Document # DEPLW-1237

Maine Department of Environmental Protection

Nonpoint Source Management Program 2011 Annual Report

Working Together for Clean Water

May 2012

The Maine Department of Environmental Protection acknowledges that preparation and publication of this report was funded, in part, with monies provided by the U.S. Environmental Protection Agency under Section 319 of the Federal Clean Water Act.

From the Watershed Director

Finding New Ways to Get Things Done

By Don Witherill

Over the years the staff here at DEP, along with our partnering organizations, have taken on many initiatives aimed at protecting or restoring Maine's lakes, streams, and coastal waters from the effects of nonpoint source (NPS) pollution. You can read about many of these efforts in the pages that follow. Some projects provide for direct reduction or elimination of pollutant sources. The NPS Watershed Projects (see pages 23 to 53) fit this category. However, the value of many of the other activities is more intangible. For instance, how do we measure water quality benefits resulting from watershed surveys, water quality monitoring, education of municipal officials, or contractor training? These are all examples of activities that are also summarized in this report, for which the Department has provided support through the Section 319 program.

In Maine as well as elsewhere in the country, the NPS program appears to be at a crossroads. In recognition of the need to document quantifiable program success, we anticipate new guidance from EPA will lead us in the direction of increasing funding for activities that fit under the heading of "implementation." That means more money for "on the ground" work in threatened or impaired watersheds. That's the good news. The downside is Section 319 funding has shrunk by 18 percent in the past two years, and it is unlikely to increase in the near future. Therefore, we will need to shift funding away some of our other activities if we are to increase support for implementation projects. Over the past year, we have had a number of conversations with partners who, despite their excellent work, are likely to be affected by this funding shift. Fortunately, we have transition time in 2012 to consider options for continuing much of the work that does not fall under the implementation category. Options we are investigating to continue some of these projects include using other funding sources, or shifting tasks to projects that would qualify as implementation. Where these options are not available, it may be necessary to scale back the activities.

To deal with the 18 percent funding reductions, we have already taken steps to reduce staff in DEP's Section 319 Program. Two DEP positions that recently became vacant have not been refilled, and funding for a third position was shifted to another program. In addition, two AmeriCorps volunteer positions were not re-hired in 2012. This reduction in staff for 319 activities makes the task of supporting additional implementation projects all the more challenging.

While we have proactively made changes to our NPS Program, we still await further direction that will come from EPA's changes to the Section 319 Program guidance. As we learn more in the coming months, we will share this information with those of you who have been our partners in carrying out NPS projects and we welcome your feedback. I have no doubt that we will meet the challenges and that we will continue to find innovative ways to accomplish the very successful kinds of projects that we summarize in this annual report.

Don Witherill directs the Division of Watershed Management at the Maine Department of Environmental Protection, where he has served since 1994.

Table of Contents

A. Nonpoint Source Management Program Summary 1

B. 2011 Highlights – Maine DEP NPS Program 1

C. Maine NPS Management Program Overview 3

1. Protecting Clean Waters
2. Restoring NPS Impaired Waters
3. NPS Pollutant Load Reduction

D. DEP NPS Program & Work Activities in 2011 8

1. Grant Management & Program Administration
2. NPS Site Tracker Tool
3. Summaries of Statewide Programs

E. NPS Grants Program 20

1. Overview of NPS Water Pollution Control Projects
2. NPS Water Pollution Control Projects Funded in 2011
3. Request for Proposals - FY 2012 Grants for NPS Pollution Control Projects

F. Summaries of NPS Water Pollution Control Projects Completed in 2011 23

Appendix A. - NPS Watershed Projects Active in 2011 54

This report was funded, in part, by grant funds provided by the U.S. Environmental Protection Agency to the Maine Department of Environmental Protection under Section 319 of the Clean Water Act. Neither EPA nor DEP endorses any commercial product, service or enterprise mentioned in this publication.

A. Nonpoint Source Management Program Summary

This report summarizes the Maine Department of Environmental Protection's Nonpoint Source (NPS) Program activity and accomplishments in 2011. The report fulfills annual reporting requirement of Section 319(h) of the Federal Clean Water Act. Each year, Maine DEP prepares this report to inform the public and the U.S. Environmental Protection Agency (EPA) about Maine's progress in controlling NPS water pollution.

NPS pollution is the leading source of water quality impact to Maine's clean lakes, rivers, streams and coastal waters. When it rains or the snow melts, the water running off our driveways, parking lots, yards, farm fields, forestry operations, and industrial sites carries hitchhiking pollutants. Pollutants include sediment from erosion; nutrients from fertilizers or animal waste; bacteria from failing septic systems and animal waste; and toxics from dripped or spilled petroleum products. This polluted runoff washes off the land and flows into our waterways.

Each year since 1990, EPA has awarded funds under Section 319 of the Clean Water Act to help states and tribes address their most pressing NPS pollution problems. Maine DEP coordinates Maine's Nonpoint Source Pollution Program (38 MSRA 410). Section 319 monies help fund a significant portion of Maine's NPS program. 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 stop NPS pollution. Section 319 funds are used to provide grants for watershed projects to help local communities identify water pollution sources in watersheds and take action to restore or protect lakes, streams, or coastal waters.

B. 2011 Highlights - Maine DEP NPS Program

DEP received a grant award for $1,950,566 of FFY2011 funds from EPA under Section 319 of the Clean Water Act. Funds were used to fuel 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. Approximately 40 percent of the Section 319 funds were passed through to organizations for NPS projects or programs. DEP provided technical and financial assistance for 41 NPS Watershed Projects to help protect or improve lakes, streams, and coastal waters. DEP used Section 319 funds to support the Maine Volunteer Lake Monitoring Program, Nonpoint Education for Municipal Officials (NEMO), and other statewide programs.

Maine DEP NPS Program Highlights

1. The restoration of Duckpuddle Pond, a 242 acre pond in Nobleboro and Waldoboro, was highlighted on EPA's Nonpoint Source Program Success Stories website: www.epa.gov/owow/nps/Success319. DEP removed Duckpuddle Pond from the list of impaired waters (Section 303(d) TMDL list).

2. Fifteen NPS Watershed Projects funded through the NPS Grants program in previous years were successfully brought to completion. DEP provided technical assistance and granted $672,048 of

Federal Clean Water Act funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at $731,460. See Section F for summaries of projects.

- Conservation practices (BMPs) were installed to reduce polluted runoff in five lake watersheds by NPS Watershed Implementation Projects: Green Lake (Ellsworth), Long Pond (Belgrade), Pleasant Lake / Parker Pond (Casco), Pleasant Pond (Litchfield) and Sebago Lake (Sebago, Casco, Raymond, and Windham). These projects reduced pollutant loading to the five lakes by about 524 pounds of phosphorus and 474 tons of sediment per year - equivalent to 41 dump truck loads.

- NPS Watershed Survey Projects were completed for six lakes and one stream: Beech Hill Pond (Otisfield), Coldstream Pond (Lincoln), Horne Pond (Limington), Moose Pond (Bridgton), Thompson Lake (Otisfield) and the Dyer River (Newcastle). NPS surveys find, describe, and prioritize NPS pollution sources in a watershed and recommend BMPs to reduce polluted runoff.

- Watershed management plans were completed for three NPS impaired waterbodies: Capehart Brook (Bangor), Capisic Brook (Portland), and Red Brook (Scarborough).

3. The annual request for proposals for NPS Water Pollution Control Projects, funded eight NPS watershed projects to begin in early 2012.

4. DEP collaborated with local partners working on 41 active Section 319 NPS Water Pollution Control Projects funded under NPS grants issued in 2008, 2009, and 2010.

5. The Maine Volunteer Lake Monitoring program produced the *2010 Maine Lakes Report*, which reported that during 2010, volunteers obtained 3,765 Secchi transparency readings, 16,274 dissolved oxygen readings, 1,083 total phosphorus samples, and 574 chlorophyll-a samples. These data were collected from 401 lake stations on 332 lakes representing approximately 42 percent of Maine's lake surface area.

6. Over 1,200 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. Two hundred and sixty new individuals were certified in erosion and sediment control practices through the DEP Contractor Certification Program.

7. As part of the ThinkBlue Maine Partnership, DEP supported a three-week statewide media buy to air Ducky II, a 30 second TV ad encouraging people to reduce their use of lawn care products, particularly fertilizer. The ad emphasized that stormwater runoff washes excess fertilizer from lawns into streams or ponds, which often impairs water quality.

8. Maine NEMO conducted 22 presentations for municipal officials attended by 912 people. Maine NEMO also held three well-attended (125 people) workshops focused on methods for better communication and messaging. These workshops included two sessions of "Water Words That Work" and the workshop "More Than a Message" in the Bangor area.

9. DEP issued 100 LakeSmart Awards and 170 commendation certificates to individuals receiving high scores in at least one of the four evaluation categories. To date, the number of LakeSmart Award properties is 463. LakeSmart 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. Maine NPS Management Program Overview

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 NPS water pollution.

DEP administers the NPS Program in coordination with EPA and other federal, state and local governmental agencies and non-governmental organizations. Seven Maine agencies share responsibility for coordinating and implementing NPS programs: the 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: implement State laws or rules requiring people to comply with performance standards governing certain land use activities to protect water quality; and 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 to control potential sources of NPS pollution, including: the Storm Water Management Law; the Site Location of Development Law; the 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 polluted runoff. Programs support efforts to improve and protect waters threatened or impaired by NPS pollution. Maine's lead NPS agencies provide technical assistance and information about BMPs to municipalities, businesses, and individuals. The NPS Training and Resource Center at DEP provides information and technical training on BMP use. DEP administers grants to help fund NPS Water Pollution Control Projects to prevent or reduce water pollution caused by nonpoint sources. This report summarizes NPS program work accomplished by DEP, it does not summarize work accomplished by other Maine lead NPS agencies.

1. Protecting Clean Waters

Maine has significant water quality protection and restoration challenges and fixed resources for NPS programs. The 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 have faced 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 invests a considerable portion of available NPS resources to protect 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 residents 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.

NPS Watershed Implementation Projects

To help protect threatened clean waters, DEP invests Section 319 funds for NPS projects to implement BMPs that reduce pollution sources. During 2011, Section 319 funds helped sustain or start NPS Watershed Implementation Projects in 14 watersheds. For more information refer to the appendix.

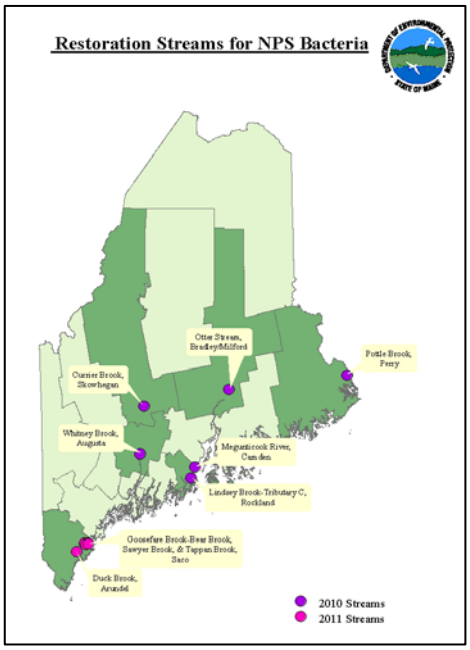
Branch Lake (Ellsworth)	McLean Brook (St.Agatha)	Pushaw Lake (Old Town)
Cochnewagon Lake (Monmouth)	Nickerson Lake (New Limerick)	Sebago Lake (Sebago)
Crescent Lake (Raymond)	Panther Pond (Raymond)	Square Pond (Shapleigh)
Green Lake (Ellsworth)	Pattees Pond (Winslow)	Thompson Lake (Otisfield)
Little Sebago Lake (Gray)	Pleasant Pond (Casco)	

2. 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 that the waters can support healthy habitats for fish and wildlife. DEP places waters that are found to be degraded (i.e. not supporting their designated uses and not attaining water quality standards) on a list of impaired waters. Restoring impaired waters involves three steps:

- **TMDL Assessment.** DEP must establish a pollution allocation (Total Maximum Daily Load - TMDL) for each impaired waterbody, according to Section 303(d) of the Clean Water Act. A TMDL assessment provides an estimate of how much pollution from point sources and nonpoint sources needs to be reduced in order for the waterbody to meet state water quality classification standards.
- **Watershed-Based Planning.** A watershed-based plan describes overall actions needed in a watershed to help restore water quality. EPA requires a watershed-based plan addressing nine minimum elements prior to use of 319 funds 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 focused within a watershed over five 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.



TMDL Assessment

DEP developed the Statewide Impervious Cover (IC) TMDL which is applied to 29 impaired streams. It was released for public review in 2011 and is available at http://tinyurl.com/bpy7mf5. This TMDL covers Maine streams with impairments that are attributed to urban runoff in watersheds with impervious cover that ranges from 7 percent to 50 percent. The concept that impervious surface impacts the water quality of connected streams is generally well accepted by water quality professionals. These TMDLs address macroinvertebrate, habitat and dissolved oxygen impairments, and use impervious cover as a surrogate for the complex mix of pollutants and altered hydrology associated with urban landscapes. During the initial public review process, stakeholders expressed significant concerns about regulatory repercussions from using this approach for TMDLs. This meant DEP spent more time on stakeholder outreach, with the secondary benefit of reaching concerned parties with additional education regarding stormwater and the impact of development on water quality.

DEP staff and a Section 319 funded AmeriCorps volunteer conducted follow-up monitoring on the Statewide Bacteria TMDL approved in 2009. The objectives were: to identify specific sources of bacteria through sampling for E.coli and sanitary surveys; eliminate these problems; and remove the impaired stream segment from the 303d list. In 2011, 11 streams were selected from the TMDL list because they had high restoration potential or were adversely impacting downstream beaches. Over 400 samples were collected using a diagnostic approach that narrows down NPS inputs to specific subwatersheds and identifies manageable areas for sanitary surveys. This approach has identified failing septic systems that have since been cleaned up and DEP anticipates streams will be delisted as this project proceeds.

Watershed-Based Planning

DEP helped several communities develop watershed plans to determine actions needed to restore an NPS impaired waterbody. To be eligible to receive Section 319 funds to help pay for work to restore an NPS impaired waterbody, EPA requires a watershed plan addressing nine minimum elements. This plan helps ensure Section 319-funded projects make progress towards restoring NPS impaired waters.

- Watershed plans were completed for five NPS impaired waterbodies: Capehart Brook (Bangor), Capisic Brook (Portland), Pleasant River (Windham), Red Brook (Scarborough), and Whitten Brook (Skowhegan).
- A watershed plan is under development for Trout Brook (South Portland).

NPS Impaired Waterbodies with a Watershed Plan

Annabessacook Lake (Monmouth)	Pleasant Pond (Gardiner)
Birch Stream (Bangor)	Pleasant River (Windham)
Bond Brook (Augusta)	Upper Prestile Stream (Fort Fairfield)
Capisic Brook (Portland)	Red Brook (Scarborough)
Capehart Brook (Bangor)	Sabattus Pond (Sabattus)
China Lake (China)	Spruce Creek (Kittery)
Dudley Brook (Castle Hill)	Threemile Pond & Webber Pond (China)
East Pond (Smithfield)	Togus Pond (Augusta)
Hart Brook (Lewiston)	Unity Pond (Unity)
Long Creek (South Portland)	Whitten Brook (Skowhegan)
Long Pond & Great Pond (Belgrade)	Wilson Pond (Monmouth)
Pejajawoc Stream (Bangor)	

NPS Watershed Implementation Projects

To help restore NPS-impaired waters, DEP allocates a portion of Section 319 funds for NPS Watershed Projects to implement BMPs that reduce pollutant loads. During 2011, Section 319 funds helped sustain or start NPS Watershed Projects to implement such BMPs in the following nine impaired watersheds:

Annabessacook Lake (Monmouth)	Long Pond (Belgrade)	Sabattus Pond (Sabattus)
Capehart Brook (Bangor)	Pleasant Pond (Gardiner)	Spruce Creek (Kittery)
Christina Reservoir (Fort Fairfield)	Pleasant River (Windham)	Wilson Pond (Winthrop)

Duckpuddle Pond - Section 319 NPS Program Success Story

The restoration of Duckpuddle Pond, a 242-acre pond in Nobleboro and Waldoboro, was highlighted on EPA's Nonpoint Source Program Success Stories website www.epa.gov/owow/nps/Success319.

The pond periodically experienced severe nuisance algal blooms as a result of excessive phosphorus runoff and sediment erosion from roads and a nearby dairy farm. In 1990, DEP placed Duckpuddle on the list of impaired waters. Between 1999 and 2010 with the help of NPS grants, the Knox-Lincoln County SWCD and DEP helped a dairy farm and two towns implement best management practices. These efforts significantly reduced polluted runoff and improved water quality. In 2010 DEP removed the pond from the impaired waters list. Refer to the insert after page 2 to read the success story.

The Duckpuddle story demonstrates that citizen-led watershed groups, fueled in part with grant funds and guided by watershed professionals, can successfully reduce polluted runoff to improve their lakes, streams, or coastal waters. Reducing polluted runoff from the many sources throughout an entire watershed usually requires sustained action over many years. DEP invests considerable staff resources to help local watershed groups get informed and organized. These local groups then engage their communities to cultivate watershed stewardship. Building local capacity offers the best hope for sustaining actions to protect or improve Maine's clean water over the long term.

Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Maine

Watershed Conservation Practices Restore Duckpuddle Pond

Waterbody Improved

Erosion and runoff from roads and a dairy farm contributed excessive phosphorus and sediment to Maine's Duckpuddle Pond, which sometimes experienced severe nuisance algal blooms as a result. In 1990 the decreased water clarity and low dissolved oxygen of the pond prompted the Maine Department of Environmental Protection (MDEP) to add it to the state's CWA section 303(d) list of impaired waters. Between 1999 and 2010, the Knox-Lincoln County Soil and Water Conservation District (KLSWCD) helped the dairy farm to implement best management practices (BMPs) and worked with local towns and organizations to upgrade roadside ditches and culverts. These efforts significantly reduced nonpoint source pollution. Duckpuddle Pond now meets applicable water quality standards, prompting MDEP to remove it from the state's list of impaired waters in 2010.

Problem

Duckpuddle Pond (242 acres) is on the border between the towns of Nobleboro and Waldoboro in Lincoln County. The pond captures drainage from an 8.5-square-mile area in the Pemaquid River watershed, near Maine's southern coast. The watershed is mostly forested with interspersed agricultural and rural land uses. Developed areas constitute approximately 14 percent of the watershed. The shoreline is sparsely developed and has several large, undisturbed shorefront areas.

Historically, stormwater runoff carried excessive amounts of phosphorus to Duckpuddle Pond, causing nuisance algal blooms (Figure 1). As a result, in 1990 MDEP placed the pond on the state's impaired waters list because of recurring nuisance algal blooms and increasing trophic state (increased biological productivity). In 1995 the Pemaquid Watershed Association and MDEP completed a watershed survey, which identified 55 priority polluted runoff sites in the watershed.

In 2005 MDEP developed a total maximum daily load (TMDL) for phosphorus in Duckpuddle Pond. In the TMDL report, MDEP estimated that the total phosphorus (TP) export, by land use, was 38 percent from agricultural areas, 30 percent from non-shoreline development (roads and low-density residential), 24 percent from non-developed land, 6 percent from atmospheric deposition, and 2 percent from shoreline development. The TMDL set the pond's assimilative capacity at 335 kilograms TP per year (kg/yr) to meet a target of 16 parts per billion (ppb) TP. According to the TMDL, annual phosphorus loading needed to be reduced by about 136 kg/year (a 29 percent reduction) to allow

Figure 1. Elevated phosphorus levels in Duckpuddle Pond caused nuisance algal blooms.

Duckpuddle Pond to comply with Maine's Class GPA water quality standards. (Class GPA applies to all lakes except man-made ponds less than 30 acres.) The TMDL report recommended implementing numerous actions that could reduce nuisance algal blooms and restore the pond.

Project Highlights

From 2000 to 2004, KLSWCD implemented the first of two CWA section 319-funded projects to reduce sediment and phosphorus inflows to Duckpuddle Pond. KLSWCD and staff from the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) worked with the Spear Farm, a dairy and vegetable producer, to improve management of manure, milk house wastewater, silage and cropping

practices. Spear Farm enlarged its manure storage capacity from one to six months to enable over-winter storage. In addition, the farmer directed milk house wastewater into a manure storage pit.

KLSWCD also worked with local municipalities and other organizations to reduce erosion along roads. The Town of Waldoboro installed cross-drainage culverts and riprap ditch linings (to distribute runoff more evenly through buffers), upgraded roads, and repaired a failing stream crossing. The Town of Nobleboro installed five new culverts with inlet/outlet protection to help stabilize ditches on two roads. Road maintenance provisions were established to ensure long-term effectiveness. The Cramer Road Association stabilized a road ditch, installed ditch turnouts, and replaced a failing culvert at a stream crossing.

From 2008 to 2010, KLSWCD implemented the second CWA section 319 project to reduce polluted runoff from the farm's livestock feeding areas and a silage bunker. The farmer constructed a heavy-use livestock area (a 2,200 square-foot concrete pad) to separate clean water from contaminated water and manure (Figure 2). Manure that accumulates in the heavy-use area is moved to the existing manure storage pit. Any contaminated water running off the heavy-use area is directed through a 45-foot level-lip spreader into a vegetated wastewater filter strip for treatment. Improvements constructed at the existing silage bunker area reduced the volume and provided treatment of silage runoff and leachate. Clean stormwater runoff was diverted away from the silage bunker area. In addition, the farm's nutrient management plan was improved, which helped the farmer to manage nutrients and control erosion and sediment export.

Figure 2. A heavy-use livestock area allows for improved manure management.

Results

Water quality has improved. Duckpuddle Pond now meets Maine's Class GPA water quality standard, which requires the lake to have a stable or improving trophic state and to have been free of culturally induced algal blooms for at least six of the last 10 years (Figure 3). Algal blooms are considered to have occurred when the Secchi disk transparency falls below 2.0 meters.

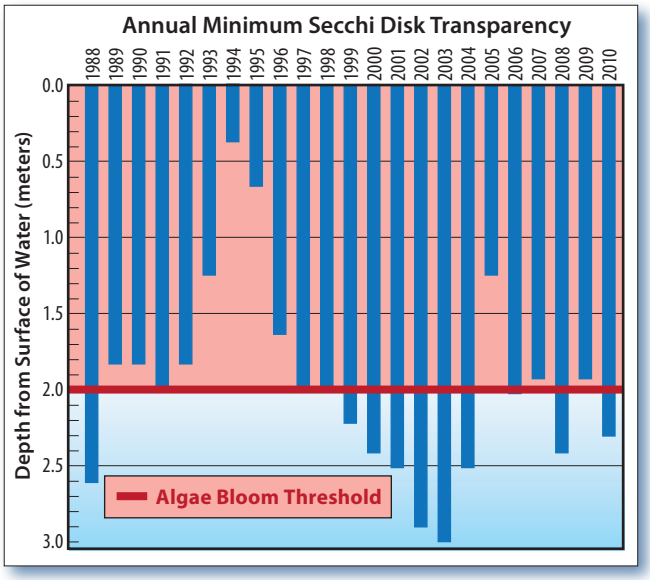


Figure 3. Duckpuddle Pond Annual Minimum Secchi Disk Transparency Data (1988–2010)

Restoration project efforts reduced pollutant loading by an estimated 248 tons of sediment and 700 pounds of phosphorus per year. Because Duckpuddle Pond had been free of culturally induced algal blooms for seven of the last 10 years, Maine DEP removed it from the state's CWA section 303(d) list in 2010.

Partners and Funding

Key project partners included KLSWCD, NRCS, Spear Farm, the towns of Waldoboro and Nobleboro, Cramer Road Association, Pemaquid Watershed Association, Maine Department of Agriculture (MDOA), MDEP, and U.S. Environmental Protection Agency (EPA). EPA provided $154,687 in CWA section 319 funds ($128,043 in Phase 1 and $26,644 in Phase 2); MDOA provided $20,000. Local match totaled $99,425, including a significant contribution from Spear Farm. KLSWCD coordinated the project, and NRCS provided landowner assistance and technical services for BMP design, construction and maintenance.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-11-001HH
September 2011

For additional information contact:

Norm Marcotte
Maine Department of Environmental Protection
207-287-7727 • norm.g.marcotte@maine.gov

3. NPS Pollutant Load Reduction

National Section 319 program guidelines require load reduction estimates for projects that will result in load reductions of sediment or nutrients (nitrogen and phosphorous). EPA recognizes that due to runoff variability, load reductions associated with BMP projects cannot be directly measured. Load reduction estimates for Maine Section 319 projects are developed using simple models. DEP and the grantees use the methods described in the EPA "Region 5 Model" and/or the U.S.Fish and Wildlife Service Water Erosion Prediction Project - Road (WEPP - Road) computer model to estimate NPS load reductions. These models are described at the following websites: http://it.tetratech-ffx.com/steplweb/ and http://forest.moscowfsl.wsu.edu/fswepp/. Nonpoint source load reductions for all Section 319-funded NPS implementation projects are documented in the EPA Grants Reporting and Tracking System (GRTS) database.

2011 NPS Load Reductions – Active 319 Projects Reported in GRTS		
Sediment	Phosphorus	Nitrogen
582 tons/year	608 lbs/year	1393 lbs/year

A road ditch with gray water on Currier Brook in Skowhegan.

D. DEP NPS Program & Work Activities in 2011

1. Grant Management & Program Administration

FFY 2011 319 Budget & Allocation Summary

During FFY2011 EPA awarded $1,950,566 in Section 319 funds (base $795,000; incremental $1,155,566) to Maine DEP. Base funds may be used for a wide array of statewide NPS programs. Incremental funds are to be used for watershed projects to help improve NPS impaired or threatened waterbodies. The table below shows how DEP allocated 319 grant funds. DEP used 60 percent ($1,168,178) of 319 funds to support 12 DEP staff positions and 40 percent ($782,388) primarily for pass-through grants to local government entities and watershed groups for NPS projects.

Activity	*Provider*	*Base-319*	*I-319*	*Total 319*	*Non-federal Match*
NPS Project Funds					
NPS Grants for Watershed Projects	Grantees	0	535,857	535,857	489,027
NPS Education Municipal Officials	PETE*	100,000	0	100,000	66,700
Volunteer Lake Monitoring Program	VLMP	50,000	0	50,000	178,000
AmeriCorps - 2 positions	MCC*	28,000	0	28,000	0
NPS Training & Resource Center	DEP	43,531	0	43,531	0
Statewide NPS Outreach	DEP	25,000	0	25,000	0
Small Community Grants Program	DEP	0	0	0	42,350
Subtotal		**246,531**	**535,857**	**782,388**	**776,077**
DEP Personnel, Other & Indirect 12 FTEs	DEP	668,178	500,000	1,168,178	524,300
Total		**914,709**	**1,035,857**	**1,950,566**	**1,300,377**
EPA 2011 Section 319 Grant Award		795,000	1,155,566	1,950,566	0

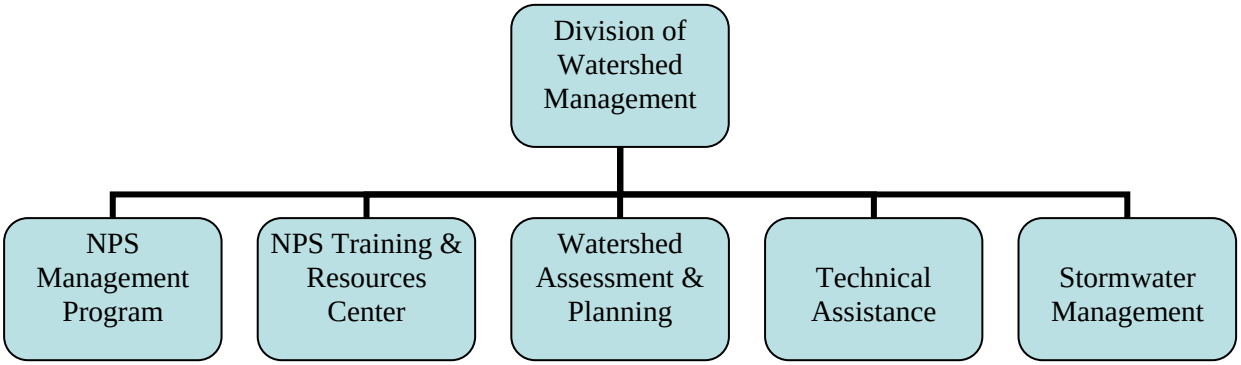
* PETE – Partnership for Environmental Technology Education
* MCC – Maine Conservation Corps

DEP Staff Services / Division of Watershed Management

DEP's Division of Watershed Management administers the NPS program and provides the following watershed management services:

- The NPS Management Program section administers the NPS program.
- The NPS Training and Resource Center provides training, education, and outreach to contractors, consultants, and others.
- The Watershed Assessment and Planning section provides stormwater technical assistance, watershed management planning and assistance, and manages the Stream Team and Volunteer River Monitoring Program (VRMP).
- The Technical Assistance section provides technical review of permit applications and maintains or develops Best Management Practices guidelines.

- The Stormwater Management section administers implementation of the Maine Pollutant Discharge Elimination System (MEPDES) stormwater permit program. (Note this section is funded by permit fees, not Section 319).



For brief summaries of Section 319-funded DEP staff services refer to the Summaries of Statewide Programs (Section D.6) and the NPS Grants Program (Section E).

319 Grant Administration Activities

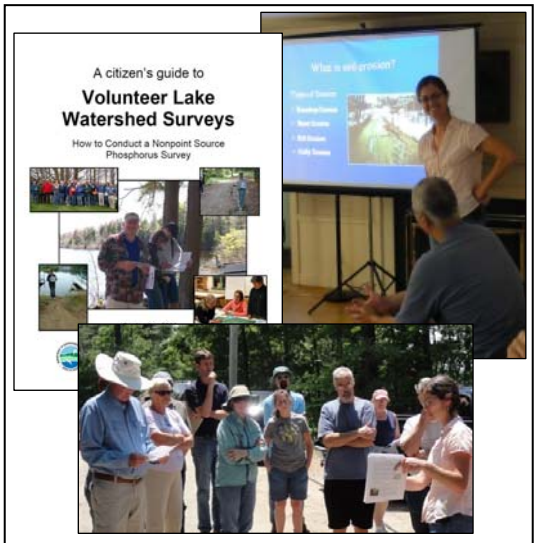
- DEP completed closeout of all NPS Projects previously funded under the FFY 2008 319 grant. DEP continues to administer 319 annual grants for FFY 2009, 2010 and 2011, including subrecipient monitoring of the 41 active grant awards.
- In May EPA informed DEP the FFY2011 319 award will be reduced by 12 percent ($297,057). DEP made several adjustments to manage the 12 percent cut. Services were reduced within several NPS activity areas including: pass-through grants for NPS watershed projects; the Maine Stream Team Program, the Volunteer River Monitoring Program, the NPS Training and Resources Center, and statewide NPS outreach.
- DEP prepared and submitted a Section 319 NPS Success Story (Duckpuddle Pond) about restoration of water quality in accordance with EPA national computational guidance.
- EPA approved DEP revision of the Maine Section 319 NPS Management Program Quality Assurance Program Plan. The plan serves as an overall quality assurance project plan for NPS projects funded by Section 319.
- DEP produced the "NPS Site Tracker", a Microsoft Excel spreadsheet and optional supporting tools used to record information about NPS sites in a watershed over time. The tool will help watershed groups undertake long term watershed stewardship work to find, fix, and maintain priority NPS sites. The tool can also be used to generate reports on accomplishments realized over years of work. For more information, see pages 11-12.
- DEP entered appropriate grant and project information into the EPA Grants Reporting and Tracking database (GRTS).

DEP Staff Services for Watershed Groups

DEP invests considerable staff resources to help watershed groups reduce nonpoint source water pollution. Some of the activities and projects that DEP supported in 2011 include:

- **Watershed Surveys** – A NPS Watershed Survey assesses a watershed to find, describe and prioritize NPS pollution sources and recommend BMPs needed at specific NPS sites to reduce polluted runoff to help protect water quality. DEP provides technical assistance and project oversight to local groups that conduct volunteer watershed surveys without Section 319 grant funding. In 2011, DEP provided assistance for surveys of the Loon Pond (Acton) and Northeast Pond (Milton, NH and Lebanon, ME) watersheds.

  DEP also completed a major revision of *A Citizen's Guide to Volunteer Lake Watershed Surveys*. This manual provides detailed guidance and sample documents to organizers of both 319-funded and non-319-funded lake watershed surveys. Available at: http://tinyurl.com/bpzsa3n. DEP also worked with the Volunteer Lake Monitoring Program to hold a workshop on conducting watershed surveys.



DEP encourages lake stewardship by providing guidance and technical assistance.

- **Watershed Association Support** – The DEP supports the work of lake watershed associations through presenting at annual association meetings and providing technical assistance. In 2011, DEP assisted the following groups without 319 project funding: Crystal Lake (Gray), Kezar Lake (Lovell), Mousam Lake (Acton), Quimby Pond (Rangeley), and Watchic Lake (Standish).

- **Watershed Roundtable** – Over 50 watershed managers from state agencies, municipalities, watershed organizations, and SWCDs attended the DEP's 9th 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 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.

YCC crew members help protect water quality one conservation practice at a time.

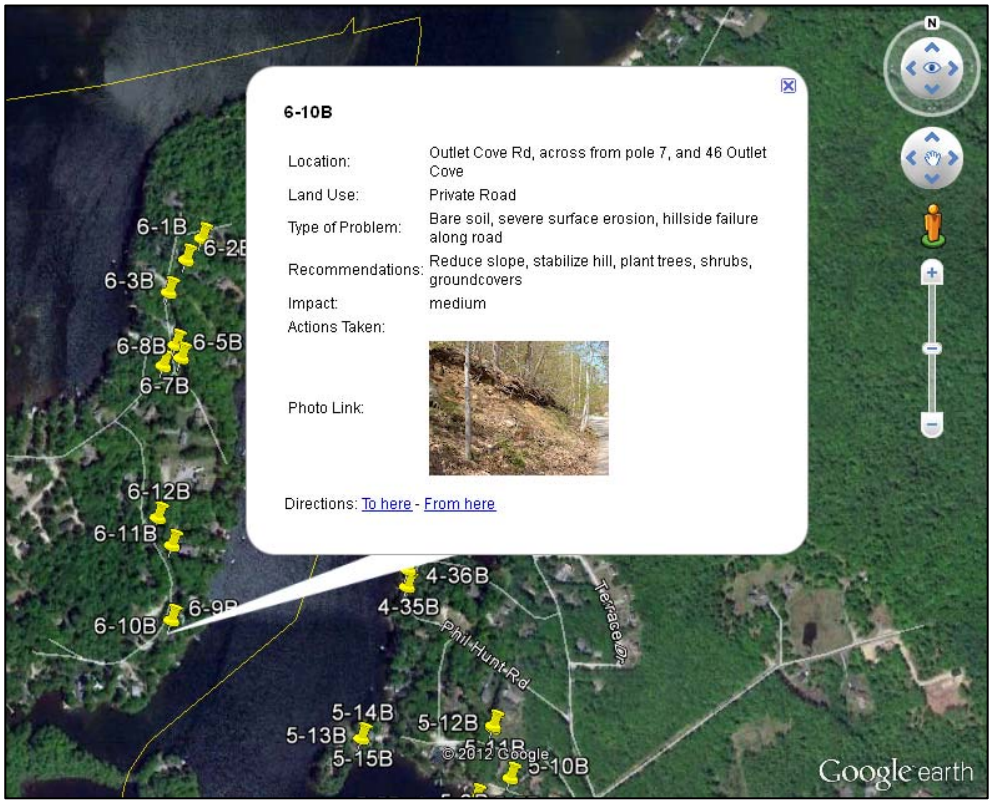
2. NPS Site Tracker Tool

Over the past 15 years, watershed surveys have been one of the most effective tools to help Maine communities identify and address NPS problems. Survey data is compiled and summarized in a report, which includes maps, photos, and a spreadsheet that lists key information about each identified NPS site. After each survey is completed, local groups usually start working to fix the NPS sites listed in the report. Since there are often over 100 NPS sites discovered in a given watershed survey and resources are limited, the watershed improvement process can take several years. During that time, new NPS sites appear on the landscape and some of the 'fixed' sites fall into disrepair due to lack of maintenance. With these moving targets, it is not surprising that groups tend to lose track of what problems are left to fix in the watershed. Depending on how much information was included in the survey report, it can also be challenging to even find the locations of some listed sites. After five to 10 years, groups often feel they no longer have a good handle on their watershed needs and consider conducting another watershed survey.

In 2011, DEP created the ***NPS Site Tracker*** to improve upon this approach and help groups efficiently accumulate information about NPS sites as part of ongoing watershed stewardship activities. At its core, the NPS Site Tracker is a basic MS Excel spreadsheet. Unlike a static list of watershed survey sites, the Site Tracker's Excel spreadsheet is intended to be a "living document" that is updated with NPS site information on an ongoing basis. Groups with more advanced skills and interests can also incorporate additional features such as site photos and links to Google Maps.

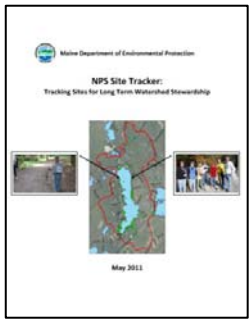
Site #	Land Use	Location	Description of Problem	Landowner & contact info.	Date Identified	Description of Work Completed	Date Fixed	Follow Up Visits and Maintenance Needs
1PR	Private Road	7th Street	Ditch back-slope failing; runoff flowing into stream.	John Doe phone # email	2008 Watershed Survey	Slope cut back, stabilized with ECM and planted with junipers. Ditch and settling basin installed.	2009	Visited on 7/1/10. ECM and plants well established. Settling basin needs to be cleaned out. Talked to road association.
3R	Residential	17 Pine Ave.	Erosion along roof dripline, lack of buffer and bare soil on sitting area.	Bob Smith phone #	2008 Watershed Survey	Landowner Tech assistance visit on 6/13/10.		Follow up to see if work done.

The NPS Site Tracker builds off standard watershed survey spreadsheets to include information about new sites or and sites that have been fixed over time. (See sample table above.) The Site Tracker also includes an optional tool that easily converts Excel spreadsheet data into a format that can be loaded directly into Google Earth or Google Maps. The resulting maps (see next page), show markers at each site location**.** You can click on any marker to view details (including photos) about each site.



DEP Resources and Assistance

The 17-page booklet, ***NPS Site Tracker: Tracking Sites for Long Term Watershed Stewardship*** (May 2011), is a resource to help groups learn about and customize a tracking tool that meets their needs. DEP plans to promote the use of this tool in 319-funded watershed surveys and watershed projects, and provide guidance to groups getting started with the tool. For more information, contact Wendy Garland, Maine DEP, wendy.garland@maine.gov or (207) 615-2451.



3. Summaries of Statewide NPS Programs

DEP directly funds several ongoing programs and projects using 319 funding. Programs are carried out by DEP staff or are implemented by partner organizations. This section provides descriptions of the following programs and accomplishments during 2011:

LakeSmart
Maine Lakes Biomanipulations
Maine Clean Boatyards and Marinas Program
Maine Volunteer Lake Monitoring Program
Maine Volunteer River Monitoring Program
Engineering Services
Statewide NPS Outreach
Maine Nonpoint Source Training and Resource Center
Maine Nonpoint Education for Municipal Officials

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.

LakeSmart Property

Accomplishments in 2011:

- Issued 100 LakeSmart Awards and another 170 commendation certificates to individuals that received high marks in between one and three of the four evaluation categories. Many additional property owners received commendations from their local association through the screener pilot program. To date, LakeSmart Award properties number 463.
- **Screeners Pilot Program –** This was the third year of a three-year pilot program with the Congress of Lake Associations to test the effectiveness of using volunteers to screen prospective properties. In 2011, 25 volunteers were trained as screeners on nine pilot lakes. Screeners visit properties, provide limited technical assistance, and recommend award-quality properties to the certified evaluators. This approach is expected to save money as well as expand the reach of the program. The pilot along with the regular LakeSmart program will be evaluated in the winter of 2012.
- Coordinated with the NPS training Center to provide training on LakeSmart landscaping and the evaluation and maintenance of gravel roads to over 90 participants.

For More Information:

Barb Welch, Maine DEP – (207) 215-9110, barb.welch@maine.gov
LakeSmart website – http://www.maine.gov/dep/water/lakes/lakesmart/

Maine Lakes Biomanipulation

This 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. 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 2011, and will continue in the spring of 2012.

Fish Processing

Accomplishments in 2011:

- Trap-netting removed a total of 11.1 tons of targeted fish species (compared to 10 tons in 2007; 2.3 tons in 2008; 1.6 tons in 2009; and 6 tons in 2010). By number of fish, 92 percent of the catch was made up of white perch (compared to 88 percent in 2007, 57 percent in 2008, 62 percent in 2009, and 83 percent 2010), along with 6 percent yellow perch and only 2 percent 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 0.5 percent of the catch (compared with 2 percent in 2007, 10 percent in 2008, 6 percent in 2009 and 0.7 percent in 2010).

- 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 Ph.D. graduate student Quenton Tuckett, and project technician Dennis Anderson. The Cooperative Agreement with the University of Maine, Orono will terminate on schedule on June 30, 2012 and limited direct DEP-319 contracts will be considered to further fund this post-TMDL implementation project in future years (2013-2015 post-fish removal study phase).

- Assessed fish assemblages monthly in East and North Ponds (June to September) using a standardized combination of active fishing gears including: pre-dusk sinking gill netting, expert baitfish angling, and nighttime beach seining. Tuckett and fish technicians tagged and released 2,000 white perch for mark-recapture studies and are in the process of re-estimating the adult white perch population (to be compared to 22,267 in 2007, 10,629 in 2008, 11,055 in 2009, and 4,844 in 2010).

- In 2010 an early ice-out occurring in late March and a warmer summer climate resulted in a productive growing season and multiple nuisance algal blooms on East Pond; in contrast, the more typical ice-out/growing season in 2011 resulted in very good water quality/transparency measures through Labor Day, with just a few weeks of nuisance algae blooms in mid to late September. 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 continues to be considerable improvement in water quality in terms of the length of time in the summer when water quality/clarity standards are achieved.

For More Information:

David Halliwell, Maine DEP – (207) 215-9343, david.halliwell@maine.gov
Melissa Evers, Maine DEP – (207) 215-3879, melissa.evers@maine.gov

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 and sedimentation control; boat maintenance and repair/ fueling activities/petroleum control; waste recycling, disposal and storage; and boat pumpouts and sewage management. The program provides technical assistance, conducts verification visits, and publicly recognizes facilities that meet award standards.

Jean & Margaret Beaulieu and crew at Classic Boat Shop in Bernard celebrate their designation as a Maine Clean Boatyard.

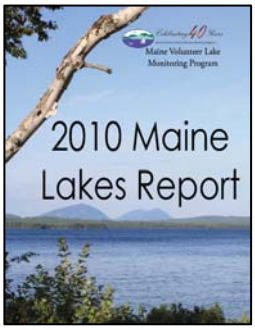
Accomplishments in 2011:

- Designated two new facilities and recertified three facilities. Conducted verification visits at two additional facilities that will continue to work towards certification.
- 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.
- Created a new checklist to better facilitate self-assessment and verification-team accuracy.

For More Information:

Norm Marcotte, Maine DEP- (207) 215-6277, norm.g.marcotte@maine.gov
Gerry Tiernan, Maine Marine Trades Association – (207) 773-8725, gtiernan@mainemarinetrades.com
Clean Marinas Website – www.mainemarinetrades.com/clean_marinas/default.asp

Maine Volunteer Lake Monitoring Program (VLMP)



Funding received under Section 319 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 partial funding for the annual meeting where information about lake water quality and monitoring topics is presented. Volunteers monitor assigned lakes twice a month for five to six months each year, enter data into electronic format, and assist in the local coordination of VLMP activities. The total match generated by the volunteers is more than double the Section 319 funding level.

Accomplishments in 2011:

- Produced the ***2010 Maine Lakes Report***, which reported that during 2010, volunteers obtained 3,765 Secchi transparency readings, 16,274 dissolved oxygen readings, 1,083 total phosphorus samples; and 574 chlorophyll-a samples. These data were collected from 401 lake stations on 332 lakes representing approximately 42percent of Maine's lake surface area.
- Produced three newsletters and convened the 2011 Annual Meeting, which was their 40th Anniversary Celebration attended by more than 110 people.
- Encouraged collection of transparency readings on days that the Landsat satellite passed Maine.
- Trained more than 34 new volunteers for transparency and two for dissolved oxygen, for a total of 419 volunteers certified to obtain Secchi transparency data and another 163 volunteers certified to collect both transparency and dissolved oxygen data. Recertified 47 volunteers for transparency, more than 80 volunteers for dissolved oxygen, and recertified 101 volunteers online using the Virtual Secchi Recertification tool.
- Reached a level of 582 certified volunteer water quality monitors in the program. These volunteers were monitoring 487 lake basins in Maine by the end of 2011.

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

The Volunteer River Monitoring Program (VRMP) began in 2009. Prior to that year a number of volunteer river groups were working independently, all using different sampling or analysis methods, data management systems, and quality assurance/quality control requirements. Other groups were interested in monitoring, but did not have the resources to do it on their own. The VRMP now provides technical support and resources to a network of volunteer groups. This support includes quality assurance services, training, volunteer certification, data archiving, and an annual water quality report.

Currently there are nine watershed groups throughout the Maine that are part of the VRMP Program. These groups monitor the Kennebunk and Mousam Rivers in south coastal Maine; the Presumpscot River in Cumberland County; Hart Brook and No Name Brook in the City of Lewiston-Androscoggin County; the lower Androscoggin River in mid-coast Maine; the Bagaduce River-a coastal river in eastern Maine; Penjajawoc Stream in the City of Bangor- Penobscot County; and the Prestile Stream in northern Maine-Aroostook County.

VRMP Accomplishments in 2011:

- The VRMP completed its third year. New training videos continue to be developed, and the program continues to evolve.
- Trained and certified or recertified volunteers associated with nine volunteer organizations on a number of small and major river and stream systems statewide.
- Monitors covered an area of over 1000 square miles of watershed. A total of 59 volunteers monitored 96 sites and completed 653 sampling events.
- Data collected included temperature, dissolved oxygen, conductivity, bacteria, turbidity, and total suspended solids.
- Water quality data report was completed in July 2011.

For More Information:

Mary Ellen Dennis, DEP – (207) 215-7946, mary-ellen.c.dennis@maine.gov
VRMP Website – www.maine.gov/dep/water/rivers-streams/vrmp/index.htm

Engineering Services

DEP's Engineering Services unit provides technical assistance and guidance to consultants, permit applicants and the general pubic. The five environmental engineers evaluate permit applications under the Site Location of Development Law, the Storm Water Management Law, and the Natural Resources

Protection Act. The staff are also available to the Section 319 Program, Soil and Water Conservation Districts, watershed associations, and other environmental organizations to offer technical assistance concerning erosion and sedimentation control, stormwater management, and phosphorus mitigation.

Accomplishments in 2011

- Reviewed project applications under the Storm Water and Site Location laws to ascertain whether the applications are satisfying the requirements of these laws. Staff evaluated the projects' engineering designs for site layout, stormwater management for quality and quantity, for environmental impact (wetlands, streams, steep slopes, and other environmental concerns), erosion control during construction, and for long-term maintenance and effectiveness. The unit reviewed between 150 and 200 projects this last year. Approximately 20-25percent of the projects reviewed were located within a lake watershed or within an impaired urban stream watershed.
- Participated in a stakeholder committee to evaluate the stormwater management rules and the phosphorus methodology and their implications on the environment, the landscape, and the quality of Maine surface waters as well as effects on landowners, commercial owners, developers, designers, engineers, contractors, and the public.
- Developed a training program for engineers through the Nonpoint Source Training Center. The training program covers current engineering topics such as new laws or DEP requirements, engineering design techniques, construction practices, and development plans. Continuing education credits are available for engineers completing the program.
- Maintained communication and facilitated discussions with engineers from towns that have delegation for Site and Stormwater permitting and for Soil and Water Conservation Districts that have an MOU to perform such permit review.
- Regularly developed, assessed or modified BMPs for stormwater management or site stabilization. The outcomes are new guidance standards, documents, and revisions to the Maine BMP design manuals. This past year, the following topics were addressed: shoreline stabilization, bioslope BMPs, the promotion of the new NRCC rain data for modeling stormwater quantity, and the review of the phosphorus methodology with a stakeholder group.

For More Information:

Marianne Hubert, Engineering Services Unit, (207) 215-6485, marianne.e.hubert@maine.gov
Stormwater BMP manual: http://www.maine.gov/dep/land/stormwater/stormwaterbmps/index.html
Erosion Control BMP manual: http://www.maine.gov/dep/land/erosion/escbmps/index.html

Statewide NPS Outreach

DEP's Statewide NPS Outreach program disseminates information to raise awareness and move people toward more environmentally friendly behaviors. DEP has developed partnerships with organizations having 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 2011:

- Supported the Southern Maine Children's Water Festival, which reached approximately 700 students and their teachers from 16 towns. AmeriCorps educators reached an additional 1,500 students with watershed protection messages in classroom presentations, Lake Days, and other events. Staff judged the aquatics section at two Envirothon regional competitions reaching 150 students.
- Distributed four issues of the Nonpoint Source Times, which recently completed its 20th year of publication. Back issues available at http://www.maine.gov/dep/land/newsletter/index.html
- As part of the ThinkBlue Maine Partnership, supported a three-week statewide media buy to air Ducky II - a TV ad encouraging people to reduce their use of lawn care products, particularly fertilizer. The ad emphasized that stormwater runoff washes excess fertilizer from lawns into streams or ponds, which often causes lower water quality.
- Purchased questions on a statewide phone survey conducted by a leading Maine market research company to evaluate the impact of Ducky II. It is clear from the survey results that the ad effectively conveyed the message and reached the target audience with respondents saying things such as: "The message was to reduce the amount of lawn chemicals you use, cut your grass higher, watch where your dogs poop and all that stuff."
- Participated in EPA's Watershed Academy's 60th Webcast titled *Conducting Effective Stormwater Outreach* on October 27, 2011. Presented information on how the ThinkBlue Maine Partnership produced and aired the Ducky II ad on TV. The webcast has been archived and can be viewed at http://tinyurl.com/8ytufhz.
- Continued 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 workshops on forming road associations were held in 2011, and technical assistance was provided to residents on 10 roads to form a road association and to 10 road associations to evaluate their road and develop a road maintenance plan.

For More Information:

Kathy Hoppe, DEP - (207) 551-3134, kathy.m.hoppe@maine.gov
Watershed and NPS Website – http://www.maine.gov/dep/land/watershed/index.html

Maine Nonpoint Source Training and Resource Center

The primary focus of DEP's "Maine Nonpoint Source Training and Resource Center" 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. The Joint Environmental Training Coordinating Committee (JETCC) provides some administrative assistance to the Center, coordinating course registration, assembling training materials, and completing other administrative tasks.

Accomplishments in 2011:

- Provided training to 586 participants in erosion and sediment control practices for contractors, and certified 260 additional individuals in the Voluntary Contractor Certification program.
- Coordinated a conference with 186 participants on Shoreline Stabilization to promote effective stabilization techniques to designers, engineers, municipal officials, and other groups.
- Coordinated training for 415 participants on the new wastewater disposal rules and the installation, design, and inspection of septic systems.
- Coordinated an Exam Review course and exam for the Certified Professionals in Erosion and Sediment Control resulting in four new individuals becoming CPESC certified. There are currently 66 individuals certified in Maine, more than any other state in New England except New Hampshire.
- Provided training to 94 individuals on LakeSmart landscaping and the evaluation and maintenance of gravel roads.
- Distributed over 217 copies of publications and 19 DVDs from the Center's Lending Library.

For More Information:

Bill Laflamme, DEP – (207) 215-9237, william.n.laflamme@maine.gov
NPS Training Center Website – http://www.maine.gov/dep/land/training/index.html

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.

Municipal officials learn about BMPs.

Accomplishments in 2011:

- Conducted 22 NEMO presentations attended by 912 people.
- Hosted two Eric Eckl workshops with 125 attendees in the Bangor Area focused on better communications and messaging. The "Water Words That Work" and "More Than A Message" workshops were met with rave reviews and follow-up surveys indicate that 79 percent of attendees had a better understanding of the variety of people in the general public, 86 percent understood how to better use photos as part of messaging, 68 percent had a better understanding of what language is easily understood by the general public, and 86 percent would recommend this training to colleagues.
- Participated in EPA Region 1 Impervious Cover- Total Maximum Daily Load (IC-TMDL) data collection and statewide meetings.
- Continued work on the EPA wetlands grant with the 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. To date, the project

has completed base maps for towns and polled the stormwater group for key indicators to utilize in evaluating development scenarios.

- Participated in the Salmon Falls Collaborative including presentations at three landowner workshops focused on conservation easements and forest planning, and a workshop for land use decision makers on the links between land use and water quality and the trade-offs between conservation and development.
- Presented at the National Groundwater and National Rural Water Annual Meetings on the effectiveness of LID at pollutant removal, presented the "Suck It Up and Soak It In" LID materials to the Maine Landscapers Association for member education credits.
- Assisted the Midcoast Region Planning Commission with presenting LID ordinance education for towns in the region.
- Partnered with Wells National Estuarine Research Reserve to offer and advertise multiple training opportunities and to pilot the Forging The Link Materials (linking economics and community resiliency for climate change with LID) along with UNH Stormwater Center, Virginia NEMO, and Antioch University.

For More Information:

LaMarr Clannon, PETE – (207) 771-9020, lcannon@maine.rr.com
Don Witherill, DEP – (207) 215-9751, donald.t.witherill@maine.gov
Maine NEMO Website – www.mainenemo.org

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 percent 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 five 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 2011

DEP provided grants for 12 NPS watershed projects. Ten projects received grants in January based on the outcome of the annual NPS Projects Request for Proposals DEP issued in April 2010.

Project Title	Grantee	Project #	Grant	Match
Annabessacook Lake Rehabilitation Project, Phase II	Cobbossee Watershed District	2011RT15	68,450	52,450
Capehart Brook Restoration	Bangor, City of	2011RT16	60,000	58,494
Capehart Brook Watershed Plan	Bangor, City of	2011RT17	5,000	0
Cochnewagon Lake NPS Watershed Implementation Project	Cobbossee Watershed District	2011RR02	81,005	63,365
Crescent Lake Conservation Project	Raymond, Town of	2011RR03	79,133	118,128
Crooked River Watershed Survey	Cumberland County Soil & Water Conservation District	2010PP19	28,244	26,429
Horne Pond (aka Pequawket) Watershed Survey	York County Soil & Water Conservation District	2011RR06	10,646	9,046
Long Pond NPS Watershed Project, Phase II	Belgrade Regional Conservation Alliance	2011RT07	99,500	88,544
Parker, David & Tilton Ponds Watershed Survey	30 Mile River Watershed Association	2011RR08	17,238	11,716
Pleasant River Watershed Implementation Project, Phase I	Cumberland County Soil & Water Conservation District	2011RT04	60,032	46,304
Square Pond Watershed Improvement Project, Phase II	York County Soil & Water Conservation District	2011RR01	54,853	57,350
Trout Brook: Development of Watershed Management Plan	South Portland, City of	2010PT20	35,300	61,220
		Totals	**$599,401**	**$593,046**

3. Request for Proposals: FFY 2012 Grants for NPS Pollution Control Projects

The NPS RFP reserved funds ($160,000) for NPS projects intended to help restore NPS-impaired waters. 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.

In April 2011, DEP issued the annual NPS RFP and in May DEP received 17 proposals requesting $712,762. 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 that the eight highest-ranked projects will be funded with FFY 2012 319 funds. DEP worked with grantees as needed to adjust work plans to secure approved grant agreements (contracts). DEP planned to complete grant agreements to enable start-up of projects by February 2012.

Results – Request for Proposals

FFY 2012 Grants for NPS Water Pollution Control Projects

Project Type	*Funds Requested*	*Funds to be Awarded*
NPS Watershed Implementation Project	$549,924 9 proposals	$309,241 5 proposals
NPS Watershed Survey or Watershed Planning	$162,838 8 proposals	$44,330 3 proposals

NPS Projects to be Awarded Grants by February 2012

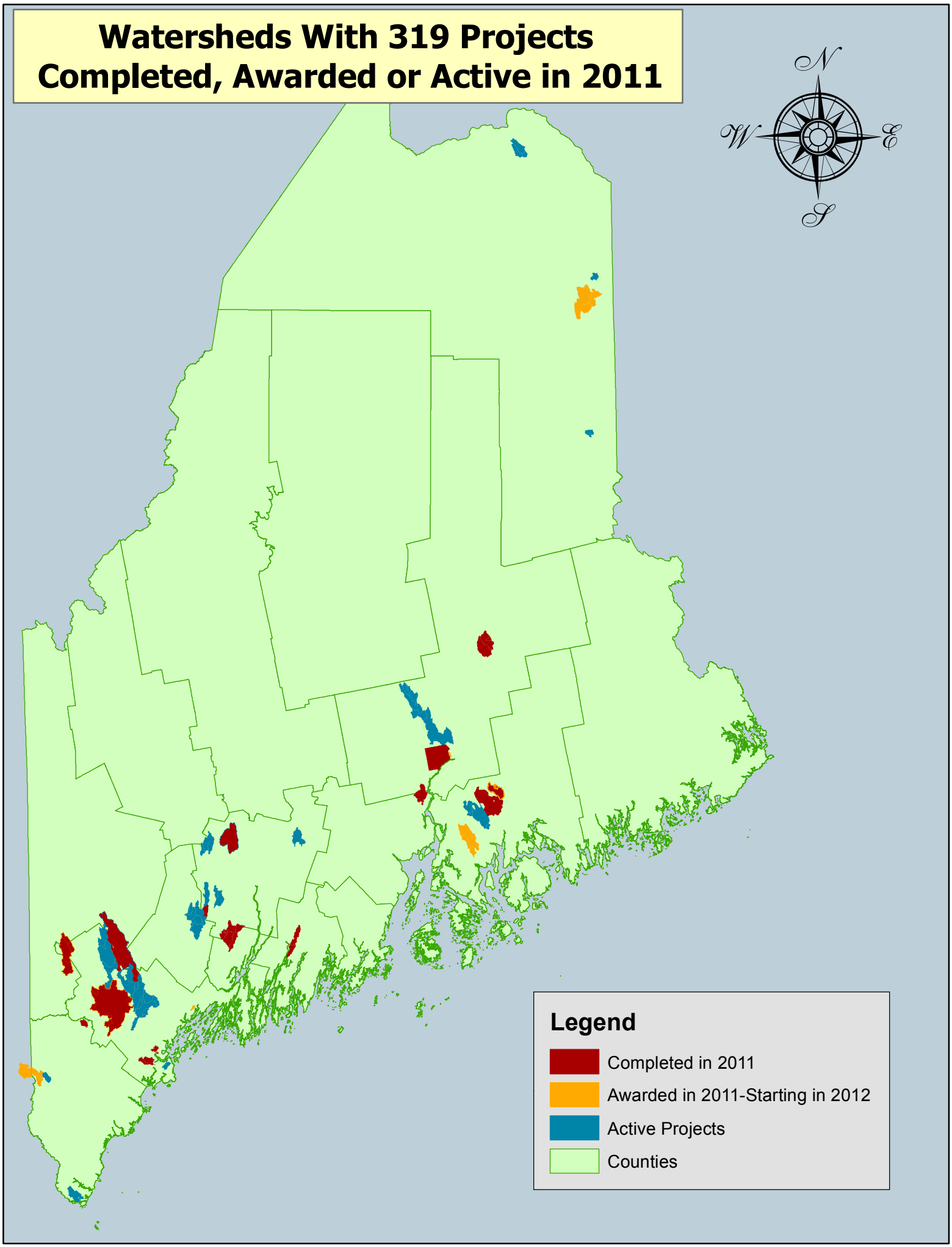
NPS Watershed Implementation Projects			
Project	*Grantee*	*Grant*	*Match*
Great East Lake and Wilson Lake Watershed Implementation (Phase I Maine)	Acton Wakefield Watersheds Alliance	67,641	88,355
Beech Hill Pond Watershed Improvement Project	Hancock County Soil & Water Conservation District	58,125	38,770
Moose Pond Watershed Implementation Project Phase I	Cumberland County Soil & Water Conservation District	60,371	42,068
Sebago Lake Conservation Project – Phase I	Portland Water District	86,484	96,253
Penjajawoc Hot Spot Remediation	City of Bangor	36,620	25,430
	Subtotal	**$309,241**	**$290,876**
NPS Watershed Planning or Surveys			
Upper Prestile Stream Main stem 1 Watershed Survey	Central Aroostook Soil & Water Conservation District	7,336	6,495
Toddy Pond Watershed Survey	Hancock County Soil & Water Conservation District	17,055	12,000
Concord Gully Watershed Survey Proposal	Town of Freeport	19,939	15,844
	Subtotal	**$44,330**	**$34,339**
	Total	**$353,571**	**$325,215**

F. Summaries of NPS Water Pollution Control Projects Completed in 2011

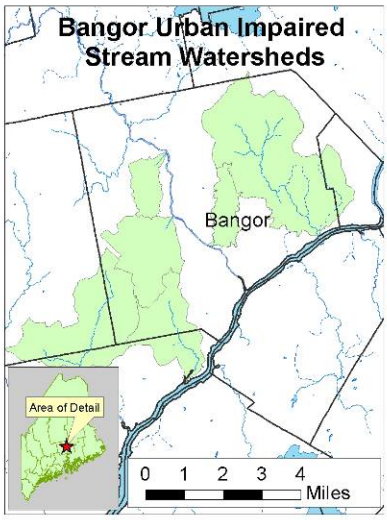
Fifteen projects funded through the NPS grants program were successfully completed in 2011. Concise two-page summaries of each project are included in the following pages and will be uploaded to the Knowledgebase database, http://www.gulfofmaine.org/kb/2.0/search.html. Additional project information can be obtained from the DEP or the project grantee. The map on the following page shows the locations of watersheds with NPS projects awarded, completed or underway in 2011.

Project Title	Page Number
Bangor Stormwater Utility Planning (ARRA)	24
Beech Hill Pond Watershed Survey	26
Capisic Brook Watershed Management Plan (ARRA)	28
Coldstream Pond Watershed Survey	30
Dyer River Watershed NPS Survey	32
Green Lake Watershed Improvement Project - Phase I	34
Horne Pond Watershed Survey	36
Long Creek: Property Evaluations & Program Develop (ARRA)	38
Long Pond NPS Watershed Project – Phase I	40
Moose Pond Watershed Survey	42
Pleasant Lake / Parker Pond Conservation Project	44
Pleasant Pond NPS Abatement: Phase 3 Agricultural BMPs	46
Red Brook Watershed-based Management Plan (ARRA)	48
Sebago Lake Conservation Project – Phase I	50
Thompson Lake Watershed Survey – Southern Section	52

Watersheds With 319 Projects Completed, Awarded or Active in 2011



Bangor Stormwater Utility Planning
#2009SP01



Waterbody Name:	Arctic Brook, Birch Stream, Capehart Brook, Penjajawoc Stream, Shaw Brook, Sucker Brook
Location:	Bangor – Penobscot County
Waterbody Status:	Urban Impaired Streams
Project Grantee:	City of Bangor
Project Duration:	August 2009 – July 2011
ARRA 604(b) Grant:	$70,000
Local Match:	$93,254

PROBLEM:

The Maine DEP has identified six streams in Bangor as impaired as a result of nonpoint source pollution from urban development. Bangor has completed three watershed management plans and will need to develop plans for the remaining three watersheds. Developing the plans and implementing all six of them will require additional funding. To expedite the implementation of retrofits, the City would like to fund 100 percent of the cost of construction of priority retrofits on private and public properties as well as in-stream and riparian recommendations that are listed in the watershed plans. Simultaneously, new state requirements for stormwater management and aging stormwater infrastructure are increasing the cost of providing services to the public. This project allowed City staff to investigate and take steps to prepare the necessary information that Bangor officials need to make important decisions about how to manage and fund water quality protection and stormwater management through a stormwater utility.

PROJECT DESCRIPTION:

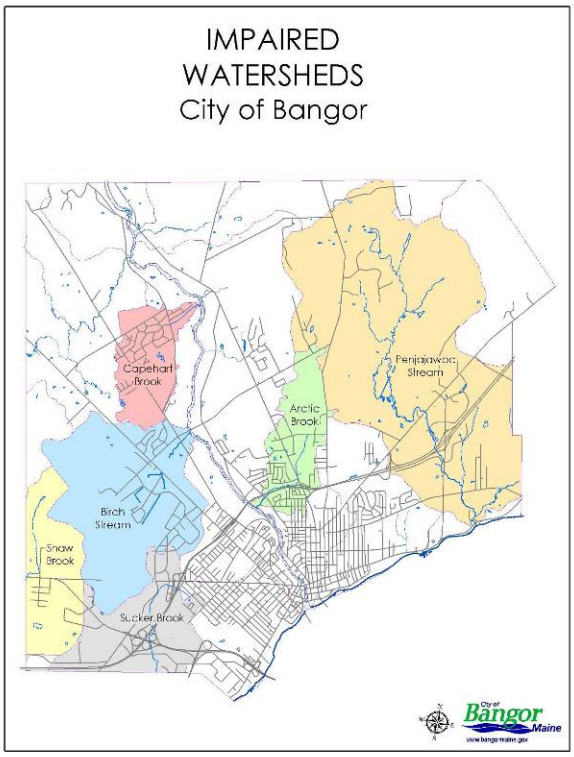
With input from consultants and stakeholders, the City of Bangor identified and examined key components, complex issues, and concerns associated with forming and funding a stormwater utility. The project used focus groups to help develop an outreach strategy. The City explored three distinct funding and administrative options. They developed white papers exploring such issues as credits, sidewalks and aprons, governance through the city or a separate entity, and the cost of implementing watershed plans. An impervious cover map was developed and the amount of imperviousness in different watersheds was calculated by land use.

Stormwater Utility Citizen Review Panel

Throughout the process, City staff met with owners of large impervious areas, owners of multi-residential units, local stakeholder groups, and a citizen's advisory council; gave presentations to community groups; and posted information on their website. The project analyzed current spending on stormwater programs and developed an ideal budget and an organizational analysis. They found that tasks are currently carried out with a widely varying amount of funding from multiple departments and programs.

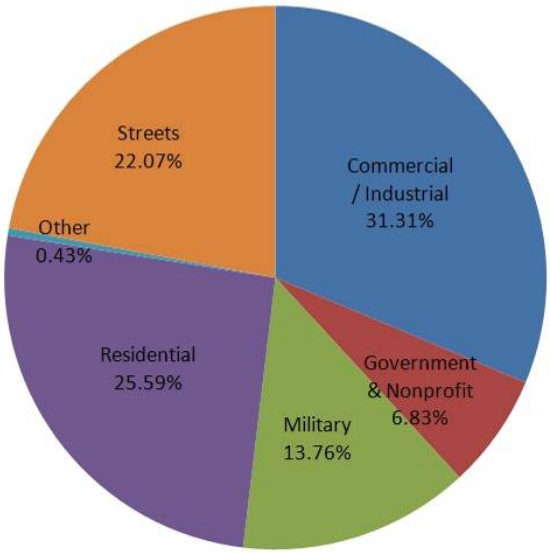
PROJECT OUTCOMES:

- The project developed and implemented a Public Outreach Plan, which included outreach tools such as PowerPoint presentations, a website, and an FAQ factsheet.
- A Rate Study and Budget/Cash Flow Model with a five and 10-year program funding strategy was developed.
- Governance and policy statements were summarized.
- Impervious cover maps were created, and an ERU (equivalent residential unit) was calculated.
- A master account file report that summarizes the total number of billing units, the top 50 rate payers and policy statement for billing exceptions. A rate ordinance was also developed.



PROJECT PARTNERS:

James W. Sewall Company
Packard Judd Kaye

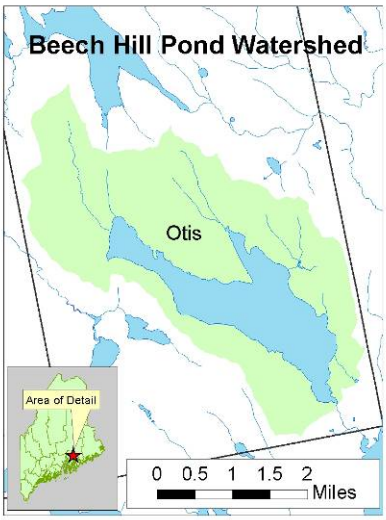


Total Impervious Area:	161,397,122 SF
Total Land Area of Bangor:	959,711,825 SF
Percent Impervious:	16.8%

CONTACT INFORMATION:

Kathy Hoppe, Maine DEP – (207) 540-3134 kathy.m.hoppe@maine.gov
Wynne Guglielmo, City of Bangor – (207) 992-4255, wynne.guglielmo@bangormaine.gov
http://www.bangormaine.gov/index.php?id=2&sub_id=1327

Beech Hill Pond Watershed Survey
#2009PP19



Waterbody Name:	Beech Hill Pond
Location:	Otis – Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County SWCD
Project Duration:	December 2009 – March 2011
604(b) Grant Amount:	$12,899
Local Match:	$9,197

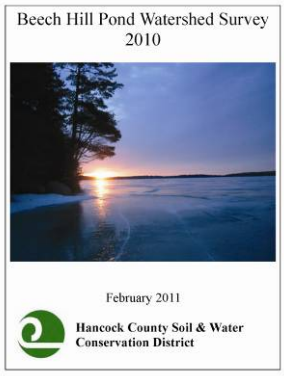
PROBLEM:

Beech Hill Pond is a 1,422 acre lake that has a direct drainage area of 8.56 square miles. The lake outlet, Beech Hill Stream, flows into Graham Lake. Beech Hill Pond has a public boat launch and beach and is a popular recreation area for swimming, boating, fishing, and floatplane flying. The Maine State Record Lake Trout weighing in at 31 pounds, 8 ounces was caught in Beech Hill Pond in 1958.

Since 1974 water quality data has been collected for Beech Hill Pond by the Maine DEP and the Volunteer Lake Monitoring Program. The water quality of Beech Hill Pond is considered to be above average and the potential for nuisance algae blooms is low. However, the recent increase in watershed development has heightened concerns about lake water quality and impacts from NPS pollution. The Beech Hill Pond Association (BHPLA) formed in 2008 to educate and inform members how to preserve and improve Beech Hill Pond and its watershed. Since then, the group has been actively monitoring lake water quality and conducting invasive plant patrols. In 2010, many lake residents participated in the University of Maine Cooperative Extension (UMCE) Watershed Stewards Program in the town of Otis.

PROJECT DESCRIPTION:

The purpose of the project was to identify and prioritize existing sources of polluted runoff in the Beech Hill Pond watershed and raise local awareness about the impact of soil erosion on lake water quality. The survey was managed by Hancock County SWCD and guided by a steering committee that included representatives from BHPLA, DEP, the Town of Otis, watershed residents, and UMCE.



The watershed survey was conducted by project staff and 24 volunteers, including watershed residents and participants in the Watershed Stewards Program. Survey methods were based on those outlined in Maine DEP's *A Citizen's Guide to Lake NPS Watershed Surveys.* A mailing was sent to 790 residents in Otis to inform them about the project and increase awareness of NPS issues in the watershed. The survey report will be used to plan future restoration projects and to attract local support for developing and conducting a NPS Watershed Project.

PROJECT OUTCOMES:

- The entire Beech Hill Pond watershed was surveyed during the project. Project staff and volunteers identified and documented 167 NPS sites, including 115 sites on residential properties and 52 sites on private roads.

- The *Beech Hill Pond Watershed Survey Report* was completed in February 2011. The report summarizes the findings of the watershed survey and includes information on the number and type of sites, the severity of each site's erosion problems, recommended fixes, impacts to the lake, and the cost and technical level to fix the problem. Available at: http://tinyurl.com/73msov3

- Project staff estimated that the annual pollutant loading from the 12 worst sites in the watershed totaled 242 tons of sediment and 206 pounds of phosphorous (Region 5 Method).

- The project laid the foundation for watershed mitigation efforts in the watershed. HCSWCD was awarded a 319 grant for the *Beech Hill Pond Watershed Improvement Project – Phase I*, which will begin in March 2012.

An eroded channel carries sediment directly into Beech Hill Pond.

A volunteer helps document an erosion site on a private road.

PROJECT PARTNERS:

Beech Hill Pond Lake Association
Town of Otis
Beech Hill Pond Watershed Stewards
University of Maine Cooperative Extension

CONTACT INFORMATION:

Greg Beane, DEP – (207) 299-4703, greg.e.beane@maine.gov
Megan Facciolo, Hancock County SWCD – (207) 667-8663, megan.facciolo@me.nacdnet.net

Capisic Brook Watershed Management Plan
#2009SP04

Waterbody Name: Capisic Brook

Location: Portland, Westbrook – Cumberland County

Waterbody Status: Urban Impaired Stream

Project Grantee: City of Portland

Project Duration: September 2009 – September 2011

ARRA 604(b) Grant: $97,795

Local Match: $55,968

PROBLEM:

Capisic Brook is located on the west side of Portland and drains a watershed of approximately 1400 acres to the Fore River. Land uses are primarily residential development with significant commercial and light industrial development. About 31 percent of the watershed is covered by impervious surfaces. The brook is considered impaired because it does not attain Class C water quality standards. Maine DEP designated it as an urban impaired stream under Chapter 502 of the Maine Stormwater Management Rules.

In upstream sections near Evergreen Cemetery, Capisic Brook has a healthy macroinvertebrate community, good water quality, and adequate habitat. The downstream station above Capisic Pond has impaired biota, poor water quality, and degraded habitat. Impairments are caused by polluted stormwater runoff and increased peak flows due to the extensive impervious cover and combined sewer overflows. Since 1996, Portland has made significant progress toward the separation of the sanitary and storm sewer systems. These efforts are expected to be completed over the next several years.

PROJECT DESCRIPTION:

In 2009, Maine DEP awarded Portland an American Recovery and Reinvestment Act (ARRA) grant to develop a watershed restoration plan that focuses on addressing the many causes of stormwater pollution in the Capisic Brook watershed. Steps in the plan development included the following:

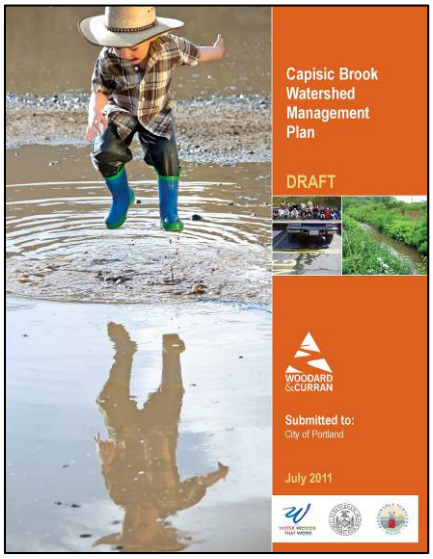
1. Determine watershed restoration needs through a review of existing studies and resources;
2. Identify and engage key watershed stakeholders in the planning process;
3. Utilize community social marketing research to develop a targeted marketing strategy;
4. Identify opportunities within the brook corridor to improve recreation and community space;
5. Identify specific structural and nonstructural stormwater improvement projects;
6. Outline an appropriate financing strategy for plan implementation; and
7. Develop a program to monitor for water quality improvements.

PROJECT OUTCOMES:

- The *Capisic Brook Watershed Management Plan* was completed in July 2011 as a final draft pending review and adoption by the Portland City Council. It is anticipated that the plan will be submitted to the City Council for formal adoption in 2012.
- A structural stormwater retrofit inventory was completed following guidelines developed by the Center for Watershed Protection. Priority was given to drainage areas with the most impervious cover, roadway miles, and known stormwater "hot spots" such as the Exit 48 commercial area, Riverside Street, Sagamore Village, and Warren Avenue. Detailed plans and cost estimates for structural stormwater retrofit projects were incorporated into the plan.
- Woodard & Curran worked with city staff to characterize the costs associated with existing stormwater management, MS4 General Permit compliance, combined sewer overflow (CSO) abatement efforts, stormwater retrofit projects, and other actions proposed in the plan. The total capital cost to implement the plan is estimated at $18 million. The project team explored potential financing options for implementation of the plan. Final recommendations are incorporated into the plan.
- Portland, with the support of Cumberland County SWCD, was awarded a grant from the Casco Bay Estuary Partnership to survey residential landowners to gain a basic understanding of the level of public awareness of stormwater and watershed issues. A consultant, *Water Words That Work*, used results of the survey to create a social marketing program to encourage residential landowners to adopt stormwater pollution prevention BMPs. It would become the *Greener Neighborhoods, Cleaner Streams* program, now being implemented by the City. The plan also recommended development of a voluntary commercial/industrial pollution prevention program for the watershed.
- Portland also explored a variety of planning and policy issues, developing recommendations for reducing the impacts of impervious surfaces through its technical and design standards, and land use code. City planners also recommended expansion of the Stream Protection Overlay Zone along critical sections of the brook to protect wetland/riparian areas.

PROJECT PARTNERS:

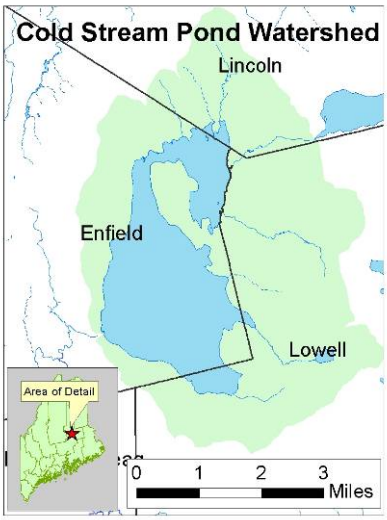
Casco Bay Estuary Partnership
City of Westbrook
Cumberland County SWCD
Friends of Casco Bay/Baykeeper
Maine Department of Transportation
Maine Turnpike Authority
University of Maine
University of Southern Maine
Water Words That Work
Woodard & Curran, Inc.



CONTACT INFORMATION:

Douglas Roncarati, City of Portland – (207) 874-8848, DAR@portlandmaine.gov
Jeff Dennis, Maine DEP – (207) 215-6376, jeff.dennis@maine.gov

Cold Stream Pond NPS Watershed Survey
#2010RR15



Waterbody Name:	Cold Stream Pond and Upper Cold Stream Pond
Location:	Enfield, Lincoln, Lowell – Penobscot County
Waterbody Status:	NPS Priority Watershed (Cold Stream Pond)
Project Grantee:	Penobscot County SWCD
Project Duration:	January 2010 – January 2012
604(b) Grant Amount:	$9,600
Local Match:	$12,575

PROBLEM:

Cold Stream Pond is a 3,619-acre pond with a watershed of 21.7 square miles. The lake supports a coldwater fishery and is a highly valued ecological and recreational resource in the area. As a result, watershed towns, Maine Department of Inland Fisheries and Wildlife (IF&W), and Maine DEP have coordinated to monitor pond water quality since 1970. The lake's larger, primary basin has excellent water quality with an average clarity of 10.2 meters and minimal oxygen depletion. Water quality in the smaller north basin is considered above average with water clarity of 6.9 meters and low to moderate oxygen depletion in late summer months.

The lake's western shoreline has been heavily populated with camps and year-round homes for decades, and the eastern shoreline was historically forested with periodic timber harvesting. However in recent years, the eastern shore has also been developed for residential purposes. The lake's shoreline is now developed with about 425 homes, two public boat launches, a public beach, and the nearby Lakeside Camping and Cabins. The Cold Stream Pond Campowners Association formed in 1994 to educate the public about water quality protection. In 1999, a watershed survey was conducted for Cold Stream Pond.

PROJECT DESCRIPTION:

The overall goal of the Penobscot County Soil and Water Conservation District's efforts in this watershed is to protect and maintain Cold Stream Pond's excellent water quality. As a first step to reaching this goal, the District led a watershed survey using methods from Maine DEP's *A Citizen's Guide to Lake Watershed Surveys*. Volunteers from the University of Maine's Watershed Stewards Program received training in survey methods and conducted the survey in the spring and summer of 2010. Since some grant funds remained after completing the survey, a survey of the Upper Cold Stream Ponds watershed was completed in 2011. Project staff completed follow-up evaluations and produced the final watershed survey reports, which were shared with all key stakeholders.

Making buffer T-shirts at the Upper Cold Stream Ponds Association Annual Meeting

PROJECT OUTCOMES:

- Project staff and local volunteers surveyed the entire Cold Stream Pond and Upper Cold Stream Ponds watersheds. The Cold Stream Pond survey identified 142 NPS sites, and Upper Cold Stream Ponds survey identified 163 NPS sites.

- This project created watershed survey reports for both Cold Stream Pond and Upper Cold Stream Ponds. The *Cold Stream Pond Watershed Survey Report* is available at http://www.coldstreampond.com/uploads/Watershed_Survey_Report.pdf.

- Letters including information about the grant and watershed survey results were sent to 776 landowners in the watershed.

- Fourteen local residents of Upper Cold Stream Ponds and Cold Stream Pond graduated from the University of Maine Cooperative Extension's Lake Stewards program.

- Outreach Plans were completed for the Cold Stream Pond Campowners Association and for the Upper Cold Stream Ponds Association.

Typical NPS site associated with gravel camp roads, documented during the survey.

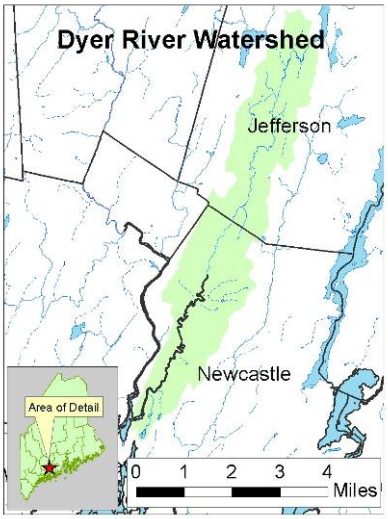
PROJECT PARTNERS:

Cold Stream Pond Campowners Association
Town of Enfield
University of Maine Cooperative Extension
Upper Cold Stream Ponds Association
Town of Lincoln

CONTACT INFORMATION:

Greg Beane, Maine DEP – (207) 299-4703, greg.e.beane@maine.gov
Chris Brewer, PCSWCD – (207) 990-3676, chris.brewer@penobscotswcd.org

Dyer River Watershed NPS Survey Project
#2010RT16



Waterbody Name: Dyer River

Location: Jefferson and Newcastle – Lincoln County

Waterbody Status: Impaired

Project Grantee: Sheepscot Valley Conservation Association

Project Duration: January 2010 – April 2011

319 Grant Amount: $13,000

Local Match: $10,000

PROBLEM:

The Dyer River is located in mid-coast Maine and is a tributary of the Sheepscot River. Flowing from the outlet of Dyer Long Pond for 12.84 miles, the upper portion of the Dyer River is freshwater while the lower portion is tidal estuarine. Much of the 10.2 square mile watershed is rural and forested, but there is also some agriculture and residential development. Recreation includes fishing, kayaking, and canoeing. Atlantic salmon, alewife, and eel fisheries in the Sheepscot River are listed as endangered species under the Federal Endangered Species Act.

The Dyer River does not meet its Class B classification and is listed as impaired by bacteria and low dissolved oxygen. The river is included in the Maine Statewide Bacteria TMDL. An NPS survey conducted as part of the development of the 319-funded *Sheepscot River Watershed Management Plan* (2007) identified roads as a primary NPS source throughout the Sheepscot watershed. However, that survey did not focus on sources of bacteria, the major cause of the Dyer's impairment.

PROJECT DESCRIPTION:

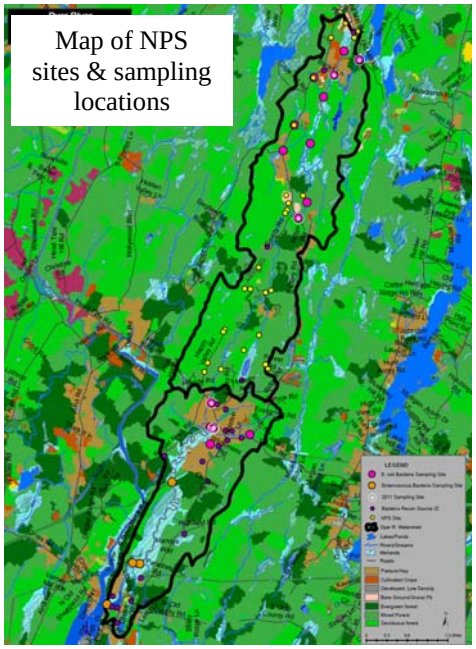
The purpose of this project was to identify bacteria sources and NPS sites in the Dyer River Watershed that contribute to bacteria contamination and sediment and nutrient loading. The survey project consisted of a stream corridor survey, watershed NPS survey, and bracketed bacteria sampling.

In the summer and fall of 2010, a survey team walked or canoed the entire stream length, conducting a modified Stream Corridor Survey and watershed/NPS survey based on Maine DEP's *Stream Survey Guidance for NPS Projects* and *Stream Survey Manual*. Bacteria sampling was conducted in an effort to bracket the location and extent of bacteria sources. Stream and watershed surveys found that the riparian corridor is, for the most part, forested or in wetlands with little residential or commercial development along stream banks, and with moderate NPS issues. Bacteria testing, however, found several high bacteria sites and these appear to be associated with agricultural sources, although septic and wildlife sources may also be present.

Upper Section of the Dyer River

PROJECT OUTCOMES:

- The project completed extensive surveys of the Dyer River watershed, including a watershed survey, stream corridor survey, bacteria source reconnaissance and an aerial survey from a small plane (provided at no cost to the grant or the grantee).
- The watershed survey documented 18 NPS sites with a rating of high or medium impact to water quality. These sites were primarily gravel roads, active and recent forestry sites, and gravel pit activity.
- Bacteria monitoring was conducted in the Dyer River and its tributaries during seven sampling events. Several locations were identified with bacteria levels exceeding state criteria.
- In March 2011, the project completed the *Dyer River Watershed Bacteria and NPS Survey Report*, which describes the survey methods, findings, and recommendations. A public factsheet, *Dyer River Watershed Survey – Facts and Figures*, was also created for more widespread distribution.
- Momentum from the grant resulted in continued discussion and information exchange between the local organizations, DEP, and the Maine Department of Agriculture.



Map of NPS sites & sampling locations

Aerial view of the Dyer River

Large NPS erosion site

Lower section of the Dyer River

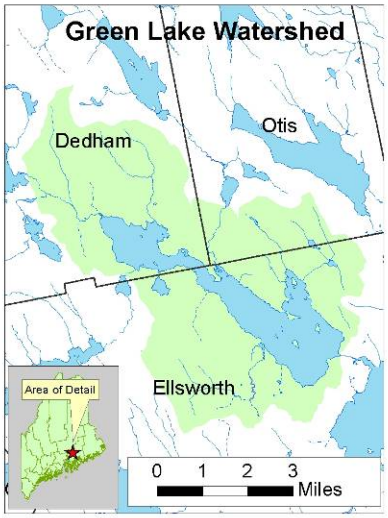
PROJECT PARTNERS:

Sheepscot River Watershed Council
FB Environmental Consultants

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 215-3461, kristin.b.feindel@maine.gov
Maureen Hoffman, SVCA, (207) 586-5616, maureen@sheepscot.org, www.sheepscot.org

Green Lake Watershed Improvement Project – Phase 1
#2009RR01



Waterbody Name:	Green Lake
Location:	Dedham, Otis, Ellsworth – Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County SWCD
Project Duration:	April 2009 – October 2011
319 Grant Amount:	$50,685
Local Match:	$61,778

PROBLEM:

Green Lake covers 3,132 acres and has a direct watershed extending 21.4 square miles. The lake has one City-owned boat launch and two private boat launches. Green Lake supports heavy, year-round recreational use, in part since it is one of the eight original locations of landlocked salmon in Maine and home to the southernmost population of arctic charr. Water quality data has been collected for Green Lake since 1974. The water quality is considered above average, and the potential for nuisance algae blooms is low. However, there is dissolved oxygen depletion in some areas in late summer months.

In 1999, a watershed survey was conducted, and in 2001, Green Lake and Phillips Lake received a 319 Grant to install BMPs at major problem areas identified in the watershed survey. Through this grant, BMPs were installed around Green Lake at 14 NPS sites and project staff completed 17 technical assistance visits with watershed landowners. In 2006, University of Maine Cooperative Extension (UMCE) completed a survey update focused on roads and identified 57 road-related sites that still required erosion control measures. A Rainy Day Survey conducted by Hancock County SWCD also highlighted high priority sites and the need for erosion and sediment control.

PROJECT DESCRIPTION:

The Phase I project focused on reducing sediment loading to Green Lake by fixing high and medium priority road sites from recent surveys. Phase I also included a public boat launch stabilization project and a 50 percent cash match and technical assistance program to encourage residential properties to install conservation practices such as vegetative buffers or water diverters on driveways.

Buffer strip planted at Sunset

At the beginning of the project, UMCE led a session to identify outreach priorities. The resulting education and outreach plan will guide education activities and implementation efforts. Project information was advertised through presentations at the Green Lake Association's annual meetings, press releases, and the Hancock County SWCD's biannual newsletter and website.

PROJECT OUTCOMES:

- The project addressed NPS issues at 20 road sites and eight residential sites in the western half of the watershed to reduce erosion and help protect water quality.
- Project work helped reduce annual pollution loading to Green Lake by an estimated 325 tons of sediment, 276 pounds of phosphorous, and 552 pounds of nitrogen (Region 5 Method). In addition, an estimated 432 feet of shoreline was protected or restored around the lake.
- A long range plan for meeting education/outreach needs in the Green Lake Watershed was developed.
- Five outreach activities were conducted through the project, including a mailing to increase GLA membership; a Lake Day Event with a BBQ and MLCI boat cruise; a survey of knowledge levels; a campaign to raise awareness of the LakeSmart program; and Buffer Boat Cruises for Ellsworth and Dedham/Lucerne town officials and planning board members.

Nicolin Road boat launch before stabilization

Nicolin Road boat launch after stabilization

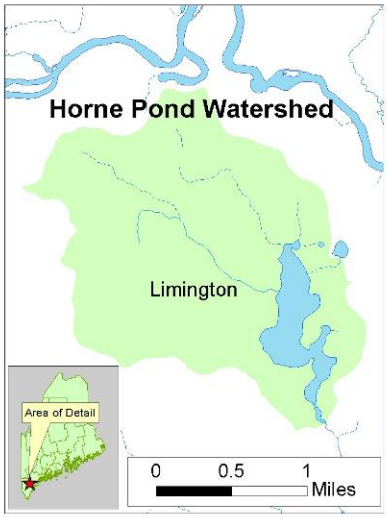
PROJECT PARTNERS:

City of Ellsworth
Town of Dedham
University of Maine Cooperative Extension
Green Lake Association
Town of Lucerne

CONTACT INFORMATION:

Greg Beane, Maine DEP – (207) 299-4703, greg.e.beane@maine.gov
Megan Facciolo, Hancock SWCD – (207) 667-8663, megan.facciolo@me.nacdnet.net

Horne Pond Watershed Survey
#2011RR06



Waterbody Name: Horne Pond

Location: Limington – York County

Waterbody Status: NPS Priority Watershed, Most at Risk

Project Grantee: York County SWCD

Project Duration: February 2011 – January 2012

604(b) Grant Amount: $10,646

Local Match: $9,123

PROBLEM:

Horne Pond (locally known as Pequawket Lake) covers 139 acres and has a direct watershed of 2.8 square miles. The lake flows into the Little Ossipee River and is part of the larger Saco River watershed. Horne Pond is developed with 177 seasonal and year-round residences and the Town's Moy-Mo-Da-Yo Beach area, which covers 36 acres and includes a boat launch, parking, swimming, and summer camp facilities. The Town formed the Moy-Mo-Day-O Beach Recreation Oversight Committee in 2007 to oversee further development of the park's day uses, overnight camping, and boat access.

Water quality monitoring has been conducted on the lake since 1980. The lake's water quality is considered above average with water clarity of 6.2 meters. However, recent dissolved oxygen profiles show low to moderate depletion in deep areas of the lake. In 1996, the Pequawket Lake Preservation Association (PLPA) formed to monitor, protect, and preserve the lake's water quality. The Town of Limington and Beach Oversight Committee have done some work to stabilize eroded area and reduce runoff into the lake.

PROJECT DESCRIPTION:

The purpose of the project was to identify, document, and prioritize soil erosion sites in the Horne Pond watershed. Survey methods were based on those outlined in the DEP publication, *Citizen's Guide to Lake Watershed Surveys*. Letters were sent to all 270 watershed property owners to notify them of the survey and invite their participation in the project. In June 2011, 35 volunteers participated in the training session and field survey.

Erosion on Moy-Mo-Da-Yo Beach

In total, 48 erosion sites were identified in the watershed. Survey data was summarized in the *Horne Pond (Pequawket Lake) Watershed Survey Report* (December 2011). Survey reports were distributed to town officials and interested residents and posted on partner websites.

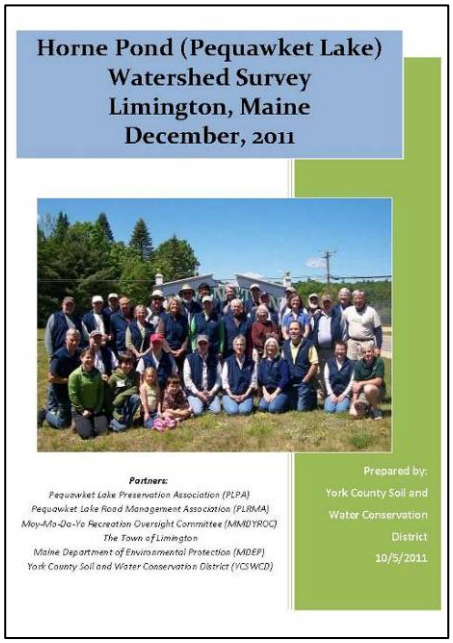
PROJECT OUTCOMES:

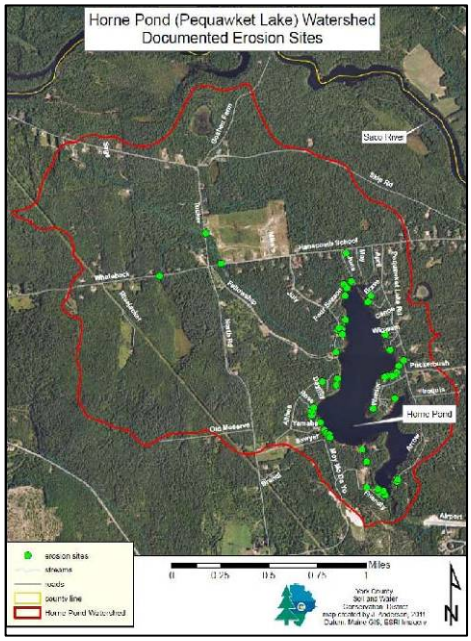
- Project staff and volunteers surveyed the entire Horne Pond watershed and documented 48 erosion sites. Of these, 68 percent (32 sites) were associated with residential properties and another 18 percent (nine sites) were associated with town and private roads. The remaining seven sites were found on driveways (four sites), the town beach area (two sites), and a logging area.

- The *Horne Pond (Pequawket Lake) Watershed Survey Report* was completed in December 2011. The report summarizes watershed survey findings and lists specific recommendations for identified sites.

- The survey project helped launch PLPA into a more proactive leadership role. PLPA added language to their by-laws stating that members must inspect their septic systems once every five years and then worked with a local septic company to provide discounts. In 2011, 14 members took advantage of the discounts. Two of the systems were found to be failing and were replaced by the owners.

- PLPA and project staff met with Maine Forest Service (MFS) officials to clarify cutting recommendations of their 'Firewise' program that were inconsistent with Limington shoreland zoning and the watershed survey report. This meeting resulted in a MFS policy change in program guidelines for vegetation removal within the shoreland zone.





PROJECT PARTNERS:

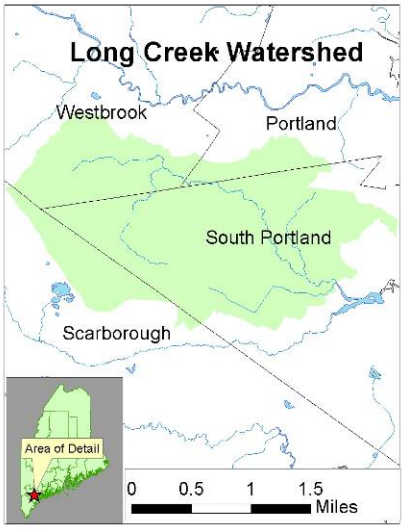
Moy-Mo-Day-O Beach Recreation Oversight Committee
Pequawket Lake Preservation Association
Town of Limington

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 615-2451, wendy.garland@maine.gov

Joe Anderson, York County SWCD – (207) 324-0888, janderson@yorkswcd.org

Long Creek Property Evaluations & Program Development
#2009SP02



Waterbody Name:	Long Creek
Location:	Portland, South Portland, Scarborough, Westbrook – Cumberland County
Waterbody Status:	Urban Impaired Stream
Project Grantee:	Cumberland County SWCD
Project Duration:	September 2009 – September 2011
ARRA 604(b) Grant:	$90,000
Local Match:	$62,908

PROBLEM:

Years of urbanization have impaired Long Creek's capacity to support recreation and wildlife, such as brook trout. Stream degradation was caused by increased volumes of stormwater runoff and associated pollutants – flowing into the stream from impervious areas such as parking lots, roadways, and rooftops. Long Creek does not attain state and federal water quality standards and is classified as one of 31 "urban impaired" streams in Maine. State and federal laws require that Long Creek be restored to meet water quality standards. The *Long Creek Watershed Management Plan* (July 2009) is a locally supported plan to restore the stream. The management plan was developed through a two-year stakeholder process involving South Portland, Portland, Westbrook, Scarborough, Cumberland County SWCD, local nonprofits, small and large businesses, the Conservation Law Foundation, DEP, and EPA. Independent of the watershed planning effort, EPA Region 1 used the residual designation authority under CWA Section 402(p) to designate properties with more than one acre of impervious surface in the watershed as subject to NPDES permit requirements for stormwater discharges.

PROJECT DESCRIPTION:

In 2009, Maine DEP awarded Cumberland County SWCD an American Recovery and Reinvestment Act (ARRA) grant. The project goal was to establish the institutional structures necessary to support implementation of the Long Creek Management Plan. This included assessment of watershed properties to provide the basis for financing implementation of the plan; development of financial controls including policies and procedures, and an accounting database in Quickbooks; outreach to designated property owners; securing landowner commitments for plan implementation; and establishment of a water quality monitoring program to assess the success of plan implementation and provide information on which to base program decisions and priorities.

PROJECT OUTCOMES:

- A fee structure was developed for watershed property owners. Fees were based on the existing stormwater runoff potential of properties with one acre or more of impervious surface. Potential was determined by measuring the area of impervious surface and its use frequency, identifying existing on-site stormwater control practices and determining the level of maintenance.
- About 120 landowners (industries, public entities, commercial enterprises, etc.) agreed to the terms of a Participating Landowner Agreement. The agreement includes components to address a variety of ownership relationships that exist in commercially developed watersheds; a sample easement with many potential redevelop scenarios considered; and a credit structure to both acknowledge properties that were developed utilizing stormwater BMPs and to incentivize landowners to install BMPs not identified as part of the Management Plan.
- The Long Creek Watershed Management District was established. An Interlocal Agreement between four municipalities was executed to establish the District as a quasi-municipal nonprofit entity that supports public and private representation on a governing board.
- A financial policies and procedures manual was developed. An accounting database was developed in Quickbooks to provide the necessary structure for the Long Creek Watershed Management District accounting. This included permittee (all designated properties) and vendor lists, and the ability to track expenditures on a project basis, grant basis, and by cost categories (i.e., administration, monitoring, good housekeeping, and construction & maintenance).
- A monitoring program was established to track water quality in Long Creek, and five months of water quality monitoring data was collected.

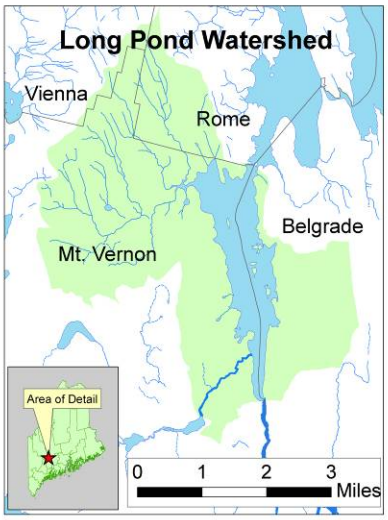
PROJECT PARTNERS:

Casco Bay Estuary Partnership
City of Portland
City of South Portland
City of Westbrook
Town of Scarborough
Maine DEP
Long Creek Watershed Management District

CONTACT INFORMATION:

Tamara Lee Pinard, Cumberland County SWCD – (207) 892-4700, tamara@cumberlandswcd.org
Donald Witherill, Maine DEP – (207) 215-9751, donald.t.witherill@maine.gov

Long Pond NPS Watershed Project, Phase I
#2009RT07



Waterbody Name:	Long Pond
Location:	Belgrade, Rome, Mt. Vernon, Vienna – Kennebec County
Waterbody Status:	Impaired, NPS Priority Watershed
Project Grantee:	Belgrade Regional Conservation Alliance
Project Duration:	April 2009 – April 2011
319 Grant Amount:	$49,750
Local Match:	$44,525

PROBLEM:

Long Pond (2666 acres) is a part of the Belgrade chain of lakes and has a direct watershed of 22 square miles. Water quality data, which has been collected since 1970, shows a declining trophic trend and increasing phosphorus concentrations over the last decade. As a result, Long Pond does not meet state water quality standards and is listed as impaired.

In 2002, Belgrade Regional Conservation Alliance (BRCA) led a watershed survey and documented 211 NPS sites. Of these, 69 percent of these were associated with residential sites; an additional 11 percent were associated with driveways; and six percent were found on private camp roads. During 2007 and 2008, the Colby Environmental Assessment Team detailed an additional 400+ sites (buffer and road sites) that were rated "fair" or "poor" and made recommendations for specific improvements. A Phosphorous Control Action Plan (PCAP) and Total Maximum Daily Load (TMDL) were approved in April 2008, and a watershed-based plan was completed in 2009.

PROJECT DESCRIPTION:

Long Pond viewed from French Mountain

The purpose of this project was to begin to implement the 2008 TMDL and 2009 Watershed Based Plan in order to reduce phosphorus loading to the lake. The project implemented 15 BMPs on four camp roads and four BMPs at the Belgrade Town Beach. An additional 21 NPS sites were addressed by the BRCA Youth Conservation Corps, primarily at private residences needing riparian buffers, rain gardens or additional erosion control work.

A porous paver demonstration project was completed at Day's Store, a highly visible public location. One of the visitors to the demonstration site was so inspired by the effectiveness of the demonstration project as a teaching tool that he became the driving force (and major donor) behind the multi-million dollar Maine Lakes Resource Center in Belgrade Lakes. The Lakes Resource Center was completed and opened in the fall of 2011 and has implemented various low impact development (LID) techniques such as porous pavers, grass pavers, rain gardens, and advanced wastewater treatment technologies.

PROJECT OUTCOMES:

- The project constructed BMPs on 19 NPS sites, exceeding the project goals by 50 percent. Work included reducing erosion to the pond by rebuilding and resurfacing eroding roads, replacing undersized culverts, and installing ditches and ditch turnouts.
- A porous paver demonstration site was installed at Day's Store in downtown Belgrade. Over 200 people toured the site, and countless others viewed the signage and explored the site independently.
- The BRCA's Youth Conservation Corps installed conservation practices on 21 residential sites, exceeding project goals by 40 percent. Work included three rain gardens, ten vegetated buffers, nine infiltration trenches, three sets of infiltration steps, seven stabilized paths, ten armored culverts, and three ditch and shoreline stabilization projects.
- Local contractors and town officials learned about erosion and sediment control through an all-day workshop and presentations at town board meetings.
- The project's road-related work reduced pollutant loading to Long Pond by an estimated 17.6 tons of sediment and 22 pounds of phosphorus per year (Region 5 Method).

NPS pollution loading from the above road to Long Pond was reduced by replacing a crushed and undersized culvert; armoring the ditch and outlet; and rebuilding the road segment with geotextile, base gravel and crushed bluestone.

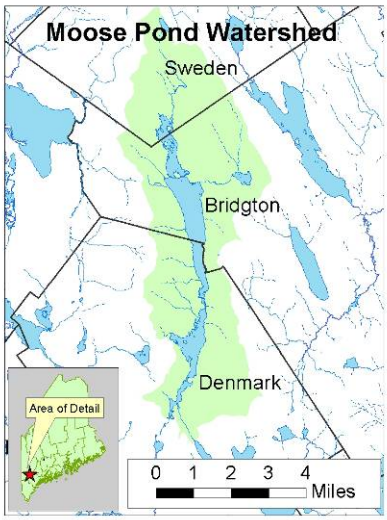
PROJECT PARTNERS:

Belgrade Lakes Association
Kennebec County SWCD
Town of Belgrade

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 215-3461, kristin.b.feindel@maine.gov
Peter Kallin, BRCA – (207) 495-6039, brcapk@belgradelakes.org

Moose Pond Watershed Survey
#2009PP17



Waterbody Name:	Moose Pond
Location:	Bridgton, Denmark and Sweden – Cumberland and Oxford Counties
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Cumberland County SWCD
Project Duration:	January 2010 – April 2011
604(b) Grant Amount:	$15,563
Local Match:	$10,724

PROBLEM:

Moose Pond has three distinct basins with a combined surface area of 1,617 acres. The lake sits at the base of Pleasant Mountain, and its shoreline is fringed with three public boat launches, a scenic public picnic/rest area on Route 302, a public beach, a private campground, two summer residential youth camps and numerous homes. The 17.4 square mile watershed includes the Shawnee Peak Ski Area and is part of the Saco River watershed.

Lakes Environmental Association (LEA) and local volunteers have monitored Moose Pond water quality since 1976. The uppermost basin, which is located in the least developed part of the watershed, is considered to have above average water quality. The lower two basins show moderate oxygen depletion in the bottom waters of the lake, which can limit the pond's coldwater fish habitat. As a result, LEA rates Moose Pond as a moderate to high degree of concern. The Moose Pond Association (MPA) has worked with LEA to conduct water quality monitoring, courtesy boat inspections, a boat washing station and erosion control projects along Route 302 and Caruso Island. In addition, LEA helps watershed residents address erosion problems through its *Clean Lake Check-Up* program.

PROJECT DESCRIPTION:

The purpose of the project was to identify, document, and prioritize soil erosion sites in the Moose Pond watershed. Survey methods were based on those outlined in the DEP publication, *Citizen's Guide to Lake Watershed Surveys*. Postcards were sent to all watershed property owners (1,400 parcels) to notify them of the survey and invite their participation in the project. In May 2010, 22 volunteers participated in the training session and survey.

In total, 208 erosion sites were identified in the watershed. Survey data was summarized in the *Moose Pond Watershed Survey Report*. Survey reports were distributed to town officials, libraries, and interested residents and posted at www.cumberlandswcd.org.

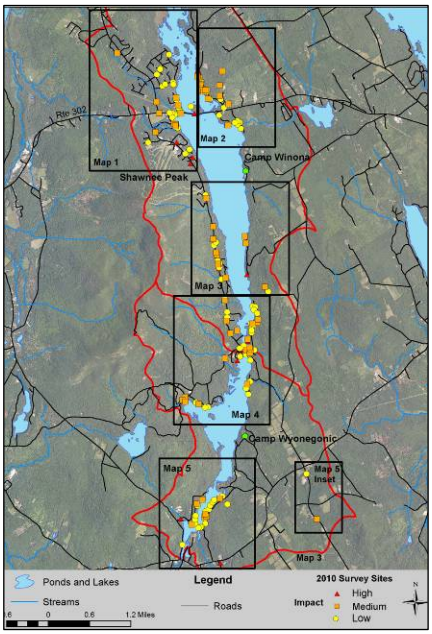
PROJECT OUTCOMES:

- Project staff and volunteers surveyed the entire Moose Pond watershed and documented 208 erosion sites. Most identified sites were associated with residential areas (73 sites), town roads (34 sites), commercial properties (30 sites), driveways (24 sites), beach access sites (18 sites) and private roads (17 sites).

- The *Moose Pond Watershed Survey Report* was completed in March 2011. The report summarizes watershed survey findings and lists specific descriptions and recommendations for identified sites.

- During the project, the Moose Pond Association prepared a mailing to all property owners with identified erosion sites and met with the Towns of Denmark and Sweden to ensure that survey recommendations would be incorporated into upcoming road projects. Their strong leadership and initiative earned them CCSWCD's Stewardship Group of the Year Award in April 2011.

- The project laid the foundation for mitigation efforts in the watershed. CCSWCD was awarded a 319 grant for the *Moose Pond Watershed Improvement Project* which begins in March 2012.



Volunteers for the Moose Pond Watershed Survey

PROJECT PARTNERS:

Lakes Environmental Association
Town of Bridgton
Town of Sweden
Moose Pond Association
Town of Denmark

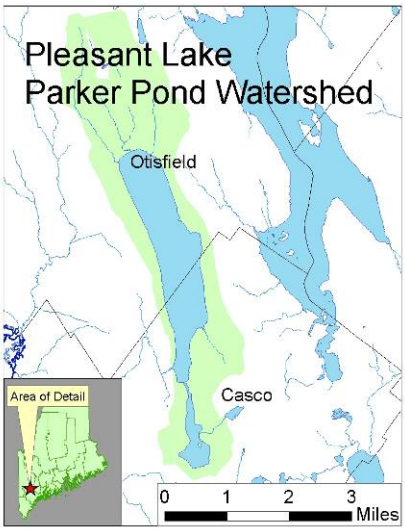
CONTACT INFORMATION:

Wendy Garland, DEP – (207) 615-2451, wendy.garland@maine.gov

Heather True, Cumberland County SWCD – (207) 892-4700, htrue@cumberlandswcd.org

Pleasant Lake / Parker Pond Conservation Project
#2009RR03

Waterbody Name:	Pleasant Lake and Parker Pond
Location:	Casco and Otisfield – Cumberland and Oxford Counties
Waterbody Status:	NPS Priority Watersheds, Most at Risk (Parker)
Project Grantee:	Cumberland County SWCD
Project Duration:	April 2009 – November 2011
319 Grant Amount:	$80,711
Local Match:	$78,293



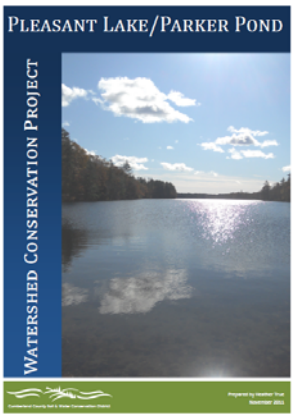
PROBLEM:

Pleasant Lake (1,077 acres) and Parker Pond (166 acres) have a combined watershed area of 6.7 square miles. The ponds, which are connected by Lilly Brook, drain into Sebago Lake via the Crooked River. The ponds' shoreline is developed with 150 homes, three summer camps (including the well known Seeds of Peace Camp), and two public boat launches. The ponds are also located adjacent to the village of Casco, which includes numerous businesses and municipal buildings.

The Pleasant Lake/Parker Pond Association (PL/PPA) formed in 1966 and has been monitoring water quality of both ponds since 1977 and 1978, respectively. Water quality of both lakes is considered to be above average; however Pleasant Lake is beginning to show signs of oxygen depletion in deeper areas. Pleasant Lake's low flushing rate of 0.2 times per year (the statewide average is 1-1.5 times per year) makes the pond more sensitive to increases in phosphorus. In 2007, PL/PPA and CCSWCD conducted a 319-funded watershed survey (#2007PP-11) and identified 17 NPS sites in the watershed of Parker Pond and 47 in Pleasant Lake. Twenty five percent of all the sites were associated with residential activities, 15 percent were related to private roads, and 17 percent were driveways.

PROJECT DESCRIPTION:

The primary purpose of this project was to reduce erosion and export of sediment and phosphorus into Pleasant Lake and Parker Pond. Conservation practices to reduce erosion and runoff were installed at 38 priority sites throughout the watershed. Road drainage improvement work was done on several town and private roads, as was stabilization of eroding areas at Casco's town beach and Otisfield's public boat launch. Another project goal was to raise awareness about watershed problems and foster long-term stewardship. Goals were met through PL/PPA annual meeting presentations, newsletter and newspaper articles, mailings, a final project report, and landowner interactions through the small matching grants program. Project match totaled $78,293, surpassing the planned amount by over $23,000.



Project outreach report

PROJECT OUTCOMES:

- The project installed conservation practices at 11 NPS sites in the watershed, including several priority road sites and high visibility sites such as the Casco Town Beach and the Otisfield Boat Launch.
- Pollutant loading to Pleasant and Parker Ponds was reduced by an estimated 83 tons of sediment and 71 pounds of phosphorus annually (WEPP Model and Region 5 Method).
- Watershed landowners took advantage of the project's 27 small matching grants (up to $500 each) and installed shoreline plantings, waterbars, infiltration trenches, and erosion control mulch.
- Numerous conservation practices were installed at two of the lake's summer camps, Camp Arcadia and Hoop Camps. Work included construction of waterbars on roads and trails, roof dripline trenches for cabins, native plantings, a rain garden, and sediment basins.
- A 20-page report was created to showcase the on-the-ground work that was completed through the project and to provide landowners with ideas for continued work on their properties.

Work at Casco Town Beach included the installation of a large infiltration trench at the top of the beach (above). Straw wattles were also used to stabilize eroded shoreline areas.

Camp Arcadia installed a meandering pathway down to the lake. Erosion control mulch stabilized the previously eroded path, and stones and native plants helped direct foot traffic.

PROJECT PARTNERS:

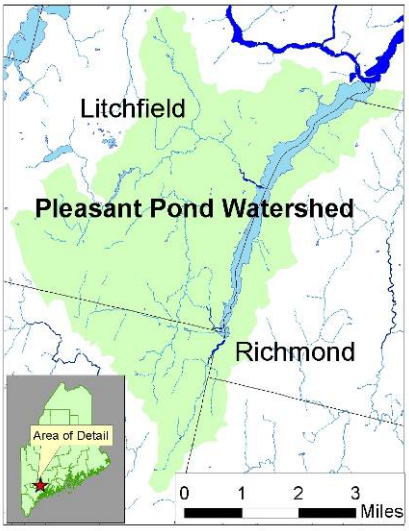
Pleasant Lake/Parker Pond Association
Town of Casco
Portland Water District
Town of Otisfield

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 215-3461, kristin.b.feindel@maine.gov
Heather True, CCSWCD – (207) 892-4700, htrue@cumberlandswcd.org

Pleasant Pond NPS Abatement: Phase 3 Agricultural BMPs
#2008RT31

Waterbody Name:	Pleasant Pond
Location:	Litchfield and Richmond – Kennebec and Sagadahoc Counties
Waterbody Status:	Impaired, NPS Priority Watershed, Most at Risk
Project Grantee:	Cobbossee Watershed District (CWD)
Project Duration:	December 2008 – September 2011
319 Grant Amount:	$31,553
Local Match:	$28,003



PROBLEM:

Pleasant Pond is a shallow, five-mile-long pond with a 23.4 square mile watershed. 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 2004 TMDL report indicated that agriculture accounted for 39 percent, public and private roads for 15 percent, and residential sites and septic systems for 7 percent of the phosphorus load.

Two phases of Pleasant Pond NPS Abatement Projects (#2006R-05 completed in 2008, and #2008RT06 completed in 2010) addressed sources of phosphorus from roads and residential development. The projects were led by the Kennebec Soil and Water Conservation District and supported by the Four Towns Watershed Association. Work included road BMPs, residential conservation projects installed by the Friends Youth Conservation Corps, educational workshops, technical assistance, and water quality monitoring conducted by CWD.

PROJECT DESCRIPTION:

This project's purpose was to reduce phosphorus runoff from farmlands by implementing BMPs that would stabilize soil and increase on-site retention of animal waste nutrients. CWD staff reached out to farmers and encouraged them to utilize, or further utilize, the technical services of the Natural Resource Conservation Service (NRCS) and funding available through their Environmental Quality Incentives Program (EQIP). A cost sharing program requiring a match of cash or services was also available.

The project helped coordinate and install a variety of conservation practices on two dairy farms, an eroded shoreline, and one camp road in the watershed. Cost sharing was provided for one of the dairy farms. The other farm project tapped into EQIP funding and only needed technical assistance. The project provided a framework for maximizing resources and communication between water quality specialists, farm technical services, and the agricultural producers.

Several BMPs were installed on two dairy farms in the watershed.

PROJECT OUTCOMES:

- The project constructed a 5,520 square-foot concrete, roofed manure storage facility and 9,000 square-foot adjacent heavy use area with a vegetated treatment area. This work covered the manure storage area and treated any remaining runoff, which resulted in an estimated reduction of 96 pounds of phosphorus entering Pleasant Pond each year (Region 5 Method).

- At a second dairy farm, BMPs were installed to collect manure leachate runoff from a manure storage area and divert it to a vegetated treatment area. Pollutant loading to Pleasant Lake from this site was reduced by an estimated 21 pounds of phosphorus each year (Region 5 Method).

- Project staff provided technical assistance to support the installation of an 11,250 square-foot concrete heavy use area and vegetated treatment area, which was paid for with EQIP funds. In addition, a heavy use area at a barn entrance was stabilized.

- Two additional projects were completed on non-agricultural sites. One hundred feet of eroding shoreline was stabilized with rip-rap and plantings. A section of camp road that previously drained to the pond was graded and ditched, and check dams and a culvert were installed to redirect road runoff away from the pond.

- Pollutant loading to Pleasant Pond was reduced by an estimated 125 pounds of phosphorus and eight tons of sediment per year (WEPP Road Model and Region 5 Method).

A covered, concrete manure storage facility, adjacent heavy use area and vegetated runoff treatment system were installed at a watershed dairy farm to minimize and treat phosphorus runoff.

PROJECT PARTNERS:

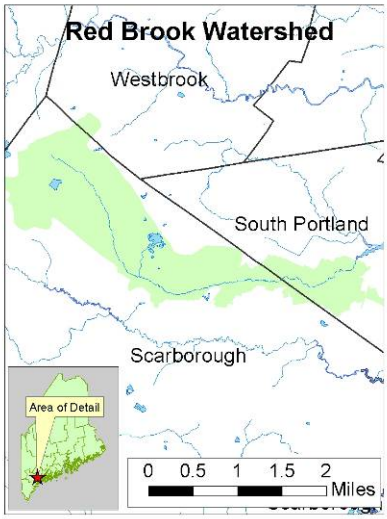
Agricultural landowners
Natural Resource Conservation Service
Maine Department of Agriculture, Food, and Rural Resources

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 215-3461, kristin.b.feindel@maine.gov
Wendy Dennis, CWD – (207) 377-7111, cwd@fairpoint.net

Red Brook Watershed Based Management Plan

#2009SP03



Waterbody Name: Red Brook

Location: Scarborough, South Portland – Cumberland County

Waterbody Status: Urban Impaired Stream

Project Grantee: Town of Scarborough

Project Duration: August 2009 – June 2011

ARRA (604b) Grant: $48,605

Local Match: $38,829

PROBLEM:

Red Brook is a small (7.15 mile long) stream that flows into Clark's Pond and the Fore River. The 3.2 square mile watershed includes a relatively undeveloped upper watershed, sections of the Maine Turnpike and I-295, a regional waste incinerator, and a high-density commercial area at the base of the watershed.

Water quality in the upper portion of the stream is considered to be relatively stable, and the stream supports a brook trout population. However, the stream does not meet Class C standards and is impaired due to habitat degradation and PCB contamination. A PCB-contaminated site in the upper watershed was sealed in 2009, and levels in fish tissue are expected to decrease over time. Habitat degradation is found primarily in the lower sections of the stream due to past channel alterations and near-stream development.

PROJECT DESCRIPTION:

The purpose of the project was to develop a locally-supported watershed management plan that outlines a strategy to restore Red Brook. The project was coordinated by Cumberland County SWCD and the Town of Scarborough and guided by a steering committee. Information about Red Brook was compiled from past studies, and extensive additional information was also collected. A fluvial geomorphologist evaluated restoration needs; a local engineering firm volunteered to develop preliminary retrofit designs for six commercial properties; data sondes were deployed to collect continuous water quality data; EPA collected and analyzed soil samples to help rule out potential ongoing PCB sources to the stream; DOT staff conducted a brook trout survey; and project staff documented fish barriers and erosion problems.

A project web site was created and a mailing was sent to watershed residents at the start of the project. Nearly 50 people attended a kick-off meeting in May 2010, and 30 people participated in Technical/Road and Land Use Development Workgroups that helped develop plan strategies and priorities. Project staff incorporated new data and workgroup input into a draft plan that was shared with stakeholders and presented at a community meeting. The final plan was unanimously endorsed by the Scarborough Town Council in June 2011.

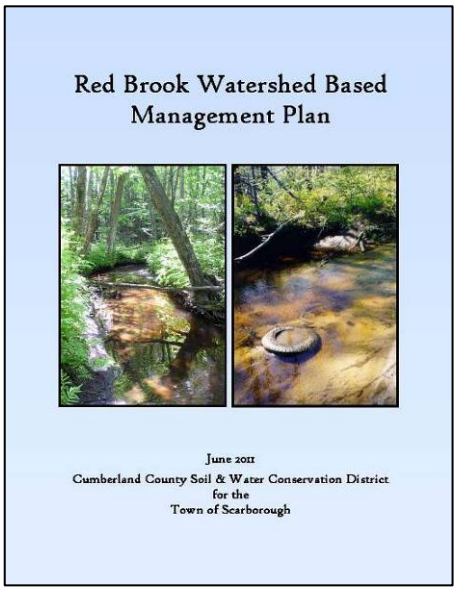
PROJECT OUTCOMES:

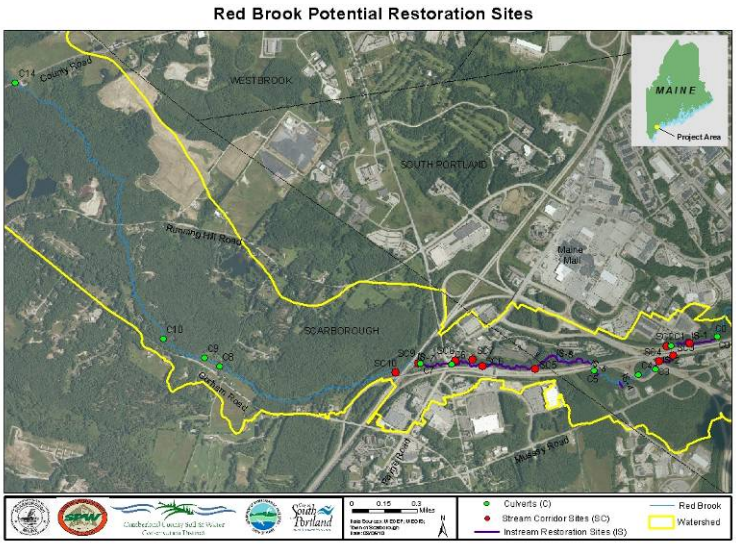
- The project identified and prioritized 36 stream habitat and water quality improvement projects. After learning about the problem sites, Maine Department of Transportation (DOT) took the initiative to fix one of the sites, and several other projects have also been incorporated into future work plans by the Town of Scarborough, DOT, and the Maine Turnpike Authority.

- The Land Use Development workgroup provided input to guide future development in the upper portions of the watershed and recommended an ordinance that would expand the 75' stream buffer protection zone to include all important feeder streams.

- The *Red Brook Watershed Based Management Plan* was completed in June 2011. The plan includes background information, results of stream and watershed assessments, maps and an action plan. Available at www.cumberlandswcd.org/redbrook .

- The Scarborough Town Council unanimously endorsed the Red Brook Plan in June 2011.





PROJECT PARTNERS:

Casco Bay Estuary Partnership
City of South Portland
Cumberland County SWCD
Deluca Hoffman
FB Environmental
Field Geology Services
Maine Department of Transportation
Maine Turnpike Authority (represented by GZA)

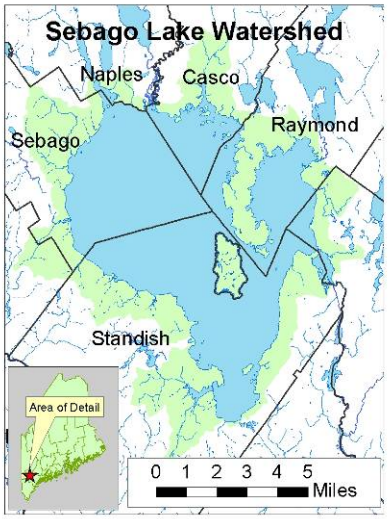
CONTACT INFORMATION:

Wendy Garland, DEP – (207) 615-2451, wendy.garland@maine.gov

Dan Bacon, Town of Scarborough – (207) 730-4041, dbacon@ci.scarborough.me.us

Betty Williams, CCSWCD – (207) 892-4700, betty-williams@cumberlandswcd.org

Sebago Lake Conservation Project Phase I
#2009RR04



Waterbody Name:	Sebago Lake
Location:	Sebago, Naples, Casco, Raymond, Standish and Windham – Cumberland County
Waterbody Status:	NPS Priority Watershed, Most At Risk
Project Grantee:	Portland Water District (PWD)
Project Duration:	March 2009 – June 2011
319 Grant Amount:	$73,051
Local Match:	$199,091

PROBLEM:

Sebago Lake is the second largest lake in Maine with a surface area of 30,513 acres. The lake's 100 miles of shoreline is developed with 2,300 seasonal and year-round homes, 12 public boat launches, eight marinas, seven summer youth camps and Sebago Lake State Park. It is the primary drinking water supply for 200,000 people in eleven communities. The lake's direct watershed covers 171 square miles, and the entire watershed covers 360 square miles.

PWD has monitored Sebago Lake's water quality since 1970. Sebago Lake is considered to have excellent water quality with average clarity over 31 feet. However, there are concerns about declining trends in recent years. To maintain the lake's high quality, PWD conducts permit reviews, site inspections, free landowner consultations, a small matching grants program, and a school-based education program. A PWD *Hotspots Survey* identified runoff from roads within 1,000 feet of the lake shoreline as one of the lake's greatest sources of sediment and phosphorus pollutants. In 2001 and 2007, PWD surveyed 418 private roads within this shoreline corridor and rated 27 percent of the roads as causing medium to high pollutant impact to the lake.

PROJECT DESCRIPTION:

The purpose of this project was to significantly reduce erosion and export of sediment and phosphorus into Sebago Lake. Due to the large size of the lake and watershed, Phase I focused work in the Towns of Naples and Sebago. PWD partnered with Cumberland County SWCD to install conservation practices at 10 high-impact private and public roads and provide technical assistance to 31 landowners. PWD staff also inspected 255 properties within the lake's shoreland zone. The Casco Bay Youth Conservation Corps installed conservation practices on two sites in the project area.

Volunteers stabilized paths, planted vegetation, and installed infiltration steps at Camp O-At-Ka.

PROJECT OUTCOMES:

- The project successfully fixed NPS problems on 10 public and private road sites. Work included resurfacing/recrowning 3,850 feet of road and installing 7,410 feet of new ditches, 19 new cross-drain culverts, nine ditch turnouts, and 13 ditch check dams. The Casco Bay YCC worked at two properties where they installed 13 infiltration steps, stabilized 100 feet of path, and planted 40 trees and shrubs.
- Technical assistance was provided to 31 landowners (more than the goal of 20) including 18 visits by Cumberland County SWCD staff and 13 watershed property consultations by PWD staff.
- PWD staff also conducted 255 inspections in the Shoreland Zone and reviewed plans for 18 large developments. PWD staff spent a total of 876 hours (109 work days) on this work, far exceeding the project goal of 476 staff hours (60 work days).
- Pollutant loading to Sebago Lake was reduced by an estimated 40 tons of sediment and 30 pounds of phosphorus per year (Region 5 Method).
- Project match totaled $199,091, more than double the amount anticipated ($99,274 planned).

Maine Avenue/Sebago Avenue ROW, Standish – Severely eroded road flowed directly into the lake. Numerous culverts, stone-lined ditches, level lip spreaders and 700 feet of new road material was installed, graded and shaped.

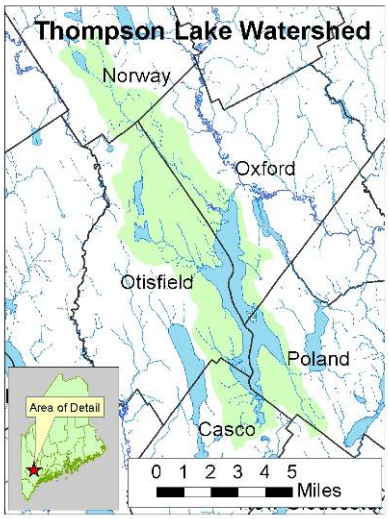
PROJECT PARTNERS:

Casco Bay Youth Conservation Corps
Cumberland County SWCD
Town of Naples
Town of Sebago

CONTACT INFORMATION:

Kristin Feindel, DEP – (207) 615-3461, kristin.b.feindel@maine.gov
Paul Hunt, PWD – (207) 774-5961, phunt@pwd.org

Thompson Lake Watershed Survey – Southern Section
#2009RR08



Waterbody Name:	Thompson Lake
Location:	Casco, Poland, Oxford, Norway, Otisfield – Cumberland, Androscoggin, Oxford Counties
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Thompson Lake Environmental Association
Project Duration:	March 2009 – April 2011
604(b) Grant Amount:	$16,190
Local Match:	$17,187

PROBLEM:

Thompson Lake is a large, high quality lake that covers 4,225 acres. The lake is a regional attraction with two public launches, a private marina, public beach, and three summer youth camps. The watershed covers 35 square miles and includes 1,200 seasonal and year-round residences. The lake's water quality, has been monitored since 1977, and is considered to be excellent, with an average water clarity of 8.8 meters and little dissolved oxygen depletion. However, concerns remain about NPS pollution from shoreline development and the watershed's extensive network of town and private gravel roads.

In addition to its monitoring and invasive plant programs, Thompson Lake Environmental Association (TLEA) has focused efforts on watershed stewardship for many years. They conducted partial watershed surveys in 1995 and 1999, partnered on Section 319 grants, and started a summer Youth Conservation Corps in 2002. In 2008, TLEA took the initiative to fund a survey of the Otisfield section of the watershed. In 2010, they received a Section 319 grant (#2010RR08) to fix many of the 95 identified sites.

PROJECT DESCRIPTION:

The original project purpose was to identify, document, and prioritize soil erosion sites in the southern section (Poland and Casco) of the watershed. Since some grant funds remained after completing the survey of this area, the following spring TLEA was able to also complete a survey of the remaining northern portion of the watershed (Oxford, Norway and northern Otisfield). Survey methods were based on those outlined in the DEP publication, *Citizen's Guide to Lake Watershed Surveys*. Letters about the project were mailed to all watershed property owners. Twenty four volunteers participated in the survey in 2009 and 10 volunteers participated in 2010.

There were 106 erosion sites identified in the 2009 survey and 143 sites were found in the 2010 survey. Survey data was combined into the report, *Thompson Lake Watershed Survey – Southern and Northern Sections* (March 2011). BMP designs were also completed for four high priority sites. Presentations on the project were delivered to the towns and at the TLEA annual meeting, and numerous articles appeared in local newspapers and partner newsletters.

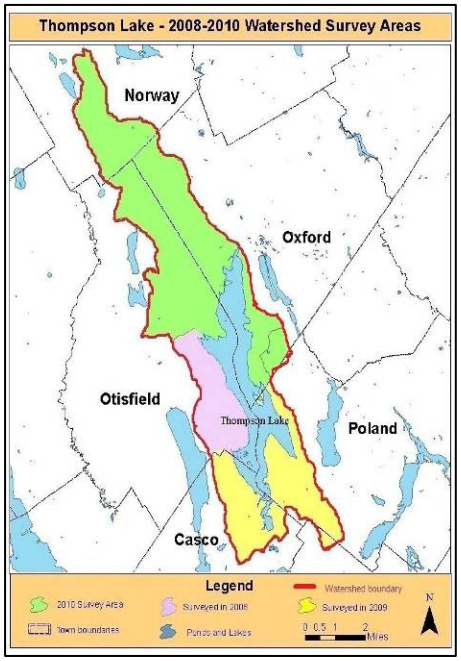
PROJECT OUTCOMES:

- Project staff and volunteers surveyed portions of the watershed in Poland, Casco, Oxford, Norway, and northern Otisfield. When combined with the 2008 Otisfield survey, the entire watershed was completed. In total, 249 erosion sites were documented. Most identified sites were associated with residential areas (129 sites), private roads (25 sites), town roads (25 sites), and driveways (21 sites).

- The *Thompson Lake Watershed Survey – Southern and Northern Sections* was completed in March 2011. The report summarizes watershed survey findings and lists specific descriptions and recommendations for identified sites.

- Engineered designs were completed for four of the high priority sites identified in the survey (exceeding the workplan goal of three designs).

- TLEA took the initiative to prompt action on problem sites by sending letters to all property owners with identified sites; organizing field visits of town road sites with the road commissioners and town managers in Poland and Casco; and targeting YCC work on watershed survey sites.



PROJECT PARTNERS:

Town of Poland
Androscoggin Valley SWCD
Oxford County SWCD
Town of Casco
Cumberland County SWCD

CONTACT INFORMATION:

Wendy Garland, DEP – (207) 615-2451, wendy.garland@maine.gov
Jeff Stern, Fiddlehead Consulting – (207) 583-2723, sternjm@hotmail.com
Thompson Lake Environmental Association – (207) 539-4535, tlea@fairpoint.net

Appendix A. List of All NPS Watershed Projects Active in 2011

Project ID# Codes:
20XX Appropriation year of funding source
RR Funding source - Section 319 Clean Water Act; waterbody attains water quality standards
RT Funding source - Section 319 Clean Water Act; NPS impaired waterbody
PP Funding source - Section 604(b) Clean Water Act
SP Funding source - Section 604(b) Clean Water Act, American Recovery and Reinvestment Act

Project Title	Project ID#	Grantee	Grant amount	Non-federal Match	Date Completed (**bold**) or To Be Completed
Annabessacook Lake NPS Watershed Restoration, Phase II	2011RT15	Cobbossee Watershed District	68,450	52,450	1/1/14
Bangor Stormwater Utility Planning	2009SP01	Bangor, City of	70,000	97,553	**8/9/11**
Beech Hill Pond Watershed Survey	2009PP19	Hancock County SWCD	12,899	8,800	**3/31/11**
Branch Lake Watershed Improvement, Phase II	2010RR01	Hancock County SWCD	89,184	50,230	9/30/12
Capehart Brook NPS Restoration, Phase I	2011RT16	Bangor, City of	60,000	42,124	4/30/14
Capehart Brook Watershed Plan	2011RT17	Bangor, City of	5,000	0	**4/25/11**
Capisic Brook Watershed Plan	2009SP04	Portland, City of	97,795	53,429	**10/24/11**
Christina Reservoir Watershed Improvement	2010RT18	Central Aroostook SWCD	60,785	49,939	9/30/12
Cochnewagon Lake NPS Watershed Protection, Phase I	2011RR02	Cobbossee Watershed District	81,005	63,365	1/1/14
Coldstream Pond NPS Watershed Survey	2010RR15	Penobscot County SWCD	9,600	8,020	**1/11/12**
Crescent Lake NPS Watershed Protection	2011RR03	Raymond, Town of	79,133	118,128	1/1/14
Crooked River Watershed Survey	2010PT19	Cumberland County SWCD	28,244	26,429	**3/30/12**
Dyer River Watershed NPS Survey	2010RT16	Sheepscot Valley Conservation Association	13,000	10,000	**5/21/11**
East Pond Biomanipulation, Phase III	2009RT16	University of Maine	50,500	9,900	12/31/12
Green Lake Watershed Improvement, Phase I	2009RR01	Hancock County SWCD	50,685	33,990	**11/8/11**
Horne Pond Watershed Survey	2011RR06	York County SWCD	10,646	9,046	**1/25/12**

Project Title	Project ID#	Grantee	Grant amount	Non-federal Match	Date Completed (**bold**) or To Be Completed
Little Sebago Lake Conservation, Phase III	2010RR02	Cumberland County SWCD	95,391	73,395	9/30/12
Long Creek Property Evaluation & Program Development	2009SP02	Cumberland County SWCD	90,000	46,083	**4/28/11**
Long Pond NPS Watershed Restoration, Phase I	2009RT07	Belgrade Regional Conservation Alliance	49,750	33,200	**5/11/11**
Long Pond NPS Watershed Restoration, Phase II	2011RT07	Belgrade Regional Conservation Alliance	99,500	88,544	1/1/14
McLean Brook Watershed BMP Implementation	2010RR03	St. John Valley SWCD	39,312	26,484	9/30/12
Moose Pond Watershed Survey	2009PP17	Cumberland County SWCD	15,563	10,626	**5/4/11**
Nickerson Lake Conservation, Phase I	2010RR04	Southern Aroostook SWCD	64,789	43,910	9/30/12
Panther Pond Conservation, Phase II	2009RR02	Raymond, Town of	63,289	51,845	**3/15/12**
Parker, David & Tilton Ponds Watershed Survey	2011RR08	30 Mile River Watershed Association	17,238	11,716	1/1/13
Pattee's Pond Watershed NPS Reduction, Phase I	2010RR05	Winslow, Town of	59,450	51,470	**3/27/12**
Pleasant Lake-Parker Pond Conservation (Casco)	2009RR03	Cumberland County SWCD	80,711	55,173	**12/27/11**
Pleasant Pond NPS Abatement Phase III, Agricultural BMPs	2008RT31	Cobbossee Watershed District	46,080	30,928	**9/23/11**
Pleasant River NPS Watershed Restoration, Phase I	2011RT04	Cumberland County SWCD	60,032	46,304	1/1/14
Pushaw Lake NPS Watershed, Phase II & Watershed Survey	2009RR05	Penobscot County SWCD	75,000	50,760	**4/1/12**
Red Brook Watershed Based Management Plan	2009SP03	Scarborough, Town of	48,605	37,727	**8/15/11**
Sabattus Pond Watershed, Phase III	2010RT06	Androscoggin Valley SWCD	77,066	93,402	9/30/12
Sebago Lake Conservation, Phase I	2009RR04	Portland Water District	86,080	99,274	**7/29/11**
Spruce Creek Watershed Improvement, Phase II	2010RT07	Kittery, Town of	79,780	81,346	9/30/12
Square Pond NPS Watershed Protection, Phase II	2011RR01	York County SWCD	54,853	57,350	1/1/14
Thompson Lake Survey – Southern Section	2009RR08	Thompson Lake Environmental Association	16,190	11,110	**5/2/11**

Project Title	Project ID#	Grantee	Grant amount	Non-federal Match	Date Completed (**bold**) or To Be Completed
Thompson Lake Watershed Improvement Phase III, Otisfield	2010RR08	Thompson Lake Environmental Association	61,189	40,976	9/30/12
Trout Brook Watershed-Based Plan	2010PT20	South Portland, City of	35,300	61,220	1/1/13
Upper Pushaw Lake Watershed Survey	2009PP18	Penobscot County SWCD	11,540	8,000	**3/14/12**
Williams Brook Subwatershed Survey & Prestile Stream Citizen Storm Watchers	2010RT17	Central Aroostook SWCD	10,776	18,275	**3/6/12**
Wilson Pond Water Quality Improvement	2009RT06	Cobbossee Watershed District	62,130	70,705	**3/13/12**

Loon Pond watershed survey volunteers

Clean water starts with you!

Maine Department of Environmental Protection
Bureau of Land & Water Quality
#17 State House Station
Augusta, Maine 04333
www.maine.gov/dep

Don Witherill
Director Watershed Management Division
Donald.T.Witherill@maine.gov
(207) 215-9751

Document available for download at:
http://www.maine.gov/dep/water/grants/319-documents/reports/