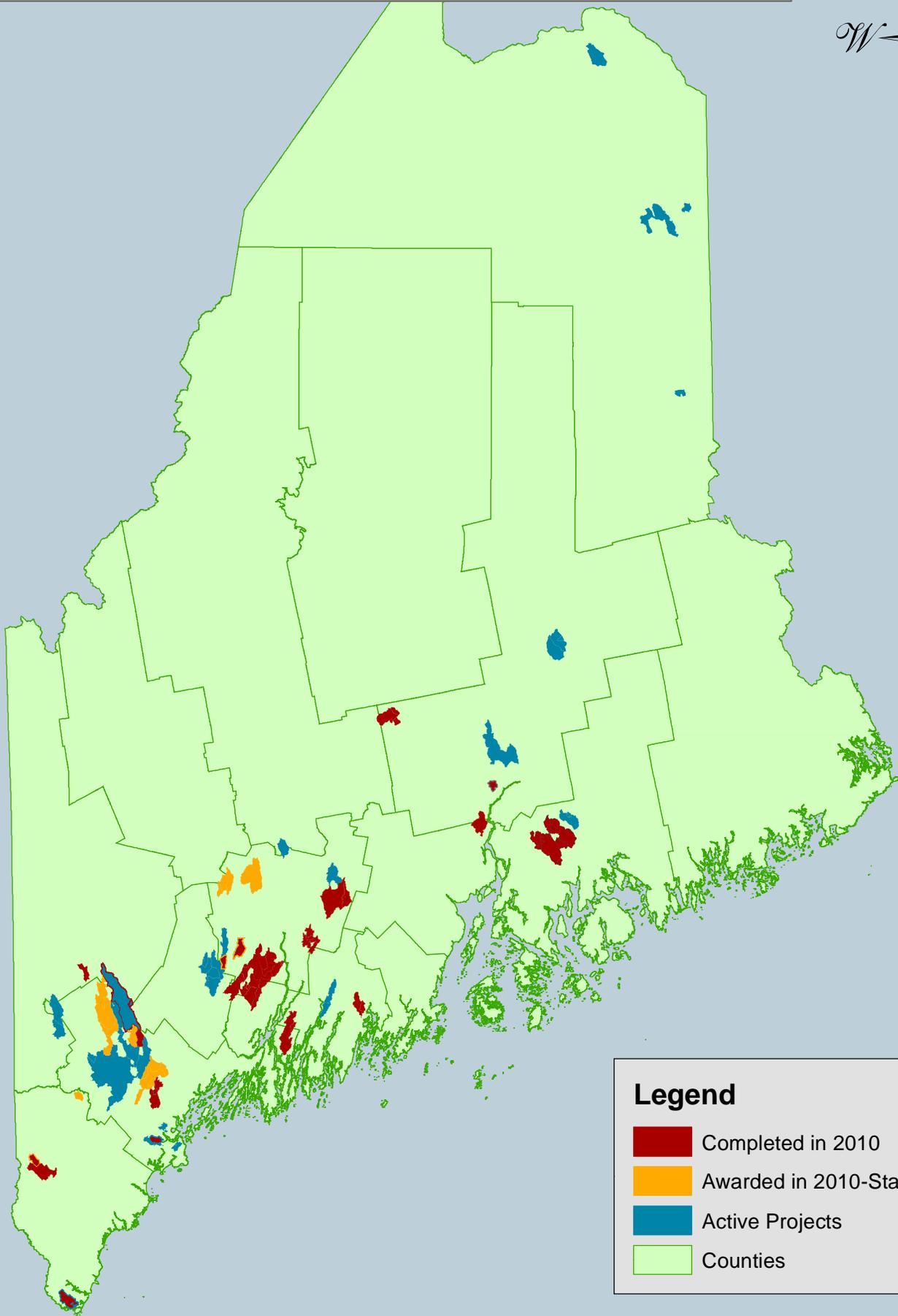
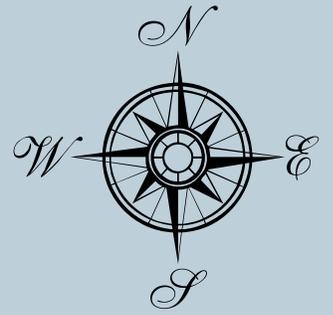
NPS Watershed Implementation Projects			
Project	Grantee	Grant	Match
Annabessacook Lake Rehabilitation Project, Phase II	Cobbossee Watershed District	68,450	52,450
Capehart Brook Restoration, Phase I	City of Bangor	60,000	58,494
Cochnewagon Lake NPS Watershed Implementation Project	Cobbossee Watershed District	81,005	63,365
Crescent Lake Conservation Project	Town of Raymond	79,133	118,128
Long Pond NPS Watershed Project, Phase II	Belgrade Regional Conservation Alliance	99,500	88,544
Pleasant River Watershed Implementation Project, Phase I	Cumberland County SWCD	60,032	46,304
Square Pond Watershed Improvement Project, Phase II	York County SWCD	54,853	57,350
Subtotals		502,973	484,635
NPS Watershed Surveys			
Crooked River Watershed Survey	Cumberland County SWCD	28,244	26,429
Horne Pond (aka Pequawket) Watershed Survey	York County SWCD	10,646	9,046
Parker, David and Tilton Ponds Watershed Survey	30 Mile River Watershed Association	17,238	11,716
Subtotals		\$56,128	\$47,191
Totals		\$559,101	\$531,826

F. Summaries of NPS Water Pollution Control Projects Completed in 2010

Twenty (20) projects funded through the NPS grants program were successfully completed in 2010. Concise two-page summaries of each project are included in the following pages and will be uploaded to the Knowledgebase database (<http://references.pearl.maine.edu/kb/search.asp>). Additional project information can be obtained from the DEP or the project sponsor. The map on the following page shows locations of watersheds with NPS projects awarded, completed or underway in 2010.

NPS Project Title	Page
Annabessacook Lake Rehabilitation Project	24
Birch Stream NPS Watershed Management Plan	26
China Lake NPS Reduction Project - Phase II	28
Cobbosseecontee Stream Watershed Survey	30
Cochnewagon Lake Watershed Survey	32
Cove Brook NPS Pollution Control Project	34
Dexter Lakes NPS Watershed Project - Phase II	36
Duckpuddle Pond Watershed Restoration Project - Phase II	38
Forest Lake Conservation Project - Phase II	40
Hancock and Sand Ponds Conservation Project - Phase I	42
Highland Lake Conservation Project - Phase III	44
Long Creek Watershed Implementation Property Database	46
McWain Pond Watershed Improvement Project	48
Mousam Lake Water Quality Improvement Project - Phase III	50
Nequasset Lake Watershed Improvement Project - Phase I	52
Pleasant Pond NPS Abatement Project - Phase II	54
Raymond Pond Conservation Project	56
Spruce Creek Watershed Improvement Project - Phase I	58
Square Pond Watershed Improvement Project - Phase I	60
Togus Watershed NPS Reduction Project - Phase II	62

Watersheds With 319 Projects Completed, Awarded or Active in 2010



Legend

- Completed in 2010
- Awarded in 2010-Starting in 2011
- Active Projects
- Counties

Annabessacook Lake Rehabilitation Project

#2007RR07

Waterbody Name: Annabessacook Lake

Location: Monmouth and Winthrop – Kennebec County

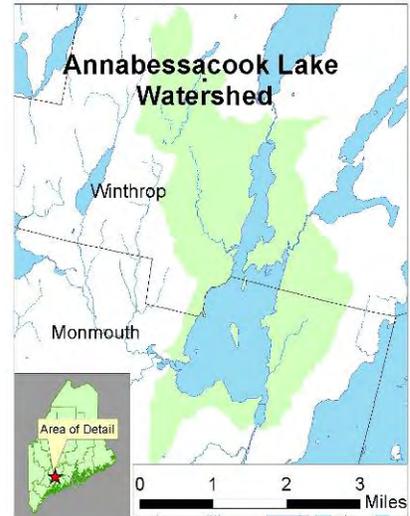
Waterbody Status: Impaired, NPS Priority Watershed, Most at Risk

Project Grantee: Cobbossee Watershed District

Project Duration: March 2007 – March 2010

319 Grant Amount: \$46,400

Local Match: \$50,824



PROBLEM:

Annabessacook Lake is a 1,391 acre lake with a direct watershed area of 21.2 square miles. Four lakes (Maranacook Lake, Lower Narrows Pond, Wilson Pond and Cochnewagon Lake) drain into Annabessacook Lake, which then drains into Cobbossee Lake. The lake’s shoreline is developed with 182 shorefront residences, a 100-site campground and the urban center of Winthrop. Urban areas of Monmouth and North Monmouth are located adjacent to lake tributaries.

The Cobbossee Watershed District (CWD) was formed in the early 1970s to improve Annabessacook Lake and other lakes of the Cobbossee Stream drainage. CWD and Maine DEP have collected water quality data since 1975, and the Maine DEP placed Annabessacook Lake on its impaired list due to its low water clarity and dissolved oxygen levels and frequent algae blooms. According to its TMDL report (2004), stormwater runoff from urban areas and soil erosion are the predominant pollution sources.

PROJECT DESCRIPTION:

The project goal was to install BMPs on documented NPS problem sites to help improve water clarity, reduce phosphorus contamination and prevent algae blooms. A major thrust was implementing BMPs on severely eroding camp roads. Local interest was initially low but picked up dramatically during the second and third summers. The Friends of the Cobbossee Watershed’s summer Youth Conservation Corps (YCC) stabilized eroding shorefronts with stone rip-rap, geo-textile fabric and native plants.

The Friends disseminated outreach materials to boaters and shorefront residents with their *OTTER II* pontoon boat and carried out their *Tadpole Patrol* educational program for children. Camp owners received technical assistance and design sketches for property NPS repairs and upgrades. At the municipal level, CWD held Planning Board workshops on Low Impact Development (LID) techniques for single family residential and small-scale commercial developments and shared updates on DEP’s newly revised guidelines for phosphorus control from new development.



Friends of the Cobbossee Watershed’s Tadpole Patrol

PROJECT OUTCOMES:

- Thirteen (13) NPS sites received repairs, accounting for an estimated annual pollutant load reduction of 2.3 tons of sediment and 1.2 pounds of total phosphorus (WEPP Model).
- BMPs were installed on five (5) roads to improve drainage, increase treatment of runoff by wooded buffers and reduce road surface erosion.
- More than a quarter-mile of eroding shorefront on 14 properties was stabilized by the Friends of the Cobbossee Watershed's YCC through their *Slow-the-Flow* Program.
- Over two years, more than 200 local students benefited from NPS prevention and education efforts provided by the Friends' *Tadpole Patrol* program.
- More than two dozen property owners received expert recommendations for how to stabilize their shorefronts against erosion and improve site drainage.
- The Town of Monmouth incorporated DEP's new LID guidelines into their recently revised Comprehensive Development Ordinance.



Briggs Shore Lane - Prior to improvements the site was severely eroded with deep rills and gullies carved into the road surface. Following improvements (right) the road now sheds water to a grassed ditch and plunge pools along the north side of the road.

PROJECT PARTNERS:

Annabessacook Lake Improvement Association
Friends of the Cobbossee Watershed
Kennebec County SWCD
Town of Monmouth
Town of Winthrop

CONTACT INFORMATION:

Tony St. Peter, Maine DEP – (207) 287-2116, tony.stpeter@maine.gov

William Monagle, Cobbossee Watershed District – (207) 377-2234, wmonagle@roadrunner.com

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:

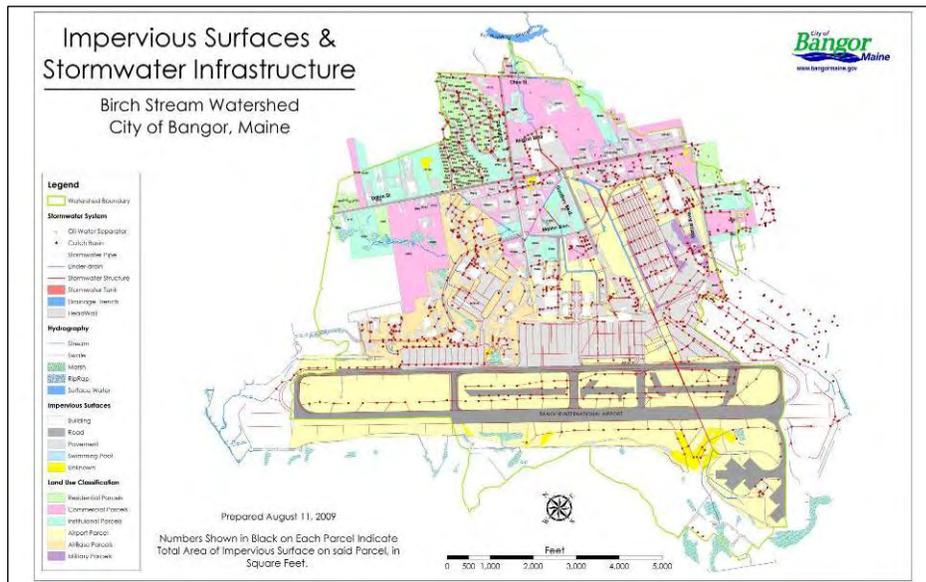
The purpose of this project was to develop a comprehensive watershed management plan for Birch Stream. Steps in the process included: mapping the watershed’s storm systems (including property boundaries and impervious cover), studying the feasibility of a stormwater utility and developing a watershed 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

China Lake NPS Reduction Project, Phase II

#2007RT28

Waterbody Name: China Lake

Location: China and Vassalboro – Kennebec County

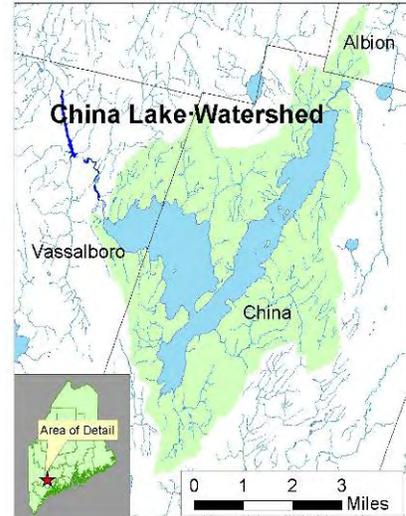
Waterbody Status: Impaired, NPS Priority Watershed, Most at Risk

Project Grantee: China Region Lakes Alliance

Project Duration: May 2008 – December 2010

319 Grant Amount: \$102,590

Local Match: \$128,465



PROBLEM:

China Lake covers 3,848 acres, and it has a 32 square mile watershed. China Lake was once crystal clear and well-known for its cold water fishery of salmon and trout. In 1983 the lake suffered a rapid decline in water quality with the onset of seasonal nuisance algae blooms and loss of its cold water fishery. In the 1980's shoreland property values declined. The lake was placed on the State's list of impaired waters due to nonattainment of water quality standards. Overall, the water quality of China Lake has only slightly improved over the past decade, with intense blue-green algae blooms prevalent during most summers since the mid-1980s. The lake is the community and economic focal point for the Town of China and the public drinking water supply for the greater Waterville area. It has three public boat launches and is heavily used for recreation, boating, fishing and swimming.

According to the TMDL report (2001), blooms are caused by nutrient enrichment due to excess phosphorus loading from watershed soil erosion and internal phosphorus recycling. Major land uses contributing to the external phosphorus load include residential and commercially developed areas, roadways, agriculture and commercial forestry. The China Region Lakes Alliance (CRLA) and China Lake Association have carried out 319 grant projects, and a summer Youth Conservation Corps (YCC) program has installed hundreds of BMPs on watershed erosion sites.

PROJECT DESCRIPTION:

In Phase II, CRLA designed and implemented conservation practices to reduce phosphorus export from the watershed into China Lake. Kennebec County SWCD provided technical services. Phase I had identified agricultural and forest lands as significant sources of external phosphorus loading. Phase II focused on assessment of agricultural lands to identify opportunities to work with landowners; construction of BMPs on high priority agricultural sites; development of CRLA capacity to inspect timber harvest sites to help ensure needed erosion control BMPs are used; and installation of BMPs at nine priority erosion sites (camp roads, boat launch, unstable stream banks, etc).



Vegetated strip (2 acres) filters runoff from a dairy farm in the watershed

PROJECT OUTCOMES:

- Conservation practices were installed at 14 high priority sites. Work included stream bank stabilization at 2 sites (450 feet), delineating a vegetative buffer strip along 1000 feet lake shore, and redirecting road runoff to buffers. A large (2 acre) vegetated filter strip with three 80 foot wide level lip spreaders in series was installed to treat runoff from a dairy farm livestock heavy use area, silage bunker and manure storage site.
- Over \$154,000 was invested in on-the-ground construction of needed conservation practices. This included \$61,091 from landowners, \$30,147 from CRLA, and \$63,159 from the 319 grant.
- Due to effective CRLA and Kennebec County SWCD collaboration with landowners, several farmers requested USDA-NRCS technical and financial assistance under the Environmental Quality Improvement Program (EQIP). In 2009 - 2010, farm operations invested approximately \$575,000 in EQIP funds and additional landowner matching funds for improved conservation practices in the watershed. By contrast, in 2004 - 2005 less than \$5,000 in EQIP funds was invested.
- Pollutant loading to China Lake from watershed sources was reduced by an estimated 53 tons of sediment and 284 lbs of phosphorus per year (Region 5 Method and WEPP Model). Substantial additional load reductions were accomplished by agricultural conservation practices installed through the EQIP program.



Before – Sediment from this eroding camp road washed sediment into the lake.



After - 900 feet of road rebuilt using BMPs to prevent sedimentation into lake.

PROJECT PARTNERS:

China Lake Association
CRLA Youth Conservation Corps
Kennebec County SWCD
Kennebec Water District
Town of China
Town of Vassalboro

CONTACT INFORMATION:

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James Hart, P.E., China Region Lakes Alliance – (207) 923-3358, jim.hart@roadrunner.com

Cobbosseecontee Stream Watershed Survey

#2008PP30

Waterbody Name: Cobbosseecontee Stream

Location: West Gardiner, Litchfield, Gardiner - Kennebec County

Waterbody Status: Impaired, NPS Priority Watershed

Project Grantee: Kennebec County SWCD

Project Duration: March 2008 – April 2010

604(b) Grant Amount: \$8,000

Local Match: \$7,775



PROBLEM:

Cobbossee Steam, short for Cobbosseecontee Stream, has a 45 square mile watershed. The stream begins at the outlet of Cobbossee Lake, intersects with Pleasant Pond, and outlets into the Kennebec River. Sections of the upper and mid-reaches (to Pleasant Pond) are populated with summer homes while other sections lack any sort of development. Farms are prevalent along the upper stream. The lowermost reach of the stream, in downtown Gardiner, is lined with old industrial and manufacturing sites. Despite the variety of development in the watershed, at least 63% of the watershed remains forested. The Cobbossee aquatic ecosystem supports a sport fishery of bass and crappie as well as brown trout in the upper stream. Sea-going species such as striped bass, alewives and American eel are found in the lowest reach.

The entire Cobbossee Stream was listed in Maine's DEP 2006 305(b) Report as a Category 2 (i.e., one that attains some designated uses, with insufficient information for other uses). One short segment of the lower stream does not attain Class B standards due to total phosphorus levels. NPS pollution associated with active erosion from commercial sites, stream banks and camp roads have been identified as likely causes of the impairment. NPS BMP work in the Pleasant Pond watershed has been ongoing, with the second phase of an implementation project being completed in 2010.

PROJECT DESCRIPTION:

The purpose of this project was to identify, document, and prioritize soil erosion and phosphorus pollution sites in the Cobbossee Stream watershed and to recommend BMPs that could be installed to address the identified problems. A steering committee from Kennebec County SWCD, Four Towns Watershed Association, Friends of the Cobbossee Watershed and DEP met to organize and guide the project. The survey work was conducted during the summer of 2009, using the methods and forms from the DEP's *Stream Survey Manual, Volume 1, Unit 6: Stream Watershed Survey* (2009). The developed areas in the watershed that could be reached by paved or gravel roads were surveyed by car or on foot. The 10 survey participants were from Kennebec County SWCD, Friends' Youth Conservation Corps and Maine DEP. There has been continued interest from landowners in addressing NPS problems in the watershed.



PROJECT OUTCOMES:

- A watershed survey was completed for the Cobbossee Stream watershed. Staff and volunteers identified and documented 61 soil erosion and phosphorus pollution sites that are having or have the potential to have a negative impact on water quality.
- Survey findings indicated that the majority of sites were recreational access points (23%), municipal roadways (21%), and private gravel roads (20%). 27% of all sites were estimated to have a medium impact, 20% a high impact, and 14% a low impact.
- The project completed and distributed the *Cobbosseecontee Stream Watershed Survey Report (2009)*, which includes survey findings, recommendations for BMPs, educational materials and pollutant loading estimations for the identified sites.



Eroding and unstable culvert



Eroding road



Horses with direct access to stream

PROJECT PARTNERS:

Friends of the Cobbossee Watershed Youth Conservation Corps
Four Towns Watershed Association
Cobbossee Watershed District

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 287-5586, kristin.b.feindel@maine.gov
Josh Platt, Kennebec County SWCD – (207) 622-7847 ext 3, josh@kcsxcd.org

Cochnewagon Lake Watershed Survey

#2008PP29

Waterbody Name: Cochnewagon Lake
 Location: Monmouth – Kennebec County
 Waterbody Status: NPS Priority Watershed, Most at Risk
 Project Grantee: Cobbossee Watershed District
 Project Duration: March 2009 – September 2010
 604(b) Grant Amount: \$8,731
 Local Match: \$13,270



PROBLEM:

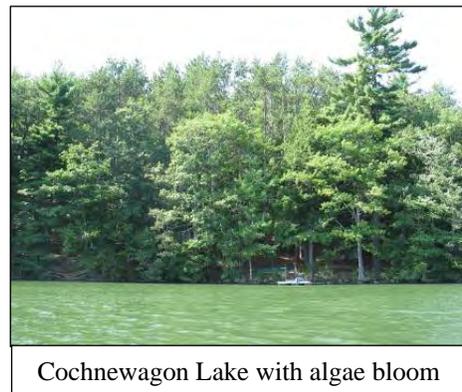
Cochnewagon Lake is a prominent feature in Monmouth. The public beach and boat launch on this 386 acre lake is in walking distance from downtown. Development in the lake’s 3.4 square mile watershed consists mostly of year-round and seasonal homes along the shoreline and upland dairy farmland and gravel roads.

The lake, which outflows to Annabessacook Lake, had a history of algae blooms until an alum treatment in 1986. The alum treatment was a major project spearheaded by the Cobbossee Watershed District (CWD) with funding and support from the EPA and DEP. After the treatment, transparency improved to 5.5 to 8.0 meters from 1986 to 2004. After many years of good water quality, recently water clarity has decreased, with algae blooms occurring in 2006 and 2007. CWD and local citizens share the goal of eliminating algae blooms and restoring the water quality of Cochnewagon Lake.

PROJECT DESCRIPTION:

The purpose of this project was to identify specific NPS sites contributing sediment and/or phosphorus to the lake, and to develop recommendations and local support for future implementation of identified BMPs. The project surveyed three types of land use: roads, shoreline residences and agriculture.

The road survey consisted of CWD surveying all 25 roads in the watershed and making return trips during rainstorms to many of the sites. The survey of shorefront properties was done by boat by CWD, and included photographs of all properties and documentation of erosion conditions and NPS pollution potential at the land/water interface. The farm survey was a continuation of a long-standing involvement between CWD and the farm owner, and focused on reviewing current manure spreading practices. The results of the surveys and future action plans were discussed by the Steering Committee, which consisted of local citizens and town representatives, and presented at a well-attended public meeting held in July 2010.



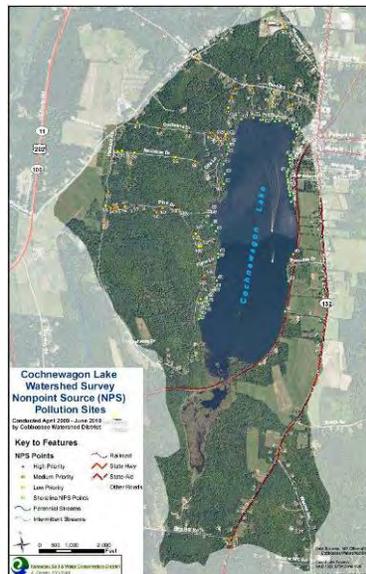
Cochnewagon Lake with algae bloom

PROJECT OUTCOMES:

- An NPS watershed survey was completed for the Cochnewagon Lake watershed. Staff and volunteers identified and documented 50 road soil erosion sites, 96 shoreline sites that are having or have the potential to have a negative impact on water quality and 45 sites with shoreline erosion problems.
- Project staff completed the *Cochnewagon Lake Watershed Survey Report* (September, 2010) and Summary Report (Sept 2010), which highlight the survey methods, findings and recommended BMPs.
- 50 local residents attended a public meeting to find out about the watershed survey results, information on the lake's water quality and recommended BMPs.



Road survey erosion site



Sediment moving during rain event

PROJECT PARTNERS:

Town of Monmouth
Monmouth Kwik Shop
Pine Drive Road Association
Cochrane Drive Road Association
Kennebec County SWCD

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 287-5586, kristin.b.feindel@maine.gov
Wendy Dennis, CWD – (207) 377-2234, [cwg@fairpoint.net](mailto:cwd@fairpoint.net)

Cove Brook NPS Pollution Control Project

#2008RR02

Waterbody Name: Cove Brook

Location: Winterport – Waldo County

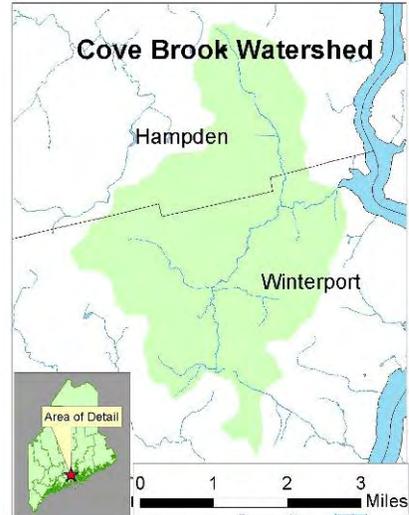
Waterbody Status: Atlantic Salmon River, NPS Priority Watershed

Project Grantee: Cove Brook Watershed Council

Project Duration: February 2008 – August 2010

319 Grant Amount: \$91,759

Local Match: \$91,276



PROBLEM:

Cove Brook is a small, spring-fed coastal stream that flows into Bald Hill Cove of the Penobscot River. Numerous intermittent tributaries, including Meadow Brook and Baker Brook, contribute to 10.3 miles of stream in the 11.2 square mile watershed. Cove Brook is one of only eight rivers in the state of Maine with a genetically distinct population of Atlantic salmon.

The Cove Brook Watershed Council (CBWC) formed in 2001 and completed the *Cove Brook Watershed Plan* in 2003. As part of the effort to develop the watershed plan, 18 NPS sites were identified and documented. Although 10 of the 18 sites were remediated by 2006, CBWC estimated that the remaining 8 sites still contributed an estimated 187 tons of sediment to the stream per year. The *Atlantic Salmon Recovery Plan* emphasizes the importance of mitigating such NPS pollution as a priority action.

PROJECT DESCRIPTION:

The goal of this project was to reduce sediment loading to Cove Brook by fixing three large high priority NPS sites in the watershed. The project addressed a quarter mile section of dirt road where stormwater would sheet flow down the road and into the brook, replaced an undersized culvert (which frequently “blew out”) with a much larger arch culvert, and stabilized a large eroding bank that contributed many tons of sediment annually to Cove Brook.

Activities associated with the NPS mitigation work were documented and distributed to the public to raise awareness of NPS pollution in this area. Before and after photos were highlighted on the CBWC website along with descriptive and quantitative estimates of their impacts. Results were also highlighted at the CBWC monthly meetings and in newsletters.



Before implementation, stormwater flowed down Old Cove Road and washed sediment into Cove Brook

PROJECT OUTCOMES:

- Three major NPS sites were fixed in the watershed including a ¼-mile section of road that drained into the stream, a large bank erosion site and an undersized culvert that frequently washed out. In addition to reducing pollutant load from the frequent culvert blow outs, the new arch culvert will allow fish to move more freely in Cove Brook.
- Annual pollutant loading to Cove Brook was reduced by an estimated 128 tons of sediment, 127 pounds of phosphorous and 250 pounds of nitrogen (Region 5 Method and WEPP Model).
- A demonstration rain garden was constructed in Winterport, and a story about the project was aired by Maine Public Radio in September 2009.
- Articles about the project appeared in the Bangor Daily News, the Penobscot Times and several CBWC newsletters.
- Match contributions from the Town of Winterport and other partners exceeded initial project goals by nearly \$28,000. This additional match allowed all projects to be completed, despite the fact that construction costs were higher than originally budgeted.



PROJECT PARTNERS:

Project SHARE
USDA Natural Resource Conservation Service
Lane Construction
University of Maine

CONTACT INFORMATION:

Greg Beane, Maine DEP – (207) 941-4292, greg.e.beane@maine.gov
Gayle Zydlewski, Cove Brook Watershed Council, (207) 581-4365, gaylezydlewski@umit.maine.edu

Dexter Lakes NPS Watershed Project (Phase II)

#2008RR05

Waterbody Name: Lake Wassookeag and Puffers Pond

Location: Dexter – Penobscot County

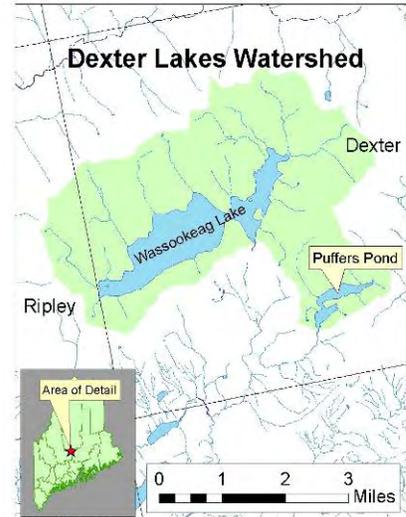
Waterbody Status: NPS Priority Watershed (Lake Wassookeag)

Project Grantee: Penobscot County SWCD

Project Duration: May 2008 – September 2010

319 Grant Amount: \$70,000

Local Match: \$49,190



PROBLEM:

Lake Wassookeag and Puffers Pond are exceptional waters and important resources to the Dexter area. Lake Wassookeag is a public water supply, and both waterbodies support cold water fisheries that contribute to the local economy. The Dexter Lakes are part of the larger Sebasticook River Watershed, which the Maine Department of Inland Fisheries and Wildlife lists as home to many “rare and endangered species”.

DEP and local volunteers have collected water quality data for Lake Wassookeag since 1975. Lake Wassookeag’s water quality is considered to be above average and the potential for nuisance algae blooms is low. However, increases in watershed impervious areas, exposed soil, buffer removal and new housing developments threaten future water quality. The Dexter Lakes Association partnered with Penobscot County SWCD to complete a DEP-funded NPS Pollution Watershed Survey in 2005. The survey documented 68 NPS sites within the watersheds of Lake Wassookeag and Puffer’s Pond. 43% of the sites identified in the survey were associated with camp roads, and 22% of the sites were associated with town roads.

PROJECT DESCRIPTION:

The goal of the project was to protect and improve the water quality of the Dexter Lakes by reducing soil erosion and polluted runoff that flows into the lakes. To achieve this goal, conservation practices were installed at 25 NPS sites identified in the 2005 watershed survey. Work was done on residential lots, town and private roads, the town boat launch and beach, and private driveways.

The project also provided technical assistance to landowners, hosted “Dexter Lakes Day” in 2008 and 2009, sponsored Cooperative Extension’s *Watershed Stewards* program and held a gravel road workshop. Articles in the local Eastern Gazette, the Rolling Thunder Express and Penobscot County SWCD newsletter advertised project activities and promoted watershed stewardship.



PROJECT OUTCOMES:

- A total of 25 NPS sites were fixed in the watershed, thereby reducing annual pollutant loading into the lakes by an estimated 196 tons of sediment (Region 5 Method and WEPP Model).
- Nineteen individual watershed property owners received technical assistance during this project.
- Project staff partnered with University of Maine Cooperative Extension to host the *Watershed Stewards* program. Fourteen stewards participated in the program, and they agreed to complete 20 hours of community service in the Dexter Lakes watershed in return for the training they received.
- “Dexter Lakes Day” was held in 2008 and 2009 with over 100 people attending in 2008 and 40 in 2009.
- The project held a gravel camp road maintenance workshop focused on using the “Frontrunner” device for grading camp roads.
- Project staff partnered with the Dexter Lakes Association, UMaine Cooperative Extension and the Town of Dexter to create “Water Logs”, short articles covering water quality topics. In total, “Water Logs” and other news related to the project appeared in 7 newsletters and 15 newspaper articles.



One of many cross drain culverts installed on Bear Lane as part of a road stabilization project



Elk Lane ditch stabilization

PROJECT PARTNERS:

USDA Natural Resources Conservation Service
Dexter Lakes Association
Town of Dexter
Bear Lane Association

CONTACT INFORMATION:

Greg Beane, Maine DEP – (207) 941-4292, greg.e.beane@maine.gov
Chris Brewer, PCSWCD – (207) 990-3676 ext.3, chris.brewer@penobscotswcd.org

Duckpuddle Pond Watershed Restoration Project – Phase II

#2007WW24 - WIFAP

Waterbody Name: Duckpuddle Pond

Location: Nobleboro and Waldoboro – Lincoln County

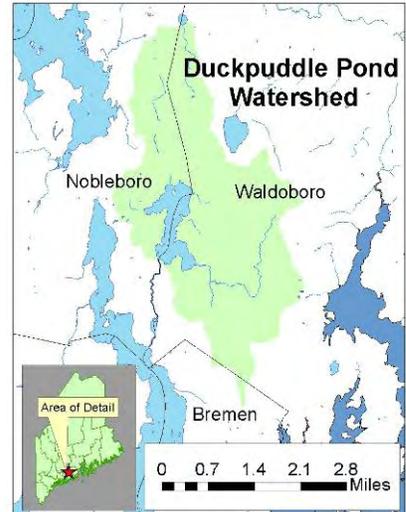
Waterbody Status: Restored, NPS Priority Watershed

Project Sponsor: Knox-Lincoln County SWCD

Project Duration: April 2008 – September 2010

319 Grant Amount: \$26,644

Match: \$17,716 (local), \$20,000 (ME Dept. Ag.)



PROBLEM:

Duckpuddle Pond is a 242 acre pond, with a primarily forested watershed covering 8.2 square miles. Developed land area, including agriculture, rural residential and commercial areas, makes up about 14% of the watershed. The pond’s shoreline is lightly developed and has several large undisturbed shorefront areas. In most years between 1989 and 1998, Duckpuddle Pond experienced nuisance algal blooms (8 of 11 years) due to excessive phosphorus export from its watershed. In 1996 Maine DEP added Duckpuddle to its list of impaired waters because of the recurring nuisance algal blooms and increasing trophic state (biological productivity).

Pemaquid Watershed Association and DEP completed a watershed survey in 1995 and identified 55 nonpoint source pollution sites. In 2005, DEP completed a Phosphorus Control Action Plan (TMDL) describing pollution sources and recommendations to reduce polluted runoff. From 2000 – 2004, a Phase I project (#2000R-37) installed erosion control BMPs on several roads and a manure storage facility on a dairy farm to help reduce sediment and phosphorus entering Duckpuddle Pond. An updated watershed survey was conducted by Knox-Lincoln SWCD, the Pemaquid Watershed Association and DEP in 2008, indentifying 45 NPS sites.

PROJECT DESCRIPTION:

The Phase II project continued work to reduce phosphorus loading from the watershed in order to help restore the water quality of Duckpuddle Pond. The Knox-Lincoln SWCD and USDA-Natural Resources Conservation Service (NRCS) worked with the Spear Farm, a large agricultural dairy and vegetable producer in the watershed. Improved agricultural BMPs were planned, designed and installed at three sites, and the farm nutrient management plan was upgraded to meet recommended NRCS standards.



Algal Bloom on Duckpuddle Pond

PROJECT OUTCOMES:

- In 2009, a heavy use area (2200 sq. ft. concrete pad) was constructed for livestock to separate clean water, contaminated water and manure. Manure accumulation in the heavy use area is removed to the existing manure storage pit. Contaminated water runoff is directed by level lip spreader into a vegetated filter strip for treatment.
- In 2010, improvements constructed at the existing bunker silo area reduced the volume and provided treatment of silage runoff and leachate. Clean stormwater runoff was diverted from entering the silage bunker area. A concrete working surface and ditch directs silage runoff water and leachate through a picket dam to collect solids and then to a 100 foot long vegetated filter area into a small basin.
- Implementation of a revised Nutrient Management Plan will help manage nutrients to meet agronomic crop needs and control erosion and sediment to reduce polluted runoff.
- Pollutant loading to the pond was reduced by an estimated 7 tons of sediment and 120 lbs of phosphorus per year (Region 5 Method).
- Notably in 2010, DEP removed Duckpuddle Pond from Maine’s impaired (TMDL) waters list. Water quality gradually improved over the 10 years ending in 2008, now the pond meets Class GPA water quality standards. Phosphorus and sediment reductions from work completed under Phase I and II contributed to improvement in Duckpuddle Pond.



Heavy Use Area, Concrete Pad



Vegetated Filter Strip Treats
Runoff from Heavy Use Area



Silage Bunker Vegetated Filter

PROJECT PARTNERS:

Spear Farm

USDA Natural Resources Conservation Service

CONTACT INFORMATION:

Norm Marcotte, DEP – (207) 287-7727, norm.g.marcotte@maine.gov

Mary Thompson, NRCS – (207) 273-2005, mary.thompson@me.usda.gov

Forest Lake Conservation Project, Phase II

#2007RR05

Waterbody Name: Forest Lake

Location: Cumberland, Gray, Windham – Cumberland County

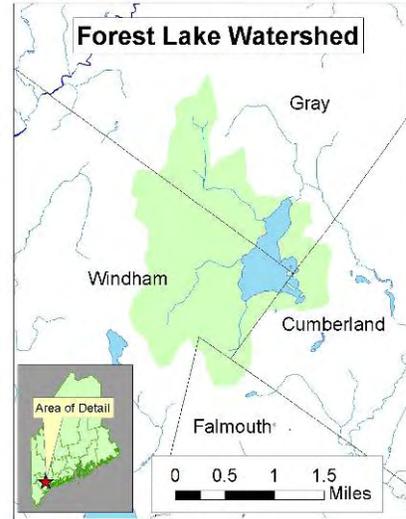
Waterbody Status: NPS Priority Watershed, Most at Risk

Project Sponsor: Cumberland County SWCD

Project Duration: April 2007 – March 2010

319 Grant Amount: \$75,000

Local Match: \$58,686



PROBLEM:

Forest Lake is a 210-acre lake that is developed with about 380 shoreline homes. The lake serves as the headwaters of the Piscataqua River, which then flows in to the Presumpscot River. Local volunteers and DEP staff have monitored the lake since 1974, and data shows moderate dissolved oxygen depletion in the bottom waters of the lake in late summer.

In 2002, the Cumberland County SWCD and Forest Lake Association (FLA) conducted a NPS Watershed survey and identified 112 erosion problems. A shoreline buffer survey found that only 18 of 176 lots had intact buffers. In April 2003, 50 watershed residents and town officials attended a day-long Community Forum and developed the framework for the *Forest Lake Watershed Management Plan*, which was completed in December 2003. A Phase I project (#2004R-01) fixed 15 high priority NPS sites in the watershed and provided technical assistance to 27 landowners. The project also hosted Cooperative Extension’s *Watershed Stewards* program, where 20 local residents attended an 8-week training class and then designed and installed a large-scale buffer planting on the lake.

PROJECT DESCRIPTION:

The project goal was to significantly reduce erosion and phosphorus export into Forest Lake. The original goal was to install conservation practices at 30 sites through cost sharing, small matching grants and labor from the Presumpscot River Youth Conservation Corps (YCC). Due to dwindling interest in matching grants and a newly identified high impact road site, the project steering committee adjusted the project targets and funding allocations. Ultimately, the project fixed 3 high impact road sites and 17 residential sites.



The project steering committee conducted door to door neighborhood outreach through the ‘Buffers Benefit’ program, and 24 landowners signed a pledge to add at least five plants per year to their buffers. Skillins Nursery provided a 20% discount card to program participants, and participants also were entered into a drawing for a \$150 Skillins gift card. Project outreach included articles in the FLA newsletter, presentations at the FLA annual meetings and a final project brochure.

PROJECT OUTCOMES:

- The project fixed 3 significant erosion problems on roads in the watershed. Another 17 residential sites were fixed with labor from the Presumpscot River YCC.
- 17 watershed residents took advantage of small matching grants (up to \$450) and YCC labor to install over 450 plants, 33 infiltration steps and 2 rain gardens.
- The project reduced pollutant loading to Forest Lake by an estimated 9 tons of sediment and 7.7 pounds of phosphorus per year (Region 5 Method and WEPP Model).
- The 'Buffers Benefit' pilot program was established to encourage landowners to enhance or install buffers on their properties. 24 landowners signed up and pledged to plant at least 5 plants along their shoreline each year for two years. Many participants planted more than the required plants and said they planned to continue adding to their buffers in the future.
- The interest in the YCC continued to grow over the course of the project. To respond to this demand, the Forest Lake Association plans to continue hiring the YCC for at least one week per summer.



Lakeside Drive in Windham had severe road surface and shoulder erosion into a stream. Three culverts were installed to replace the two failed ones, and ditches, turnouts and new road material was installed.

PROJECT PARTNERS:

Forest Lake Association
Presumpscot River Youth Conservation Corps
Skillins Nursery
Town of Cumberland
Town of Gray
Town of Windham

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 822-6320, wendy.garland@maine.gov
Betty Williams, Cumberland County SWCD – (207) 892-4700, betty-williams@cumberlandswcd.org

Hancock and Sand Ponds Conservation Project – Phase I

#2007RR03

Waterbody Names: Hancock Pond and Sand Pond

Location: Sebago and Denmark –
Cumberland and Oxford Counties

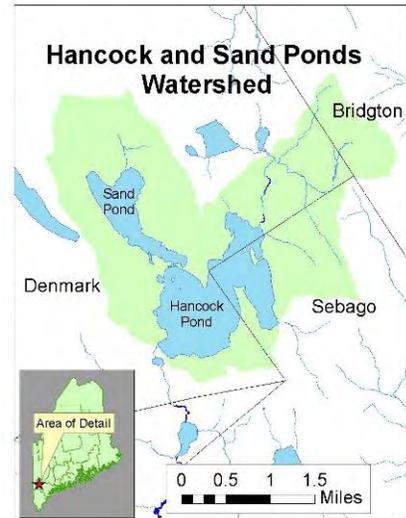
Waterbody Status: NPS Priority Watersheds

Project Sponsor: Cumberland County SWCD

Project Duration: April 2007 – February 2010

319 Grant Amount: \$75,000

Local Match: \$56,424



PROBLEM:

Hancock and Sand Ponds have a combined surface area of 1,114 acres and watershed area of 5.7 square miles. The ponds are ringed with approximately 200 seasonal and year round camps, and Hancock Pond has two heavily-used boat launches.

Local volunteers and Lakes Environmental Association (LEA) have monitored Hancock and Sand Ponds’ water quality since 1975. Water quality is considered above average in both ponds. However, Hancock Pond has experienced moderate depletion of dissolved oxygen in the bottom waters in late summer and is considered to have a moderate potential for algal blooms. In 2005, Cumberland County SWCD and the Hancock and Sand Ponds Association (HSPA) conducted a watershed survey (#2005P-08). Volunteers and technical staff identified 79 erosion sites in the watershed with residential areas (79%), private roads (20%), driveways (17%) and town roads (12%) comprising the majority of sites.

PROJECT DESCRIPTION:

The purpose of the project was to significantly reduce erosion and export of sediment and phosphorus into Hancock and Sand Ponds. The project aimed to install conservation practices at 12 high and medium priority sites from the watershed survey and provide technical assistance to 30 landowners. Matching grants up to \$300 were available to assist 20 landowners with installing conservation practices on their properties.

Project opportunities and updates were shared with the community through a project fact sheet, press releases, a post card mailing to 250 property owners, and presentations to the Towns of Sebago and Denmark and the HSPA’s annual meetings. Project articles were also included in partner newsletters and websites. Other workshops and presentations included a Homeowner Conservation Practice Workshop, a Gravel Road Maintenance Workshop and a presentation to the Town of Sebago’s Planning Board on shoreland zoning. A final project brochure was created to showcase project accomplishments.



Contractor, Al Greene, talks about proper road material at a Gravel Road Workshop

PROJECT OUTCOMES:

- The project addressed erosion problems at 18 high and medium priority sites from the watershed survey. This included 15 private road sites and three town road sites.
- 30 watershed residents received matching grants to purchase materials and install conservation practices. Since several landowners used less than the allotted \$300 grant, funds were available for additional landowners to take advantage of this program (20 grants planned, 30 awarded).
- Pollutant loading to Hancock and Sand Ponds was reduced by over 64 tons of sediment and 54 pounds of phosphorus per year (Region 5 Method and WEPP Model).
- The 48 construction sites completed through the project used a wide variety of conservation practices. Project work included 14 sediment basins, 1000 feet of new ditching, 6 turnouts, 150 native plants, 6 rubber razor diverters, 11 new culverts, 6 infiltration trenches and one concrete catch basin.



PROJECT PARTNERS:

Hancock and Sand Ponds Association
Lakes Environmental Association
Town of Denmark
Town of Sebago

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 822-6320, wendy.garland@maine.gov
Heather True, Cumberland County SWCD – (207) 892-4700, htrue@cumberlandswcd.org

Highland Lake Conservation Project, Phase III

#2008RT27

Waterbody Name: Highland Lake

Location: Falmouth, Windham, Westbrook – Cumberland County

Waterbody Status: Restored, NPS Priority Watershed, Most at Risk

Project Grantee: Cumberland County SWCD

Project Duration: May 2008 – September 2010

319 Grant Amount: \$106,867

Local Match: \$60,693



PROBLEM:

Highland Lake covers 623 acres and its 8.4 square mile watershed is part of the Presumpscot River watershed. DEP staff and Highland Lake Association (HLA) volunteers have monitored Highland Lake’s water quality since 1974. The lake was placed on the State’s list of impaired waters due to a declining water quality trend, and the lake’s TMDL report was completed in 2003. Highland Lake’s water clarity has gradually stabilized and now meets water quality standards, which prompted the Maine DEP to remove the lake from its 303(d) impaired waters list in 2010.

Cumberland County SWCD and HLA volunteers started watershed work in 1997 with a watershed survey that identified 104 erosion sites. The *Highland Lake Watershed Management Plan* was completed in 1999, and the Phase I grant project ran from 1999 – 2002. BMPs were installed on residential and road sites, and the newly-formed Highland Lake Youth Conservation Corps (YCC) installed BMPs on 88 sites. From 2004 – 2008, the Phase II project installed conservation practices at 100 residential and road sites.

PROJECT DESCRIPTION:

This project continued efforts to reduce erosion and the export of sediment and phosphorus to Highland Lake. The project addressed 11 priority sites on roads, driveways and a residential property. 21 additional sites were treated by the YCC. The project surpassed its goal of fixing 24 sites despite a substantial loss of funds from the Town of Windham.



Highland Lake Watershed Forum

The project inspected construction projects from Phase I and II and assessed BMP effectiveness and maintenance needs. Over 50 watershed residents attended a half-day watershed forum in September 2009. Forum participants discussed land use, zoning, and access/invasive aquatic plant issues and appointed leaders to convene future meetings. A presentation and project update was presented to municipal staff in both towns, and a DVD was created for interested stakeholders. Project updates were advertised through flyers, press releases and presentations at the HLA Annual meeting.

PROJECT OUTCOMES:

- Conservation practices were implemented at 11 large abatement sites, thereby reducing pollutant loading to Highland Lake by an estimated 56 tons of sediment and 45 pounds of phosphorus per year (WEPP Model and Region 5 Method).
- In 2010 Highland Lake was removed from the DEP's impaired water body list (303d) and added to the EPA's NPS Success Story webpage (www.epa.gov/owow/NPS/success/). Articles about the Highland Lake success story were featured in the Portland Press Herald and Boston Herald.
- The YCC addressed 21 sites (11 residential and 10 roads) over the course of three summers.
- Project staff inspected BMPs installed through the Phase I and II projects and found that the majority of the BMPs were functional or effective with most of them in good to fair condition.



Haven Road – road stabilization, ditching and turnouts into buffers



YCC installs infiltration steps

PROJECT PARTNERS:

Casco Bay Youth Conservation Corps
Highland Lake Association
Highland Lake Youth Conservation Corps
Maine Department of Transportation
Town of Falmouth
Town of Westbrook
Town of Windham

CONTACT INFORMATION:

Don Kale, DEP – (207) 822-6319, Donald.Kale@maine.gov
Betty Williams, Cumberland County SWCD – (207) 892-4700, betty-williams@cumberlandswcd.org

Long Creek Watershed Implementation Property Database

#2009RR15

Waterbody Name: Long Creek

Location: South Portland, Westbrook, Portland, Scarborough – Cumberland County

Waterbody Status: Urban Impaired Stream, Impaired

Project Grantee: Cumberland County SWCD

Project Duration: May 2009 – December 2009

604(b) Grant Amount: \$30,000

Local Match: \$22,000



PROBLEM:

The Long Creek watershed covers 3.45 square miles, primarily in Westbrook and South Portland. The watershed includes the Maine Mall, a golf course, light industrial facilities, office parks and some forested areas. A large stretch of the Maine Turnpike and a major regional waste incinerator and landfill also lie within in the watershed. This five mile freshwater stream and its tributaries are on the DEP Urban Impaired Stream and 303(d) lists due to problems with degraded habitat, dissolved oxygen, biological criteria, heavy metals and chlorides.

From 2007-2009, the City of South Portland worked with consulting firms, Cumberland County SWCD, municipal stakeholders, MTA, Maine DOT, local nonprofits and business owners in the watershed to develop the *Long Creek Watershed Management Plan* (2009), which outlines a cost-effective strategy for the restoration of Long Creek. In December 2008, in action independent of the planning effort, Long Creek became the first watershed in the State of Maine to have a Residual Designation Authority (RDA) petition filed. This resulted in an order by the US EPA for watershed landowners with one acre of more of impervious cover to obtain a stormwater permit from the Maine DEP. In August 2009, municipalities of South Portland, Portland, Westbrook and Scarborough executed an interlocal agreement to create the Long Creek Watershed Management District (LCWMD). Most of the watershed properties subject to the RDA order have since joined the LCWMD and are contributing to a coordinated restoration effort, and several stormwater retrofits and restoration projects have already been implemented.

PROJECT DESCRIPTION:

The project plan was to develop a property database to aid in the implementation of the *Long Creek Management Plan*. The database contains watershed parcel information such as parcel features, impervious areas, location of best management practices (BMPs) and property owners and operators. The database will be used to track treated impervious areas and monitor BMP performance and maintenance needs during future phases of restoration within the Long Creek watershed.



PROJECT OUTCOMES:

- A database was developed and is now being used to support the implementation of the *Long Creek Watershed Management Plan*. The database design considers the complexities and interrelatedness of watershed parcels (e.g., a single parcel can have multiple BMPs, a variety of uses and different management activities).
- A web-based content management system was developed that includes user-friendly features such as drop down menus.
- The contracted cost for developing the database was well under the total amount allocated, and the additional funds were used to establish and input parcel data into the database. This allowed the database to be tested to a greater degree and led to the development of several new components that helped simplify data input and output.
- The completed database can be cost effectively replicated for use in other watersheds.

City of South Portland

Cumberland County Soil & Water Conservation District

Long Creek Restoration Project - Data Management

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35 Main Street, Suite 3, Windham ME 04062
phone: 207-892-4700
fax: 207-892-4773

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Web based database application developed by [J.K. Barbalace, Inc.](#)

PROJECT PARTNERS:

J.K. Barbalace, Inc.

Acorn Engineering

CONTACT INFORMATION:

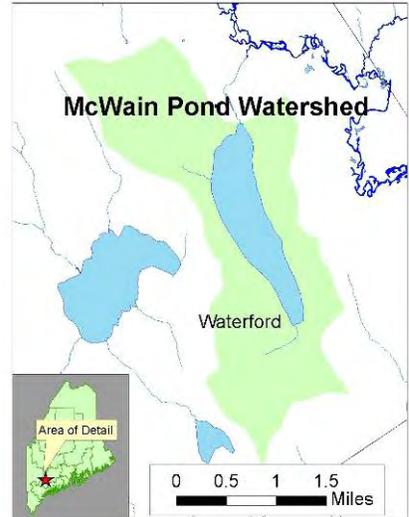
Donald Kale, Maine DEP – (207) 822-6319, donald.kale@maine.gov

Tamara Lee-Pinard, Cumberland County SWCD – (207) 892-4700, tamara@cumberlandswcd.org

McWain Pond Watershed Improvement Project

#2008RR04

Waterbody Name: McWain Pond
 Location: Waterford – Oxford County
 Waterbody Status: NPS Priority Watershed
 Project Grantee: McWain Pond Association
 Project Duration: April 2008 – September 2010
 319 Grant Amount: \$42,509
 Local Match: \$49,009



PROBLEM:

McWain Pond (also known as Long Pond) has a surface area of 445 acres and a watershed area of 3.9 square miles. McWain Pond drains to the Crooked River, which flows into Sebago Lake – a drinking water source for more than 45,000 households in southern Maine. McWain Pond’s shoreline is fringed with 75 seasonal and year-round homes and two summer youth camps, which attract a total of 400 campers each year.

The Maine DEP, Lakes Environmental Association (LEA) and local volunteer monitors have tested McWain Pond’s water quality since 1978. This testing indicates that the bottom waters of the lake experience oxygen depletion to levels that severely limit fish habitat and pose a high risk of phosphorus recycling problems. A 2006 watershed survey (#2006P-14) identified 95 erosion sites and construction designs were completed for four of the priority sites. The land uses with the most sites included residential (20 sites), town roads (17 sites), driveways (13 sites), summer youth camps (12 sites) and private roads (7 sites).

PROJECT DESCRIPTION:

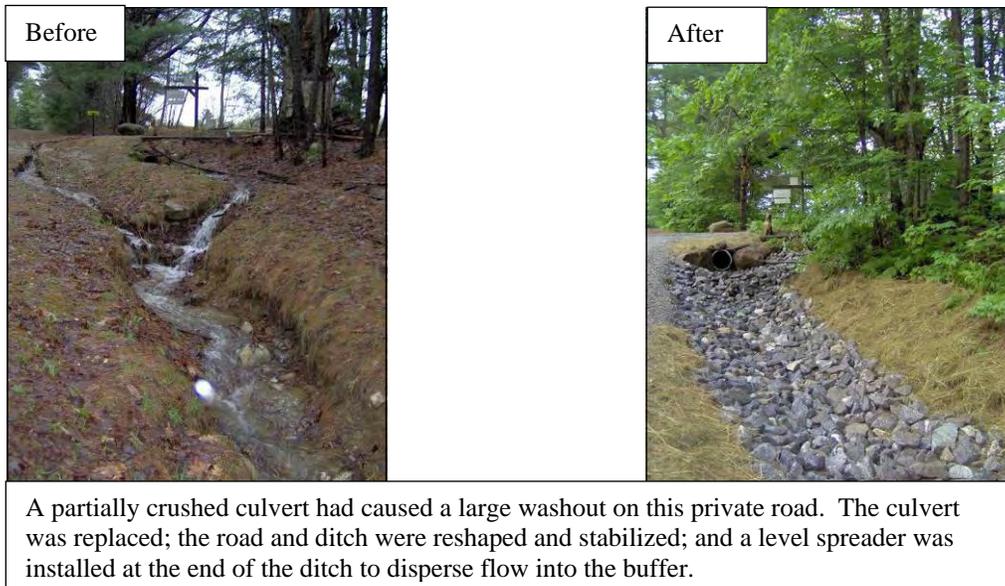
The project purpose was to reduce erosion that washes into the pond and to educate the watershed community about erosion control measures. The project planned to install conservation practices at 15 NPS sites from the watershed survey, provide technical assistance to 25 landowners and offer 10 cost-sharing ‘mini-grants’ to aid landowners’ erosion control efforts.



Project outreach included presentations at the McWain Pond Association (MPA) annual meeting and to the Town Select Board; two hands-on workshops; a final project brochure showcasing completed projects; and articles in local newspapers and partner newsletters and websites. The project was guided by a steering committee comprised of representatives from the MPA, Portland Water District, LEA, Maine DEP, Town of Waterford and other local residents.

PROJECT OUTCOMES:

- This modestly-sized project fixed erosion problems at 15 priority sites in the watershed, resulting in the reduction of pollutant loading to McWain Pond by an estimated 82 tons of sediment and 70 pounds of phosphorus per year (Region 5 Method and WEPP Model).
- Technical assistance was provided to 25 property owners, and 70% of these visits resulted in a ‘mini grant’ or a NPS abatement project. Other landowners pledged to do the work on their own.
- Ten landowners received \$300 ‘mini grants’ to install conservation practices on their properties. Landowner match totaled over \$14,000 and far exceeded the 50% match requirements.
- A camp road workshop was held in July 2009, and a buffer workshop was held in July 2010. The camp road workshop attracted 22 people from six different lakes in the region and included a presentation about new camp road legislation and a tour of grant work completed on a private road.
- Local match for the project totaled \$49,009, over \$20,000 more than the original project goal. Much of this match can be attributed to the high level of involvement from the MPA, Town and landowners.



PROJECT PARTNERS:

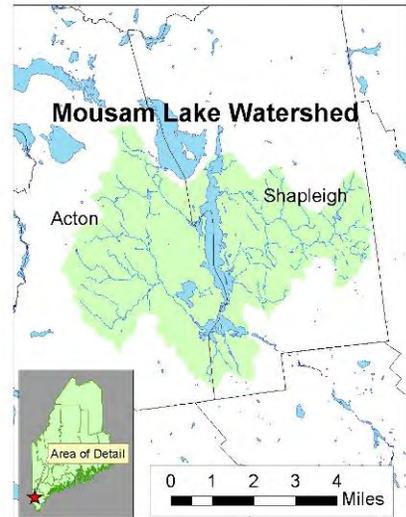
Birch Rock Camp
Camp Waziyatah
Lakes Environmental Association
Portland Water District
Town of Waterford

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 822-6320, wendy.garland@maine.gov
Jeff Stern, Fiddlehead Consulting – (207) 647-8580, sternjm@hotmail.com

Mousam Lake Water Quality Improvement Project, Phase III #2007WW22 – WIFAP

Waterbody Name: Mousam Lake
 Location: Acton and Shapleigh – York County
 Waterbody Status: Restored, NPS Priority Watershed
 Project Sponsor: York County SWCD
 Project Duration: January 2008 – February 2010
 319 Grant Amount: \$30,000
 Match: \$90,796 (local), \$20,000 (ME Dept. Ag.)



PROBLEM:

Mousam Lake is an 863-acre lake that is heavily developed with over 700 residences, and there are nearly 3,000 parcels in the lake’s 21-square-mile watershed. The lake has been monitored by the DEP and volunteers since 1974. In 1998 it was placed on Maine’s list of impaired lakes due to declining water clarity. The DEP 2003 Phosphorus Control Action Plan (TMDL Assessment) attributed water quality decline to phosphorus from soil erosion and stormwater runoff from residential properties, camp roads and aging septic systems located in the sandy soils around the lake. In 2006, DEP removed Mousam Lake from the impaired waters list based on improving water clarity trend.

Water quality improvements can be attributed to long-term efforts by York County SWCD, Mousam Lake Region Association (MLRA), Maine DEP and Towns of Acton and Shapleigh to identify and mitigate sources of pollution to the lake. In 1997, the York County SWCD received a 604(b) grant to conduct a survey to identify erosion problems in several hotspots around the lake. Three 319 projects took place in the watershed from 1999 – 2007. These projects provided cost-sharing to fix 51 road and residential sites in the watershed, provided technical assistance to another 157 landowners and conducted outreach programs. A summer Youth Conservation Corps (YCC) was established in 2001, and has continued to fix an average of 18 sites each year with town and MLRA financial support. Popular ‘Septic Socials’ have taught 197 residents and local officials about proper septic system maintenance.

PROJECT DESCRIPTION:

The purpose of the project was to address the major remaining NPS sources to Mousam Lake and continue to improve Mousam Lake’s water quality. Eight high priority sites were fixed with cost sharing assistance, and another 26 residential sites were addressed by the Acton Shapleigh YCC. Project staff provided technical assistance to 66 landowners.

The project distributed two newsletters; printed articles in local newspapers and newsletters; delivered a ‘Water Quality 101’ presentation; posted signs at the 8 high priority sites; and held 4 Septic Socials (34 participants) and 4 road association workshops. Project staff visited 49 sites fixed during past grants and presented findings to town officials and watershed groups.



In 2008 Pat Baldwin received EPA’s Lifetime Achievement Award for her work on Mousam Lake

PROJECT OUTCOMES:

- The project fixed 8 priority erosion problems in the watershed, including one private site and 7 road sites, thereby reducing pollutant loading to Mousam Lake by an estimated 25 tons of sediment and 21.2 pounds of phosphorus each year (Region 5 Method and WEPP Model).
- The Acton Shapleigh YCC installed conservation practices on another 26 road and residential sites. Over the course of the project, the YCC developed into a proactive and professional organization with the capacity to take a leadership role in long term lake stewardship efforts.
- Four ‘Road Socials’ were conducted during the project to encourage residents to form road associations. Similar to Septic Socials, these workshops were designed to be small neighborhood gatherings held on targeted high priority roads. As a result of the workshops, Starboard Lane became organized as an informal road association, and Totte Road residents started the process of forming a statutory road association.
- Local resident Pat Baldwin received EPA’s Lifetime Achievement Award in 2008 in recognition of her contributions to Mousam Lake.



Starboard Lane – This private road was regraded and stabilized, and ditches were installed to carry runoff into this detention basin and then a level spreader.



Knox Road – This town road was regraded and paved. Ditches, which were installed on both sides of the road, direct runoff into vegetation and a new detention basin at base of hill.

PROJECT PARTNERS:

Acton Shapleigh Youth Conservation Corps
Maine Department of Agriculture
Mousam Lake Region Association
Town of Acton
Town of Shapleigh

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 822-6320, wendy.garland@maine.gov
Joe Anderson, York County SWCD – (207) 324-0888, janderson@yorkswcd.org

Nequasset Lake Watershed Improvement Project – Phase I

#2007RR27

Waterbody Name: Nequasset Lake

Location: Woolwich, Dresden and Wiscasset – Sagadahoc and Lincoln Counties

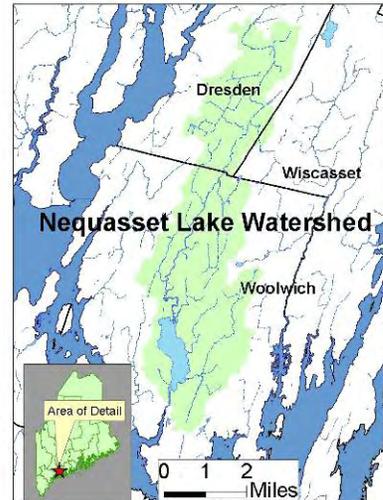
Waterbody Status: NPS Priority Watershed, Most at Risk

Project Grantee: Androscoggin Valley SWCD

Project Duration: January 2008 – August 2010

319 Grant Amount: \$67,225

Local Match: \$44,624



PROBLEM:

Nequasset Lake, which has a surface area of 465 acres and a direct watershed of 20.4 square miles, serves as the public water supply for over 15,000 people in Bath and its surrounding communities. Comparable high-yield, good quality surface water supplies are rare in coastal Maine. To protect the water supply, the Bath Water District (BWD) limits bodily contact in the lake and has purchased and protected 70% of the shoreline from development. Nevertheless, forested land in the watershed is quickly being developed for residential use.

For over 20 years, the DEP and BWD have monitored the lake’s water quality. According to the DEP, water quality is below average and the lake’s potential for nuisance algal blooms is high. Long term clarity measures about 4 meters, which is below the average for Maine lakes, and occasional algal blooms have reduced clarity to as low as 1.7 meters. A watershed survey completed in 2007 (#2006P-13) identified 66 sites that are currently impacting or have the potential to impact water quality through soil erosion and phosphorus pollution. Fifty-eight of these sites were associated with town roads, private roads and driveways.

PROJECT DESCRIPTION:

The goal of this project was to significantly reduce erosion and transport of sediment and phosphorus into Nequasset Lake by treating 20 NPS sites with best management practices. Projects included road ditch stabilization, installation of ditch turnouts, shoreline stabilization and buffer plantings. The project also included technical visits to 27 sites to help landowners develop plans to curb erosion on their properties.

The project also included outreach and education to residents. Two forestry and erosion control workshops (12 participants) were held, and 27 volunteers attended two educational events that brought volunteers to the lake to help plant buffers. A youtube movie was created to showcase project activities.



Riprap installed to stabilize road shoulder

PROJECT OUTCOMES:

- A total of 20 sites, including 13 high priority sites, were addressed to reduce erosion and help protect water quality. Management practices used include ditching, riprap on streambank sites and ditches, new culverts, vegetative buffers and turnouts.
- Estimates from ten of the 20 treated sites indicate that pollutant loading to Nequasset Lake was reduced by 23 tons of sediment and 21 pounds of phosphorus annually (Region 5 Method).
- Volunteers planted two buffers along 185 feet of shoreline on Bath Water District property.
- Technical assistance was provided for another 27 sites.
- An education video was developed for publication on websites to inform the public about implemented projects and effective practices to prevent and treat soil erosion. Available for viewing at http://www.youtube.com/watch?v=cOCAIa_xXX8.



Before - Erosion on Old Stage Road and roadside parking area washed directly into Nequasset Brook.

After - Parking areas were defined and stabilized with reclaimed asphalt, and the shoulders were stabilized with riprap. A turnout was stabilized, and boulders were placed to keep vehicles off vegetated areas.

PROJECT PARTNERS:

Bath Water District
City of Bath
Maine Rural Water Association
Town of Dresden
Town of Wiscasset

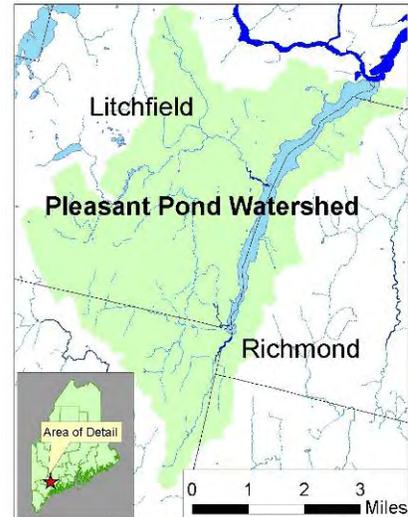
CONTACT INFORMATION:

Donald Kale, DEP- (207) 822- 6319, Donald.Kale@maine.gov

Susan Gammon, Androscoggin Valley SWCD – (207) 753- 9400, susan.gammon@me.nacdnet.net

Pleasant Pond NPS Abatement Project, Phase II #2008RT06

Waterbody Name: Pleasant Pond
 Location: Litchfield and Richmond – Kennebec County
 Waterbody Status: Impaired, NPS Priority Watershed, Most at Risk
 Project Grantee: Kennebec County SWCD
 Project Duration: March 2008 – September 2010
 319 Grant Amount: \$64,160
 Local Match: \$50,555



PROBLEM:

Pleasant Pond is a shallow, five-mile-long pond with a 23.4 square mile watershed. While the portion of the watershed that is developed is relatively small, the development is concentrated on the shoreline. The pond does not meet state water quality standards due to high concentrations of phosphorus, recurring algal blooms for the past 20 years, and low transparency readings. The pond’s TMDL report (2004) indicated that agriculture accounted for 39%, public and private roads for 15%, and residential sites and septic systems for 7% of the phosphorus load. The number of active farms has decreased in recent years and NRCS has been actively addressing agricultural runoff in the watershed.

A shoreline survey was conducted by the Cobbossee Watershed District (CWD) in 2000, and a road and ditch erosion survey was conducted by Kennebec County SWCD in 2005. These surveys resulted in a list of over 180 sites with NPS problems. From 2006 to 2008, the first phase of the Pleasant Pond NPS Abatement Project (#2006R-05) resulted in the implementation of 18 road BMPs, installation of nine residential conservation projects by the Friends Youth Conservation Corps, presentation of two educational BMP workshops, and completion of two seasons of water quality monitoring by CWD.

PROJECT DESCRIPTION:

The project goal was to continue restoring Pleasant Pond’s water quality by complementing ongoing NRCS work in agricultural lands with NPS erosion abatement work on gravel roads and eroding shorelines. The gravel road work included installation of broad-based dips, waterbars, ditches and plunge pools; road rebuilding and reshaping; culvert replacement and armoring; and work with MDOT on public roads. Project staff also provided technical assistance to an additional 10 property owners, and the Friends provided 16 landowners with ‘LakeSmart-Start!’ visits.



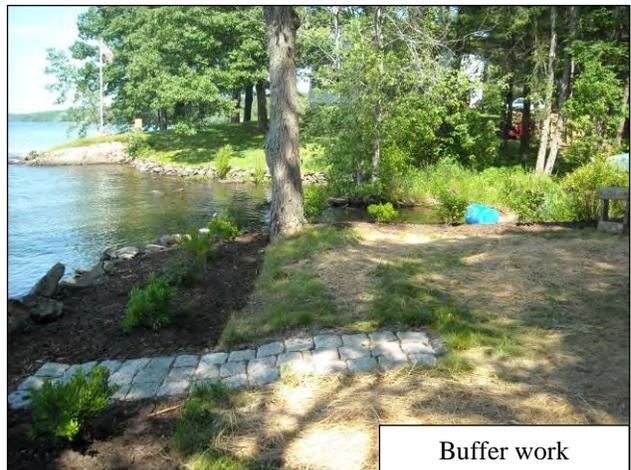
Outreach for the project included two mailings to all watershed landowners, articles in local papers and newsletters, a buffer workshop, and a gravel roads workshop for town staff. The Four Towns Watershed Association provided a forum for educational opportunities and guidance on public outreach methods. CWD continued to monitor water quality each month and provided summary reports for 2008 and 2009.

PROJECT OUTCOMES:

- The project installed 23 gravel road and shoreline conservation practices at 12 public and private sites to reduce polluted runoff into Pleasant Pond. A significant part of the work was on gravel roads. Work was also completed at the NPS site at Peacock Beach State Park – including a buffer planting, installation of infiltration steps, and stabilization with erosion control mulch.
- Pollutant loading to Pleasant Pond was reduced by an estimated 14.7 tons of sediment, 12.5 pounds of phosphorus, and 25 pounds of nitrogen per year entering the pond (WEPP Model and Region 5 Method). Approximately 716 linear feet of shoreline was stabilized through plantings, erosion control mulch, and/or rip-rap.
- The Friends of the Cobbossee Watershed’s YCC installed conservation practices at another 8 sites. Projects included buffer plantings, installation of erosion control mulch, and stabilization of eroding shorelines.
- Project staff provided technical assistance at 26 additional sites.



Gravel road work



Buffer work

PROJECT PARTNERS:

Friends of the Cobbossee Watershed Youth Conservation Corps
Cobbossee Watershed District
Four Towns Watershed Association
Maine Department of Transportation

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 287-5586, kristin.b.feindel@maine.gov
Josh Platt, Kennebec County SWCD – (207) 622-7847 ext 3, josh@kcsxcd.org

Raymond Pond Conservation Project

#2007RR02

Waterbody Name: Raymond Pond

Location: Raymond – Cumberland County

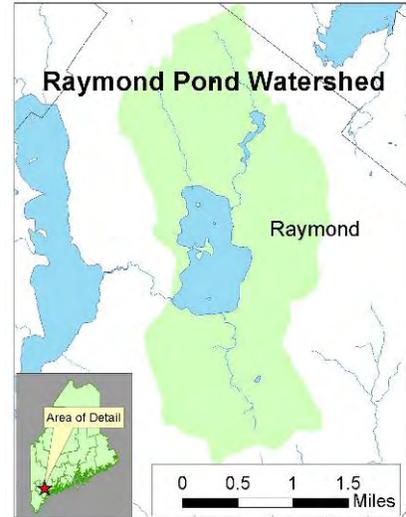
Waterbody Status: NPS Priority Watershed, Most at Risk

Project Sponsor: Town of Raymond

Project Duration: April 2007 – March 2010

319 Grant Amount: \$54,238

Local Match: \$95,363



PROBLEM:

Raymond Pond has a surface area of 346 acres and a 4.4 square mile watershed. Raymond Pond is developed with over 175 seasonal and year-round homes. It is the largest of five ponds that drains into Crescent Lake, which then flows into Panther Pond and Sebago Lake, a public drinking water source for over 45,000 households in Southern Maine.

Raymond Waterways Protective Association (RWPA) has monitored the pond since 1974, and the data shows significant depletion of dissolved oxygen in the deep areas of the pond in late summer. In 1999 the Raymond Conservation Commission spearheaded an independent watershed survey and identified 71 erosion sites. From 2001 – 2004, Cumberland County SWCD conducted a Raymond Pond and Crescent Lake grant project (#2001R-03) and addressed 10 sites on Raymond Pond.

PROJECT DESCRIPTION:

The purpose of the Raymond Pond project was to significantly reduce erosion and export of sediment and phosphorus into Raymond Pond. Conservation practices were installed on 21 large erosion sites. Nine residential matching grants were awarded to help landowners fix lower impact sites.

Project updates were distributed to the watershed community through articles in the RWPA newsletter; a project brochure that was sent to all watershed landowners at the start of the project; and annual project updates. Project staff delivered presentations about the project at the annual meetings of RWPA and several road associations. ‘Cruise the Buffers’ boat tours were held in the summer of 2007 and 2009 to highlight the value of buffers and showcase completed projects. Over 50 volunteers attended six hands-on workshops and helped install conservation practices at project sites.



PROJECT OUTCOMES:

- Conservation practices were installed to fix erosion problems at 21 high and medium impact erosion sites including one town road, seven private roads, six driveways and seven residential properties. Work included the installation of 7 new culverts, 10 rubber razor diverters, 2 rain gardens, 143 plants, 27 infiltration steps, 5 sediment basins, 12 waterbars and 7 infiltration trenches.
- Matching grants up to \$300 were awarded to another 9 landowners to address lower impact residential sites. Technical assistance was provided to 7 more landowners.
- Pollutant loading to Raymond Pond was reduced by an estimated 8.1 tons of sediment and 6.8 pounds of phosphorus per year (Region 5 Method and WEPP Model).
- Local match for the project totaled \$95,363, more than double the original project goal. Much of this match can be attributed to the extraordinary involvement of the Town of Raymond, road associations and over 50 volunteers that attended workshops and helped neighbors install conservation practices on their properties.



PROJECT PARTNERS:

Portland Water District
 Raymond Waterways Protective Association

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 822-6320, wendy.garland@maine.gov
 Noralee Raymond, RWPA – (207) 671-3329, noralee.raymond@raymondmaine.org

Spruce Creek Watershed Improvement Project – Phase I

#2008RR01

Waterbody Name: Spruce Creek

Location: Kittery and Eliot – York County

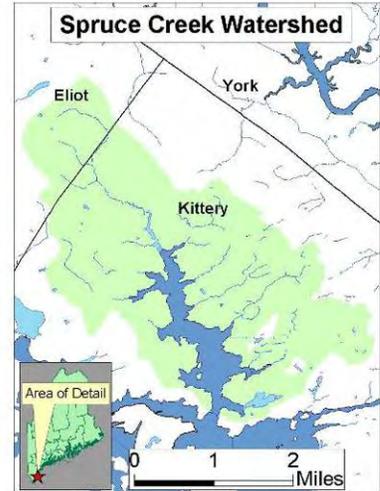
Waterbody Status: NPS Priority Watershed, Impaired

Project Grantee: Town of Kittery

Project Duration: April 2008 – March 2010

319 Grant Amount: \$69,670

Local Match: \$113,865



PROBLEM:

The Spruce Creek watershed covers 9.6 square miles in Kittery and Eliot in southernmost Maine. The creek flows into the Piscataqua River about 1.5 miles from where the river meets the Gulf of Maine. The creek is primarily fed by six freshwater streams and includes approximately 3 square miles of tidal area (including high salt marsh, ledge and mud flats). Watershed land use includes sparse residential development and some active farmland and woodlots in the upper reaches in Eliot. Along the Route 1 and Route 95 corridor, there are extensive impervious areas in commercial strip malls, roads and interchanges. The tidal portion is residential with larger homes along the immediate shoreline.

The Maine DEP lists Spruce Creek as impaired due to bacterial contamination, low dissolved oxygen, toxic contamination and a compromised ability to support aquatic life. Although a portion of Spruce Creek was open to shellfish harvesting in the past, the flats have been closed since 2005 due to poor water quality and high fecal coliform concentrations. The Spruce Creek Association (SCA) formed in 2002 to promote watershed stewardship and now has over 180 members. A survey completed in 2007 (#2005R-01) identified 197 NPS sites and provided preliminary recommendations for those sites.

PROJECT DESCRIPTION:

The goal of this project was to reduce bacteria loading and the export of sediment and nutrients into Spruce Creek to improve water quality and help re-open shellfish harvest areas. The SCA and Town of Kittery worked to achieve these goals by installing conservation practices at three residential properties and stormwater retrofits at two commercial sites and the Kittery Town Hall. The project aimed to replace two failing culverts, but this was postponed until Phase II.



110 people attended six 'residential socials'

Local residents hosted three septic socials (45 participants) and six residential socials (110 participants). The project also launched a website, established a discount rain barrel program, and conducted an intercept survey at the beginning and end of the project. 34 residents pledged to complete 444 watershed-friendly practices and received a yard sign to show their participation. Local newspapers covered several events during the project.

PROJECT OUTCOMES:

- The project installed 22 BMPs to control polluted runoff at three residential properties, two commercial sites and the Kittery Town Hall.
- The project's Septic System Maintenance and Repair Team held three septic socials with a total of 45 participants. Using town tax records, the team also identified 44 properties with high potential of malfunctioning septic systems. As a result of this work, the Town helped property owners replace two failing septic systems during the project.
- A discount rain barrel program was established, and over 100 barrels were sold to local residents. The rain barrels were distributed in a highly publicized and well attended event using a historic gundalow ship.
- Annual pollutant loading to Spruce Creek was reduced by an estimated 1.4 tons of sediment, one pound phosphorus, and 28 pounds of nitrogen (Region 5 Method).
- A 'Protect Kittery Waters' website (www.protectkitterywaters.org) was created to provide a central location for the dissemination of information for residents about current actions and events as well as steps home and business owners can take to improve water quality.



100 local residents purchased rain barrels



Volunteers help install a rain garden

PROJECT PARTNERS:

Eliot Conservation Commission
Great Works Regional Land Trust
Kittery Conservation Commissions
Kittery Department of Public Works
Kittery Land Trust
Kittery Shellfish Commission
Maine Department of Marine Resources
Maine State Planning Office

Nonpoint Education for Municipal Officials
Southern Maine Regional Planning Commission
Spruce Creek Association
Spruce Creek Watershed Council
Town of Kittery
Town of Eliot
York County SWCD

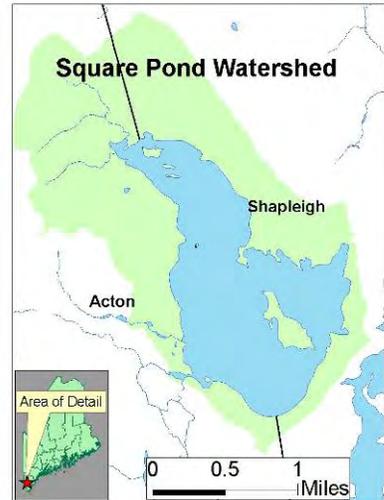
CONTACT INFORMATION:

Donald Kale, Maine DEP – (207) 822-6319, Donald.kale@maine.gov
Jonathan Carter, Town of Kittery – (207) 439-0452, jcarter@kittery.me.org
Phyllis Ford, Spruce Creek Association – phyllis@sprucecreekassociation.org

Square Pond Watershed Improvement Project, Phase I

#2008RR11

Waterbody Name: Square Pond
 Location: Acton and Shapleigh – York County
 Waterbody Status: NPS Priority Watershed
 Project Grantee: York County SWCD
 Project Duration: March 2008 – September 2010
 319 Grant Amount: \$81,034
 Local Match: \$85,081



PROBLEM:

Square Pond is a 910-acre lake with a direct watershed of 4.3 square miles. Square Pond flows into Goose Pond and then Mousam Lake, which was recently removed from the state’s impaired waters list. The pond is highly developed with over 500 seasonal camps and year-round homes, a state-owned boat launch and a town-owned beach. About 80 seasonal homes are located on Treasure Island. The residents operate their own ferry service to the island, which does not have formal roads or automobiles.

The Square Pond Improvement Association (SPIA) and Maine DEP have monitored the pond’s water quality since 1977. Data indicates that the lake currently has above average water quality. However, the pond is at risk of future water quality problems due to its high density shoreline development and moderate oxygen depletion in one of the two basins. The SPIA formed a water quality committee in 2003 to focus its energies on water quality, and the local Acton Shapleigh Youth Conservation Corps (YCC) has completed several erosion control projects on lakefront properties. A 2006 watershed survey (#2006P-12) identified 207 NPS sites including a mix of residential areas (67%), beaches (10%), driveways (8%) and private and town roads (8%).

PROJECT DESCRIPTION:

The project purpose was to fix 21 priority NPS sites from the watershed survey, including three roads, a parking lot, a town beach and 16 residential properties. The project also aimed to provide technical assistance to 20 landowners and partner with the Acton Shapleigh YCC to install conservation practices at another 16 residential sites. Community outreach included four newsletters to the 500 watershed residences, press releases to local newspapers and six neighborhood ‘septic socials’ to teach residents about septic system maintenance.



The Acton Shapleigh YCC fixed 27 sites on Square Pond, exceeding their project goal of 20 sites.

PROJECT OUTCOMES:

- The project fixed erosion problems at 23 NPS sites (exceeding the goal of 21 sites). As a result, pollutant loading to Square Pond was reduced by an estimated 21.8 tons of sediment and 17.6 pounds of phosphorus per year (Region 5 Method and WEPP Model). The Treasure Island Parking Lot site was one of the most notable sites. This 100-car lakeside parking lot was re-graded and surfaced with recycled asphalt; a rain garden was installed to treat the runoff; and vegetated buffers were planted.
- The Acton Shapleigh YCC completed 27 projects (exceeding the goal of 20 sites). York County SWCD and YCC staff completed 79 technical assistance visits (far exceeding the goal of 20 visits).
- 54 people attended six septic socials, which were hosted by local residents, the Treasure Island Landowners Association (TILOA) and the Towns. The socials provided a relaxed setting for participants to learn about septic system function and maintenance.
- The project helped build the capacity, partnerships and commitment of local organizations for ongoing lake stewardship. TILOA, which had historically focused only on island issues, joined the SPIA for the first time, hosted 5 NPS projects and raised \$5,000 in cash match. The SPIA also moved water quality to the forefront of their organization's mission, and the Acton Shapleigh YCC Board reorganized and stepped up their fundraising efforts to adjust to town budget cuts.



The Treasure Island ferry parking lot was re-graded and resurfaced with recycled asphalt, and a central rain garden was installed to capture and treat runoff. Volunteers installed ECM and 84 plants to create a shoreline buffer.

PROJECT PARTNERS:

Acton Shapleigh Youth Conservation Corps
Square Pond Improvement Association
Town of Acton
Town of Shapleigh
Treasure Island Landowners Association

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 822-6320, wendy.garland@maine.gov
Joe Anderson, York County SWCD – (207) 324-0888, janderson@yorkswcd.org

Togus Watershed NPS Reduction Project, Phase II

#2008RT03

Waterbody Name: Togus, Little Togus and Lower Togus Ponds

Location: Augusta and Windsor – Kennebec County

Waterbody Status: Impaired, NPS Priority Watershed

Project Grantee: City of Augusta

Project Duration: April 2008 – September 2010

319 Grant Amount: \$79,000

Local Match: \$66,200



PROBLEM:

The Togus Pond watershed covers 36 square miles and includes Togus Pond, Little Togus Pond, Lower Togus Pond and Togus Stream. Water quality monitoring data for Lower Togus Lake has been collected since 1989, and the water quality is considered to be below average based on measures of water clarity, total phosphorus and Chlorophyll-a. The potential for nuisance algal blooms on Lower Togus Lake is high. Water quality monitoring data for Togus Lake has been collected since 1976, and the lake has a history of blooms.

A 2003 NPS watershed survey identified over 100 problem pollution sites. Most sites were associated with roads and residential areas and some involved commercial businesses and town/state roads. Approximately half of the pollution sites identified during the survey were ranked as medium or high priority due to their impact or potential to impact water quality. In addition to soil erosion, the watershed's TMDL Report (2005) suggests that 25% of the pond's phosphorus load comes from septic systems. From 2004 – 2006, a Phase I project (#2004R-06) completed repair work on 36 problem sites, which reduced pollutant loading to the pond by an estimated 24 tons of sediment and 24 pounds of phosphorus per year.

PROJECT DESCRIPTION:

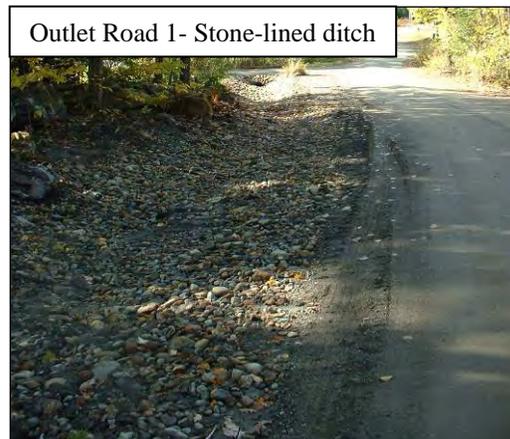
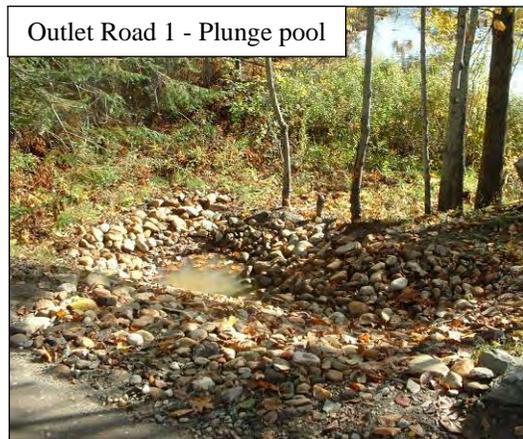
Phase II sought to repair 25 of the remaining higher priority pollution sites identified in the watershed survey and to provide technical assistance to fix another 5 lower priority sites. Primary field contacts and cost-sharing efforts with local landowners were overseen by members of the Worromontogus (Togus Pond) Lake Association (WLA), with technical assistance, technical designs and field support provided by the Kennebec County SWCD. The City of Augusta provided overall project administrative oversight. Pollutants targeted for reduction by this project were sediment and phosphorus.



Project activities were advertised through an initial letter to watershed landowners, press releases and postings in the new WLA website. Four workshops were also held to educate local residents about shoreline and road issues.

PROJECT OUTCOMES:

- NPS problems on 31 high priority road-related sites were addressed by installing ditching, culverts, plunge pools, new surface material, drainage improvements and other BMPs.
- Buffers were planted on 5 sites, and shoreline stabilization projects were completed on 3 sites.
- A WLA website was created and had received 212,000 hits as of September, 2010. (www.togusponds.org)
- The project's BMP installations reduced pollutant loading to Togus Pond by an estimated 1.8 tons of sediment, 1 pound of phosphorus and 1.2 pounds of nitrogen per year (Region 5 Method and WEPP Model).



PROJECT PARTNERS:

Kennebec County SWCD
Worromontogus Lake Association

CONTACT INFORMATION:

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Dan Nichols, City of Augusta – (207) 626-2336, Daniel.Nichols@augustamaine.gov



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Document available for download at:
http://www.maine.gov/dep/blwq/docgrant/319_files/reports/index.htm