Nonpoint Source Management Program
2014 Annual Report

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Executive Summary

This report summarizes activities and accomplishments of the Maine Department of Environmental Protection's Nonpoint Source Program in 2014. DEP prepared this report to inform the public and EPA about Maine's progress controlling nonpoint source (NPS) water pollution. NPS pollution is a major source of water quality impact to Maine's lakes, streams, and coastal waters. DEP coordinates Maine's NPS pollution control programs to achieve widespread use of state-agency best management practice guidelines (BMPs) to prevent NPS pollution. The NPS program uses a combination of statewide programs and targeted watershed projects to make progress restoring and protecting water quality. The NPS Program is funded, in part, under Section 319 of the Clean Water Act by the U.S. Environmental Protection Agency (EPA).

This report provides an overview of Maine's NPS management program, DEP's NPS grants program, staff services for communities, the NPS Training and Resource Center, the Maine Volunteer Lake Monitoring Program, and the Volunteer River Monitoring Program.

DEP uses a watershed-based approach as the coordinating framework to organize public and private sector efforts to identify, prioritize, and then implement activities to restore or protect waters. DEP administers a pass-thru grants program that awards and monitors grants of federal Clean Water Act Section 319 and 604b funds for watershed projects to help restore or protect lakes, streams and coastal waters from NPS pollution. These grants help communities identify nonpoint sources, prepare watershed-based management plans, and take action to reduce or prevent NPS pollution.

In 2014, DEP issued 16 grants totaling $1,006,710 to help communities develop watershed plans for five watersheds and implement BMPs in 11 watersheds. Thirteen NPS watershed projects funded through the NPS grants program in previous years were successfully completed. This report provides a brief outcome summary of each project. These projects reduced pollutant loads to waters by 396 tons of sediment and 336 pounds of phosphorus per year. DEP provided technical assistance and granted $745,238 of federal Clean Water Act funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at $869,312.

DEP completed a major update of Maine's NPS management program plan in collaboration with the Maine Departments of: Agriculture, Conservation and Forestry; Transportation; Health and Human Services; and Marine Resources; and other organizations. The "Maine Nonpoint Source Management Program Plan 2015-2019" established program goals, strategies and actions that state agencies will implement over the next five years to make progress controlling and preventing NPS pollution. EPA approved Maine's updated plan in September.

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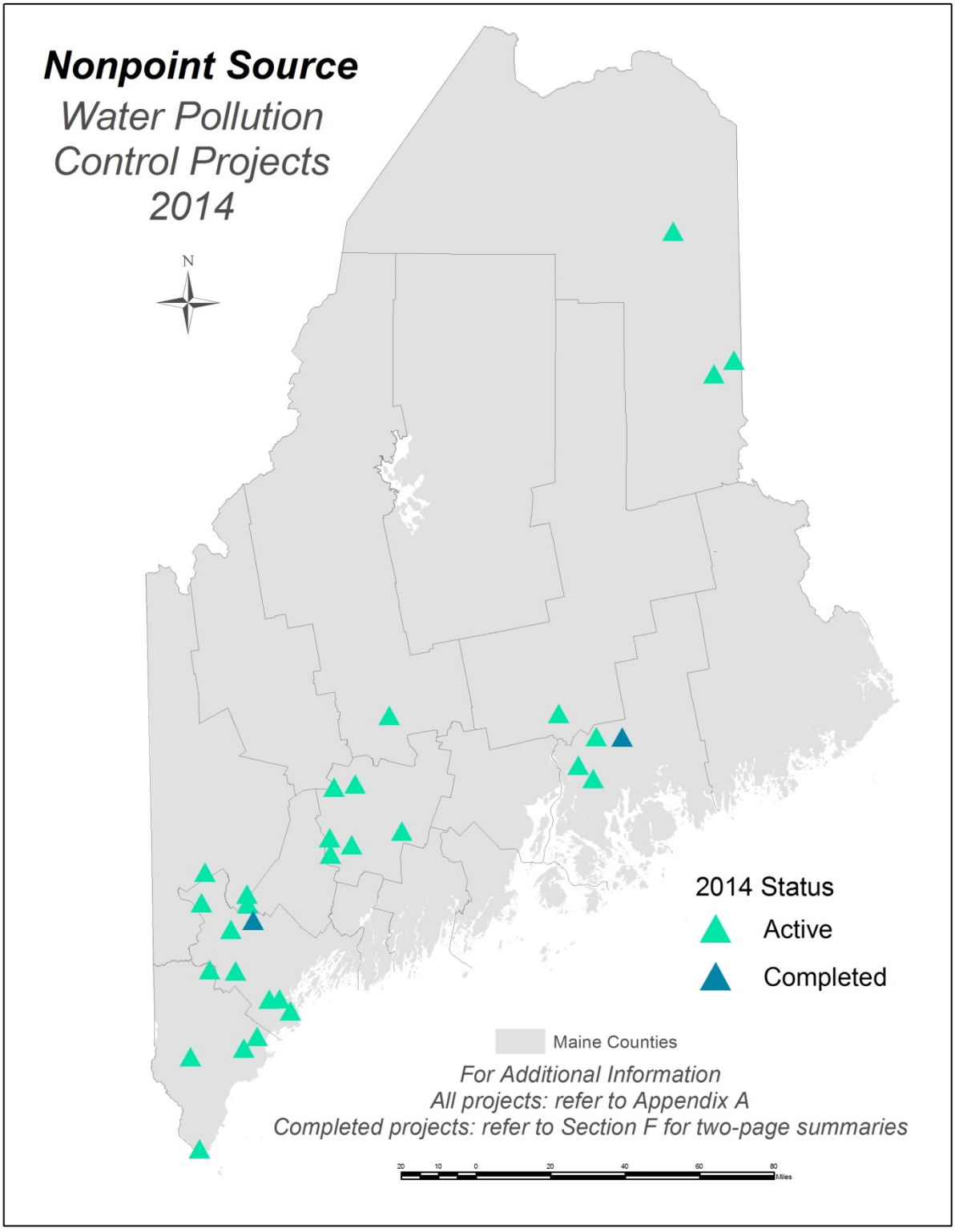
This report was funded, in part, by grant funds provided by the U.S. Environmental Protection Agency to the Maine Department of Environmental Protection under Section 319 of the Clean Water Act. Neither EPA nor DEP endorses any commercial product, service or enterprise mentioned in this publication.

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

NPS Water Pollution Control Projects Active in 2014



A. Introduction - NPS Management Program

Nonpoint source pollution adversely affects many of Maine's lakes, rivers, streams, and coastal waters. When it rains or the snow melts, 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 animal waste and failing septic systems; and toxics such as dripped or spilled petroleum products. Polluted runoff washes off the land and flows into our waters.

The Maine Department of Environmental Protection (DEP) coordinates the State of Maine Nonpoint Source Pollution Program (38 MSRA 410) to achieve widespread use of state-agency "best management practice guidelines" (BMPs) to prevent NPS pollution. Since 1990, EPA awards funds under Section 319 of the Clean Water Act to help states and tribes address their most pressing NPS pollution problems. Section 319 monies help fund a significant portion of Maine's NPS program. NPS program services were guided by the *Maine Nonpoint Source Program Plan & 15 Year Strategy* (1999). Maine DEP completed an update of the NPS management plan in 2014.

DEP helps watershed groups assess water quality problems and take action to reduce NPS water pollution

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.

This report summarizes the Nonpoint Source (NPS) Program activity and accomplishments in 2014. The report fulfills annual reporting requirements of Section 319(h) of the Federal Clean Water Act. Each year, DEP prepares this report to inform the public and the U.S. Environmental Protection Agency (EPA) about Maine's progress controlling NPS water pollution.

B. 2014 Highlights - NPS Management Program

1. DEP received a grant award of FFY 2014 funds ($1,766,269) from EPA under Section 319 of the Clean Water Act. Funds were used to fuel programs designed to evaluate, 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. 43% of the Section 319 funds were granted to organizations for NPS water pollution control projects.

2. DEP completed a major update of Maine's NPS management program plan in collaboration with the Maine Departments of: Agriculture, Conservation and Forestry; Transportation; Health and Human Services; and Marine Resources; and other organizations. The Maine Nonpoint Source Management Program Plan 2015-2019 establishes program goals, strategies and actions state agencies will implement over the next five years to make progress controlling and preventing NPS pollution. In September, the U. S. Environmental Protection agency approved Maine's plan.

3. Thirteen NPS watershed projects funded through the NPS grants program in previous years were successfully completed. DEP provided technical assistance and granted $745,238 of Federal Clean Water Act funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at $869,312.

    a. Best management practices (BMPs) were installed to reduce polluted runoff in five watersheds: Whitten Brook (Skowhegan); Beech Hill Pond (Otis); Long Pond and Great Pond (Belgrade); Phillips Lake (Dedham) and Sebago Lake. NPS projects reduced pollutant loading to these waters by 336 pounds of phosphorus and 396 tons of sediment per year - equivalent to about 34 dump truck loads.

    b. NPS watershed survey projects were completed for three watersheds: Bear Pond (Waterford), Stroudwater River (Gorham) and Sucker Brook (Hampden). An NPS survey finds, describes, and prioritizes NPS pollution sources in a watershed and recommends BMPs to reduce polluted runoff.

    c. Watershed-based plans were completed for four watersheds: Alamoosook Lake (Orland), Goodall Stream (Sanford), Thatcher Brook (Biddeford) and Topsham Fair Mall Stream (Topsham). A plan provides assessment and management information and describes actions needed to restore NPS-impaired water bodies, or to protect water bodies threatened by NPS pollution.

4. DEP issued 16 grants totaling $1,006,710 to help communities develop watershed-based plans for five watersheds and start or continue on-the-ground implementation of BMPs in 11 watersheds to make progress improving water quality. Clean Water Act Section 319 and 604(b) funding for these grants was provided to DEP by EPA.

5. In June DEP issued an RFP for projects to help communities implement their watershed-based plans and carry out actions to make progress restoring or protecting a waterbody. Ten proposals were received requesting $955,699. DEP issued conditional grant awards to award funds ($763,809) for eight NPS projects. Also DEP issued an RFP for projects to develop a watershed-based management plan. DEP received one proposal which was funded. Projects are scheduled to begin in April 2015.

6. DEP's Nonpoint Source Training & Resource Center provided training to 522 participants in erosion and sediment control practices for contractors, and certified 347 additional individuals and seven new companies in the Voluntary Contractor Certification program. Total number of individuals certified now stands at 2763 and certified companies at 40.

7. DEP and the USDA-Natural Resources Conservation Service (NRCS) produced a 3-page summary (Forty Year Partnership Effort Improves Water Quality in Sebasticook Lake, 3/28/14) about NPS and point source water pollution control work over the past 40 years that has greatly improved the water quality of Sebasticook Lake. NRCS completed conservation work on farms in the Alder Stream area of the Sebasticook watershed under the National Water Quality Initiative program.

C. Maine NPS Management Program

1. 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 NPS program uses both statewide programs and targeted watershed-based approaches to promote the use of state-agency defined "best management practice guidelines" (BMPs) to prevent water pollution. The overall aims of the program are:

- **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 a commitment to maintain or improve 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 the 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. Six Maine agencies share responsibility for implementing NPS programs: the Departments of Environmental Protection; Agriculture, Conservation, and Forestry; Transportation; Health and Human Services, Division of Environmental Health; and Marine Resources. State agencies conduct programs that promote voluntary use of BMPs and implement State laws or rules which require meeting performance standards to protect water quality. 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 NPS water pollution.

Silt-laden runoff from a camp road

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; 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.

2. Protecting Clean Waters

Maine has significant water quality protection and restoration challenges and limited resources for NPS programs. DEP prioritizes and balances the use of available NPS funds to make progress both protecting and restoring lakes, streams, and coastal waters. Preventing pollution of Maine's abundant clean waters is very important. While we are working to restore impaired waters, DEP also invests considerable NPS control efforts to protect clean waters that are considered threatened by NPS pollution. Preventing NPS water pollution of waters is far more cost effective than restoring a polluted waterbody.

Protecting Maine's clean waters can be accomplished by local communities with technical and financial assistance from DEP and other partners. Local stewardship is needed for any project, plan, or outreach effort to effectively 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 working to protect watersheds and clean waters.

Developing Plans to Protect Lakes

Through 2014 DEP and EPA have accepted seven lake watershed protection plans under the DEP Guidance for Maine Lake Protection Plans.

Lake Watershed Protection Plans Accepted by DEP

Watershed	Town	Date	Organization
Crescent Lake	Raymond	June 2013	Crescent Lake Watershed Association
Lake Auburn	Auburn	July 2013	Lake Auburn Watershed Protection Commission
Little Sebago Lake	Windham	June 2013	Little Sebago Lake Association
Phillips Lake	Dedham	April 2014	Phillips Lake Association
Thompson Lake	Oxford	June 2013	Thompson Lake Environmental Association
Toddy Pond	Orland	June 2013	Toddy Pond Association
Woods Pond	Bridgton	May 2013	Town of Bridgton

Implementation Projects to Protect Lakes

DEP invests Section 319 funds for NPS watershed projects to implement BMPs that reduce polluted runoff to help protect clean waters considered threatened by NPS pollution. Section 319 funds helped sustain or start NPS watershed implementation projects in 12 watersheds in 2014.

Beech Hill Pond (Otis)	Little Sebago Lake (Gray)	Sebago Lake (Sebago)
Crescent Lake (Raymond)	Nickerson Lake (New Limerick)	Thompson Lake (Oxford)
Crooked River (Naples)	Parker Pond (Mt. Vernon)	Toddy Pond (Orland)
Horne Pond (Limington)	Phillips Lake (Dedham)	Woods Pond (Bridgton)

3. Restoring Impaired Waters

State and federal water quality laws require that waters attain their assigned water quality classification. 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, drinking water supply, and if the waters support healthy habitats for fish and wildlife. DEP places waters that are found to be degraded (i.e. not attaining water quality standards needed to support designated uses) on the impaired waters list in the *Integrated Water Quality Monitoring and Assessment Report* or "Integrated Report" (IR). Restoring impaired waters involves three steps:

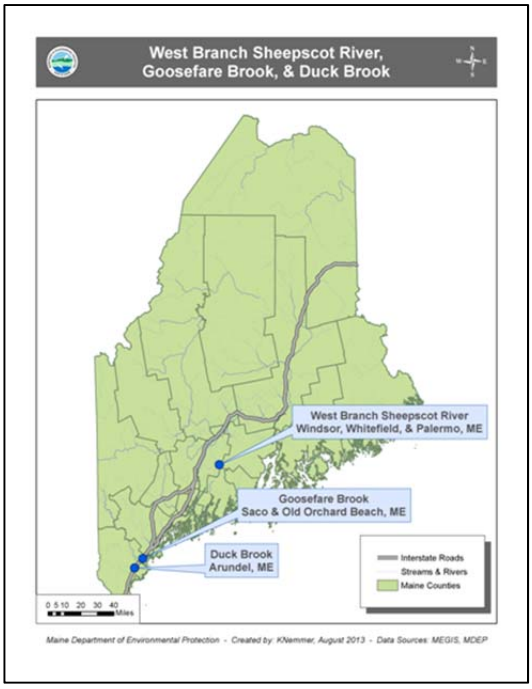
Americorps volunteer, Jake Van Gorder sampling on Rockland Harbor

- **Water Quality Assessment, TMDL & Alternative Approaches.** DEP establishes a pollution allocation (Total Maximum Daily Load - TMDL) for impaired waterbodies to comply with Section 303(d) of the Clean Water Act. A TMDL assessment estimates the necessary reduction in pollution from point and nonpoint sources in order for the waterbody to meet the state water quality classification. EPA unveiled a new approach for TMDL assessments entitled, 'A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program' which requires DEP to revise our approach to the way we develop and prioritize TMDLs. In 2015, DEP will develop a document to address the elements outlined in the 'Vision'.
- **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 NPS pollution. Usually work needs to be focused within a watershed for 10 years or more to restore an impaired waterbody. DEP provides technical and financial assistance to help communities improve watersheds and restore waters.

TMDL and Water Quality Assessments

New Bacteria TMDLs

DEP developed TMDLs for three streams impaired for bacteria: the West Branch Sheepscot River; Goosefare Brook; and Duck Brook. These draft TMDLs were submitted to EPA and approved in 2014. They were an addendum to the 2009 Statewide Bacteria TMD. Bacteria concentrations were measured in each of the impaired watersheds and used to determine the percent reduction needed to attain water quality standards. The TMDLs use a concentration-based approach because it is the most useful format for guiding both remediation and protection efforts in the impaired watersheds. The report identifies potential pollutant sources and sets a goal of meeting bacteria water quality criteria throughout the affected waterbodies.

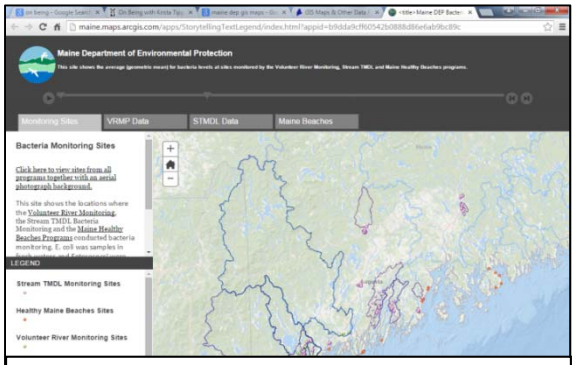


Statewide Bacteria TMDL Follow-up

For the fifth season, DEP staff and an AmeriCorps volunteer (partially supported by Section 319 funds), conducted follow-up monitoring on the Statewide Bacteria TMDL approved in 2009. Project objectives are to identify specific sources of bacteria through sampling for E. coli and sanitary surveys; then eliminate these problems; and ultimately remove the impaired stream segment from the 303d list.

In 2014, streams were selected based on restoration potential, adverse impact on receiving waters, follow-up on previous sampling efforts, and the need for characterizing natural levels of bacteria at clean sites. In 2014 this project added Rockland Harbor to answer questions about ambient bacteria levels in marine waters that are legally “Prohibited” for shellfish harvesting. Marine waters with highly developed watersheds are closed to harvesting as a precautionary measure and there is little recent monitoring data on these closed waters. A special project was also conducted on the Medomak River to identify potential bacteria sources impacting downstream clam flats that are closed after rain events.

DEP developed a web-based map to display the previously collected bacteria data. The information and can be found at: http://maine.maps.arcgis.com/apps/StorytellingTextLegend/index.html?appid=b9dda9cff60542b0888d86e6ab9bc89c
In addition to data collected for follow up TMDL monitoring, this website includes bacteria data collected by the VRMP program and Maine Healthy Beaches. DEP will be updating these maps with current data in 2015.



Screenshot of web-based bacterial monitoring data

Water Quality Assessments and Delisting Maine Waters

The DEP TMDL program developed documents to "Delist" waters currently listed in Category 4a of the 303d list (waters that are impaired but have a TMDL). Delisting in this context refers to placing waters in Category 1 or 2 (waters that attain standards) because DEP has determined these waters meet criteria through sampling or they meet the 'as naturally occurs' standards. These documents were prepared to be submitted for EPA review in conjunction with the 2014 Integrated Report.

Proposed Delistings for Dissolved Oxygen (DO)

DO delistings were proposed on streams with low DO that occurs due to natural conditions. The justification for the delisting incorporated information from past NPS TMDL modeling, aquatic life determinations, habitat ratings, and land use analysis to determine that the low DO is naturally occurring. The following table summarizes the information that supports delisting for naturally occurring conditions.

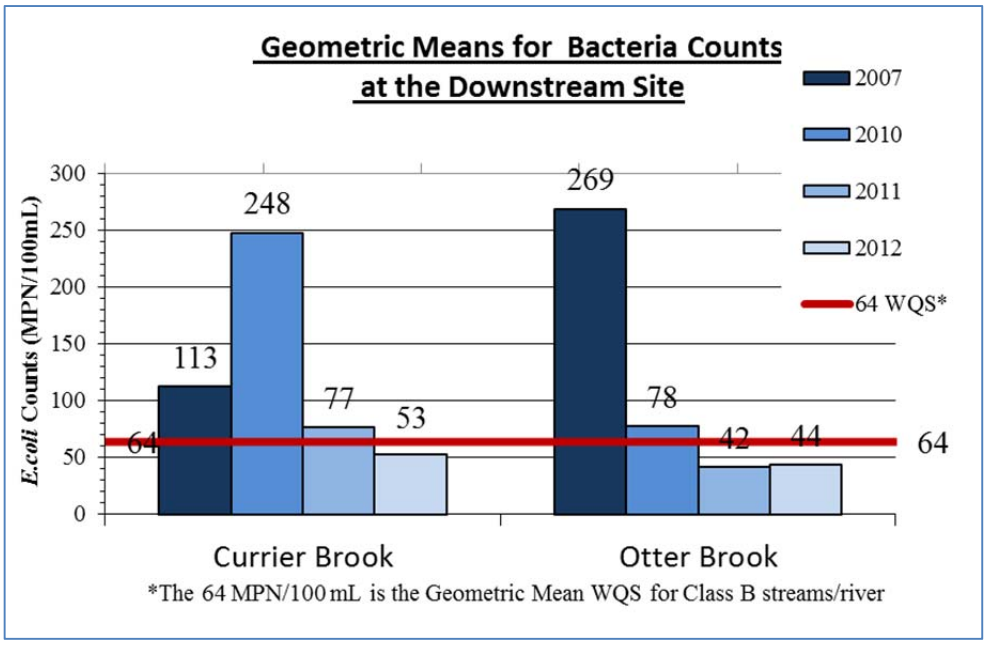
Summary results for naturally-occurring low dissolved oxygen report

Streams	2013 NPS TMDL MapShed Modeling Results	Naturally Low DO Determination*	Aquatic Life Attainment	Habitat Score	Land Use Characteristics
Carlton Brook	No load reductions needed	Yes	No Data	Good	88% forested
Chamberlain Brook	No load reductions needed	Yes	No Data	Good	83% forested, with buffer
Trout Brook	No load reductions needed	Yes	No Data	Good	93% forested
Choate Brook	No load reductions needed	Yes	No Data	Good	79% forested, with buffer
Dyer River	No load reductions needed	Yes	Class A attainment (periphyton)	Good	81% forested, with buffer
Stetson Brook	No load reductions needed	Indeterminate	Class B attainment (macroinvertebrates)	High	74% forested

**Based on assessment criteria from 2009 study- 'Development of a Low Dissolved Oxygen Stream Classification Protocol for Maine'.*

Proposed Delisting for Attainment of Bacteria Criteria

DEP proposed two streams be removed from the 303(d) impaired waters list due to attainment of bacteria criteria. Monitoring on both Currier Brook and Otter Brook found improvement and attainment at the sample sites. Results are summarized below.



NPS Watershed Implementation Projects

DEP allocates Section 319 funds to help communities implement their watershed-based plans to restore NPS-impaired waters. During 2014 Section 319 funds helped continue or start projects in nine NPS impaired watersheds:

Capisic Brook (Portland)	Spruce Creek (Kittery)
Dudley Brook (Chapman)	Trout Brook (Cape Elizabeth)
Long Pond & Great Pond (Belgrade)	Wilson Pond (Winthrop)
Ogunquit River (Ogunquit)	Whitten Brook (Skowhegan)
Pleasant River (Windham)	

Developing Plans to Restore NPS Impaired Waters

DEP provided services to help communities develop watershed-based plans (WBPs) to plan for actions needed to restore NPS impaired waters. EPA requires a watershed-based plan addressing nine minimum elements for a community to become eligible to receive Section 319 funds to help restore an NPS impaired waterbody. This plan helps ensure Section 319-funded projects make progress towards restoring NPS impaired waters.

- DEP accepted nine-element WBPs for four impaired streams: Cape Neddick River (York); Goodall Brook (Sanford); Thatcher Brook (Biddeford); and Topsham Fair Mall Brook (Topsham).
- Nine-element WBPs are being developed for three streams: Concord Gully Brook (Freeport); Goosefare Brook (Saco); and Meduxnekeag River (Houlton).
- Thru 2014 DEP has accepted 30 nine-element WBPs describing actions needed to restore NPS impaired waters:

Watersheds with Nine-Element Watershed Plan Accepted by Maine DEP

Annabessacook Lake (Monmouth)	Penjajawoc Stream (Bangor)
Birch Stream (Bangor)	Pleasant Pond (Gardiner)
Bond Brook (Augusta)	Pleasant River (Windham)
Capisic Brook (Portland)	Upper Prestile Stream (Fort Fairfield)
Cape Neddick River (York)	Red Brook (Scarborough)
Capehart Brook (Bangor)	Sabattus Pond (Sabattus)
China Lake (China)	Spruce Creek (Kittery)
Dudley Brook (Castle Hill)	Thatcher Brook (Biddeford)
East Pond (Smithfield)	Threemile Pond & Webber Pond (China)
Goodall Brook (Sanford)	Topsham Fair Mall Brook (Topsham).
Hart Brook (Lewiston)	Trout Brook (Cape Elizabeth)
Long Creek (South Portland)	Togus Pond (Augusta)
Long Pond & Great Pond (Belgrade)	Unity Pond (Unity)
Ogunquit River (Ogunquit)	Whitten Brook (Skowhegan)
Pearce Brook (Houlton)	Wilson Pond (Monmouth)

4. NPS Management Program Plan 2015-2019

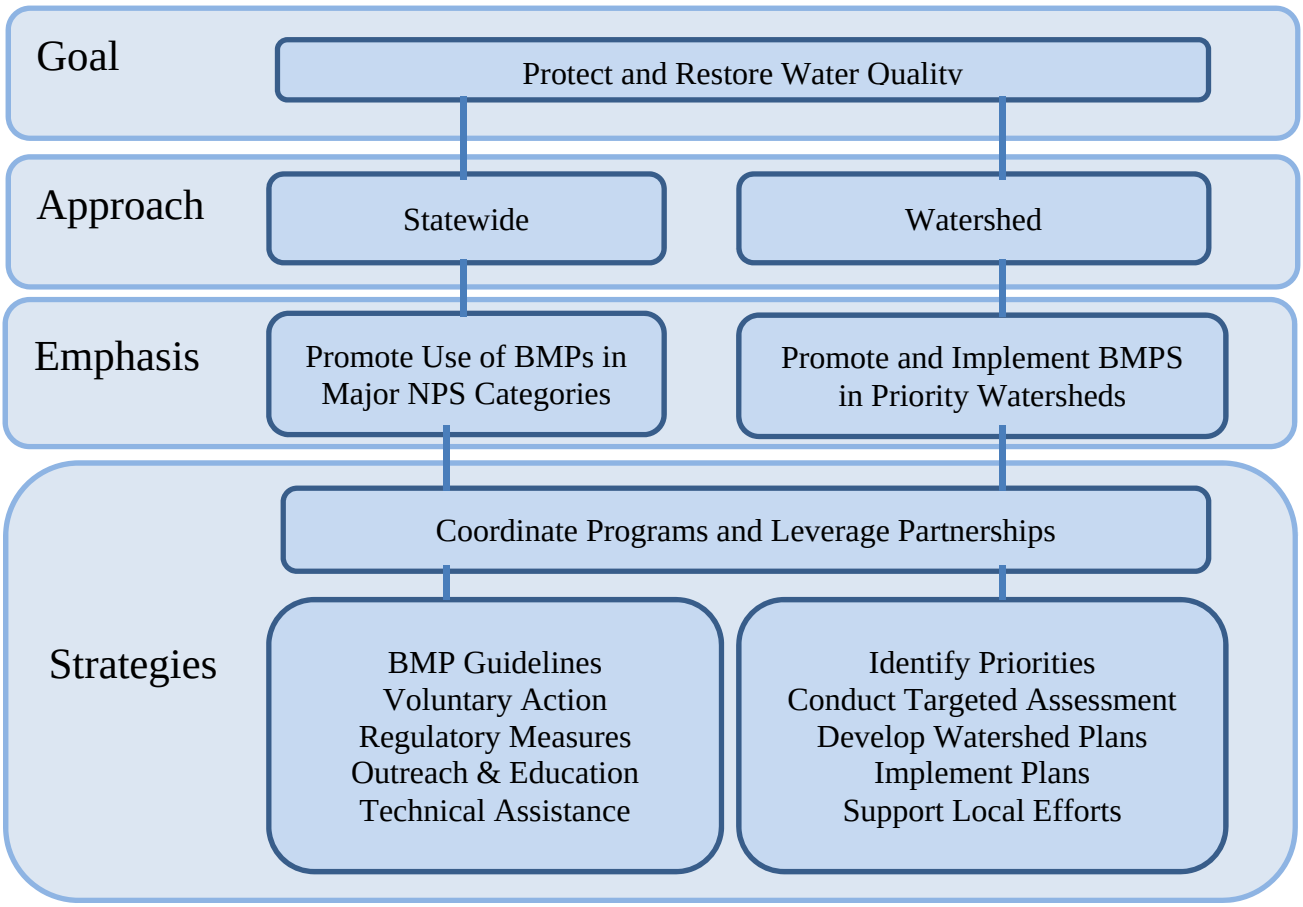
DEP updated the State NPS management program plan in collaboration with the Maine Departments of: Agriculture, Conservation and Forestry; Transportation; Health and Human Services; and Marine Resources; and other organizations. This plan establishes program goals and strategies that Maine will apply over the next five years to make progress controlling NPS pollution.

The NPS plan describes:

- Mission, Goals, Guiding Principles & framework for Maine's NPS Program;
- Lakes, streams, rivers, and marine waters impaired by NPS pollution;
- How both Statewide and Watershed-based approaches will be used to control NPS pollution;
- Regulatory and non-regulatory programs, management strategies, and resources state agencies use to address Maine's most pressing NPS water pollution control problems;
- Partnerships and funding sources critical to protect or restore Maine's waters;
- DEP's approach to promote protection and restoration work in watersheds that are most vulnerable to NPS water pollution - NPS Priority Watersheds;
- Five-year objectives, actions, and milestones to make progress achieving the long-term goals of Maine's NPS management program.

This NPS plan meets national Section 319 program guidelines (issued 04/12/13) that describe key components of effective State NPS management programs. In September 2014 the U. S. Environmental Protection Agency approved the updated plan.

Statewide and Watershed-based Approaches
Maine NPS Management Program Plan



The Maine NPS Management Program Plan is available at:
http://www.maine.gov/dep/land/watershed/nps-program-plan.html

5. Section 319 Grant Administration

EPA awarded $1,766,269 of FFY 2014 Section 319 funds to DEP. Section 319 funds supported 10 DEP NPS program staff positions. About 43% of the funding ($750,774) was used for NPS grants to municipalities, soil and water conservation districts and watershed groups for watershed implementation projects.

Activity	Provider	Program Funds Subtotal	Project Funds Subtotal	Section 319 Total	Non-federal Match
NPS Grants for Watershed Projects	Grantees	0	750,774	750,774	595,302
NPS Training & Resource Center	DEP	1,926	0	1,926	0
Small Community Grants Program	DEP	0	0	0	86,722
DEP Staff (10 FTE), Other & Indirect	DEP	967,884	45,685	1,013,569	586,635
Totals		$969,810	$796,459	$1,766,269	$1,268,659

DEP completed closeout of NPS projects previously funded under the FFY 2011 Section 319 grant. DEP administered FFY 2012, 2013, and 2014 grant awards including technical support and monitoring sub-recipient performance on 38 grants for NPS projects.

D. NPS Program Services

1. DEP Services for Watershed Groups and Municipalities

DEP provides considerable technical assistance to help watershed groups and towns reduce NPS water pollution. Some of the activities and projects that DEP supported in 2014 include:

- **Municipal Comprehensive Plan Reviews** – DEP staff provide maps and data to municipalities starting the comprehensive planning process. After plans are submitted to the state, DEP staff review the water resources sections of municipal comprehensive plans for consistency with agency goals, programs, and policies. In 2014, assistance was provided to the following towns: Baileyville, Belgrade, Bowdoinham, Fairfield, Indian Township, Madison, Princeton, Randolph, and Waterville.

- **NPS Site Tracker** – The NPS Site Tracker tool assists watershed groups with managing information on erosion sites in their watersheds. The tool allows prioritization of erosion sites, tracking of sites as they are fixed, and listing of new sites as they are discovered. The Tracker combines an Excel spreadsheet with electronic photo organization and online

mapping of sites. The DEP helped the Ellis (Roxbury) Pond Watershed Committee and Panther Pond Association set up and start to use the NPS Site Tracker in 2014.

- **Stormwater Compensation Fee (SCF) Projects** – Under the Maine Stormwater Law, developers in certain lake watersheds have the option to pay a compensation fee in lieu of constructing additional BMPs to comply with a portion of a parcel's phosphorus budget. DEP staff works annually with seven partner organizations to identify and implement phosphorus mitigation projects in these watersheds. Several projects were completed with SCF funds in 2014 including a large rain garden at the Bridgton Library and a NPS project at Sebasticook Lake in Newport.

- **Stream Water Quality Monitoring** - Conducted preliminary water quality assessment on the following streams to help with current or anticipated planning efforts or help assess progress with restoration goals: Birch Stream, Penjajawock Stream and Arctic Brook (Bangor), Capisic Brook (Portland), Concord Gully Brook (Freeport), Fish Brook (Fairfield), Goodall Brook (Sanford), Goosefare Brook and Bear (Saco), Thatcher Brook (Biddeford), Topsham Fair Mall Stream (Topsham), Trout Brook (South Portland), Unnamed Tributary to Bond Brook (Augusta), Whitten Brook (Skowhegan). Northern Maine stream work included Oliver Brook NWQI water body (Houlton), Craig (Littleton), Smith (Houlton), Suitter (Houlton), Kennedy (Presque Isle) and Presque Isle Stream (Presque Isle).

- **Urban Watershed Mapping** – DEP staff and a summer intern helped complete mapping projects in urban stream watersheds where municipalities are developing watershed-based plans. In 2014, watershed boundaries and stormwater outfall catchments were mapped in the field and entered into GIS for the Goosefare Brook and Bear Brook watersheds in Saco and Old Orchard Beach.

DEP provides technical assistance for groups protecting their lakes through watershed surveys. The Ellis (Roxbury) Pond watershed survey (volunteers shown above) was conducted with local funding and assistance from the DEP and VLMP.

- **Watershed Group Support** DEP supports the work of watershed associations and communities through presentations at annual association meetings and providing technical assistance outside of 319 grant-funded projects. In 2014, DEP provided assistance to the following groups: Great East Lake (Acton), Lake Auburn (Auburn), Long Creek Watershed Management District (South Portland), Cobbossee Watershed District, Belgrade Regional Conservation Alliance, the Belgrade Lakes Association, and others. The DEP also provides watershed maps to lake and watershed groups upon request.

- **Watershed Roundtable-** Over 60 watershed managers from state agencies, municipalities, watershed organizations, and SWCDs attended the DEP's 12th annual Watershed Managers Roundtable, which was held at the Viles Arboretum in Augusta. 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.

- **Watershed Surveys** – An 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. After completing surveys, many of these groups have proceeded to create lake watershed-based protection plans, which will guide local stewardship efforts and open the door to possible 319 grant funding.

  In 2014, DEP provided assistance for six watershed surveys. This includes surveys for Adams and Knickerbocker Ponds (Boothbay), Damariscotta Lake (Jefferson), Ellis/Roxbury Pond (Roxbury), Flying Pond (Mount Vernon), Georges Pond (Franklin) and Panther Pond (Raymond). DEP also worked with the Volunteer Lake Monitoring Program to hold a workshop on conducting watershed surveys. The workshop was attended by 20 people representing 11 lakes.

- **Youth Conservation Corps** – The DEP provides technical assistance and training to the nine YCC programs. DEP staff hosted a YCC Roundtable in December 2014 to promote information sharing and collaboration between the YCCs. These YCC programs hire high school students to install buffers, erosion control measures, and other conservation practices in lake and river watersheds. Most of these programs originally started as part of 319 grant projects. After 319 grant support ends, communities work to find local funding to continue the programs.

2. Statewide NPS Programs

Maine Nonpoint Source Training and Resource Center

The Center's primary focus is to provide training to various groups throughout the state to help them prevent nonpoint source pollution. In addition the Center maintains an inventory of NPS publications and a DVD lending library, and acts as a clearinghouse for information on nonpoint source pollution and best management practices.

Accomplishments in 2014:

- Provided training to 522 participants in erosion and sediment control practices for contractors, and certified 347 additional individuals and 7 new companies in the Voluntary Contractor Certification program. Through 2014 - 2,763 individuals and 40 companies are certified.

Attendees at an NPSTC workshop

- Provided workshops on Salt Management, LakeSmart Principles and Septic System Installation, training 125 participants.
- Provided training to 80 engineers, consultants and municipal officials on the proper inspection of Erosion and Sediment Control Best Management Practices and Stormwater Best Management Practices.
- Provided continuing education training on Controlling Turbidity on Construction Sites and Environmental Permitting to 166 individuals certified in erosion and sediment control practices.
- Provided training on Low Impact Development to 75 municipal officials throughout the state.

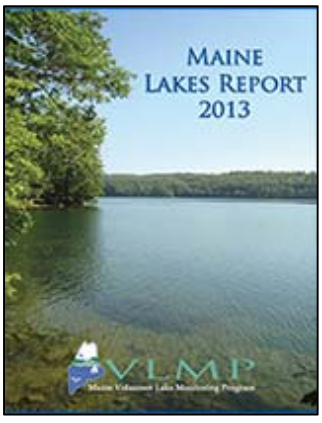
For More Information:

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 Volunteer Lake Monitoring Program (VLMP)

Funding received under Section 319 partially supported the educational aspects of the VLMP including training of volunteer monitors to collect quality data; production of one newsletter, numerous electronic notices and one annual report in 2013; and the VLMP annual meeting where information about lake water quality and monitoring topics is presented. Volunteers monitor their 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 an order of magnitude greater than the Section 319 funding level.

Accomplishments in 2014:



- Produced the *2013 Maine Lakes Report*, which reported that during 2013, volunteers obtained 4,004 Secchi transparency readings; 21,301 dissolved oxygen readings; 1,201 total phosphorus samples; and 673 chlorophyll-a samples. These data were collected from 400 lake stations on 332 lakes representing approximately 36% of Maine's lake surface area.
- VLMP produced one newsletter, numerous electronic notices, and convened the 2014 Annual Meeting, which was their 43rd Anniversary Celebration attended by 110 people.
- Encouraged collection of transparency readings on days that the Landsat satellite passed over Maine.
- Trained more than 45 new volunteers for transparency and 19 volunteers for dissolved oxygen, for a total of 449 volunteers certified to obtain Secchi transparency data and another 175 volunteers certified to collect both transparency and dissolved oxygen data. VLMP also recertified 75 volunteers for transparency, 67 volunteers for dissolved oxygen, and recertified 83 volunteers online using the Virtual Secchi Recertification tool.
- Reached a level of 624 certified volunteer water quality monitors in the program. These volunteers were monitoring 454 lake basins in Maine by the end of 2014.

For More Information:

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

Maine Volunteer River Monitoring Program (VRMP)

The purpose of the VRMP is to provide a standardized approach to river and stream monitoring. Volunteer groups participating in the program collect data under the VRMP Quality Assurance Program Plan and develop sampling and analysis plans (SAPs) specific to their needs. The volunteer organizations are also responsible for recruiting and organizing the volunteers, attending an annual training/certification, and entering the data electronically.

The VRMP provides technical support and resources to the volunteer groups. This support includes assistance with SAP development/updates, annual training, and equipment maintenance and loan. VRMP staff review the data entered by the volunteer groups, uploads acceptable data to DEP's database and produces an annual report.

Accomplishments in 2014:

- Completed the "Volunteer River Monitoring Report – 2013 Data Report", April 2014.
- VRMP staff trained and certified/re-certified volunteers associated with seven volunteer organizations on a number of small and major river and stream systems statewide.
- Water quality data was collected by 39 volunteers at 75 sites and included 547 sampling events.
- Data collected included temperature, dissolved oxygen, conductivity, bacteria, chlorophyll, and nutrients.
- Completed an update of the Quality Asssurance Program Plan, "Maine Volunteer River Monitoring Program (VRMP) Quality Assurance Program Plan (2014-2018)".

Presumpscot River Watch volunteers-May 2014

For More Information:
Mary Ellen Dennis, DEP, VRMP Coordinator – (207) 215-7946 mary-ellen.c.dennis@maine.gov

VRMP Website –
http://www.maine.gov/dep/water/monitoring/rivers_and_streams/vrmp/index.htm

Maine Lakes Biomanipulation – Post Fish Removal - Phase III

The goal of this project is to improve the water quality in East Pond, an impaired lake at the head of the Belgrade Lakes chain, through reduction of four fish species: primarily non-native white perch, black crappie, landlocked alewife; and native yellow perch. The goal of this six-year

annual targeted fish removal was to enhance zooplankton survival and concomitant consumption of nuisance blue-green algae, ultimately resulting in greater water transparencies. **Phase I** of this project in 2004-2006 assessed baseline water quality conditions and resident fish assemblages in East Pond in Oakland and Smithfield and the reference waterbody, North Pond in Smithfield. **Phase II**, fish removal, began in East Pond following ice-out in 2007 and continued through the spring of 2012. **Phase III** encompasses three years (2013-2015) of post-fish removal study to complete objectives, including project assessment and project evaluation. Notably, the Cooperative Agreement with the University of Maine (Orono) ended December 31, 2012.

Accomplishments in 2014:

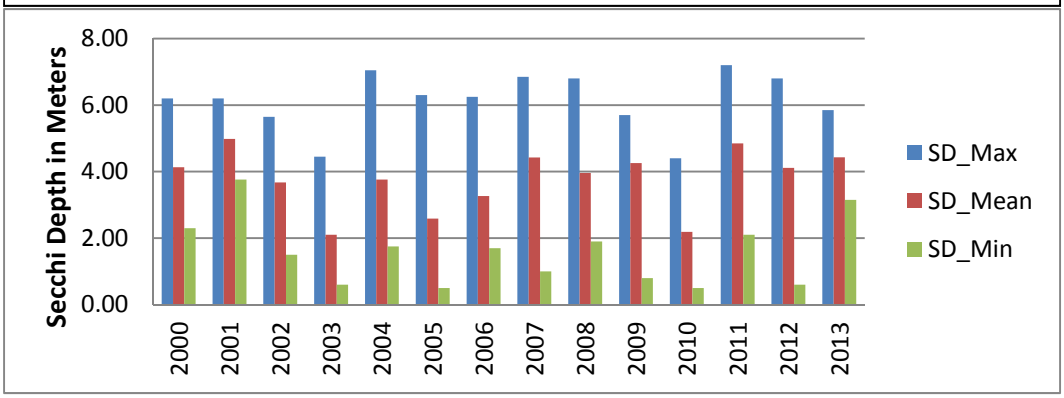
From May through September, bi-weekly water quality sampling from single deep-hole stations only, was carried out by the Lakes Assessment section of Maine DEP. Parameters sampled and data gathered included total phosphorus, chlorophyll-a, Secchi disk water transparency, dissolved oxygen-temperature profiles, and phytoplankton-zooplankton assemblages in both East and North ponds.

As in past years, fish assemblages in East and North ponds were assessed monthly, June through September, using a standard combination of active fishing gear including pre-dusk sinking gill nets, expert baitfish angling, and night-time beach seining. As in past years, Maine DEP fish technicians tagged and released 2,000 white perch for mark-recapture studies to continue estimates for the adult white perch (spawning) population. In 2014, ice-out occurred in mid-April and an extremely hot summer resulted in a productive growing season at East Pond resulting in reduced transparency measures during the summer (comparable to water quality conditions in 2010). Prior to this, water quality results indicated that nuisance blue-green algae blooms still occurred in East Pond, however, bloom prevalence had noticeably shifted to later August and September (2004 thru 2009).

Interim Results:

Transparency, as indicated by Secchi depth, has been measured consistently over the time span of the project and annual monitoring results are displayed below. Significant trends in Secchi depth are not apparent due to inter-annual seasonal variability. Interestingly, the frequency of higher maximum Secchi is increasing. This means that the lake is experiencing a greater annual frequency of higher clarity in the early part of the summer when compared to the period prior to the fish removal. Secchi depth is measured over the course of the season which indicates changes in the timing and duration of the algal bloom, but this is not shown in a simple annual timeline.

East Pond Annual Secchi Depth Monitoring Results 2000 - 2013



Overall, there has been a measurable improvement in the water quality of East Pond relative to the increased length of time in the summer when water quality-clarity standards of two meters or better are achieved. A final project report will be prepared during the fall-winter of 2015-16.

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

3. Other Program News

Water Quality Improvement

Measures to treat polluted runoff and improve habitat in Blanchette Brook, a tributary to Long Creek, appear to be improving water quality. In 2010, DEP conducted macroinvertebrate sampling at six monitoring sites within Long Creek to assess if the brook attained class C aquatic

Soil media filters help cool water, trap pollutants, and slow the flow of runoff into Blanchette Brook

life criteria. Blanchette Brook was one of the five sites which did not attain Class C aquatic life criteria. In 2011, Long Creek Watershed Management District (LCWMD) invested $193,215 for

riparian restoration of a portion of Blanchette Brook. Restoration included adding wood and boulders to the channel and shrubs and perennials to the floodplain. In 2012, LCWMD invested $615,796 to treat 16.39 acres of impervious surfaces in the Blanchette Brook watershed to reduce polluted runoff. Blanchette Brook attained Class C water quality aquatic life criteria based on monitoring that LCWMD and DEP jointly conducted in 2013. LCWMD's hydrology and dissolved oxygen monitoring have also shown considerable improvements since 2010, indicating that investments in the watershed have been successful in improving stream conditions and water quality. Continued monitoring will track future water quality changes to Blanchette Brook. FMI: http://www.restorelongcreek.org

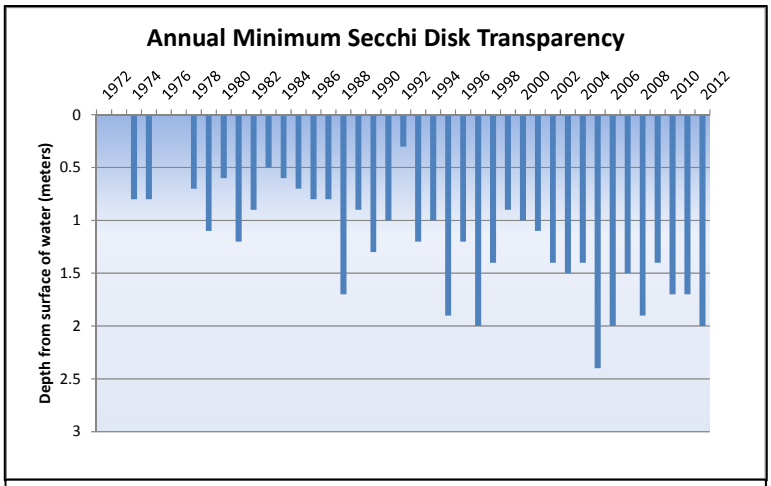
Plantings along the banks of the stream near IDEXX will eventually provide shade to cool the stream and habitat for bugs and fish

National Water Quality Initiative (NWQI)

Under the NWQI, the USDA - Natural Resources Conservation Service (NRCS) uses farm bill Environmental Quality Improvement Program (EQIP) funds to help farmers install conservation practices in the watershed to improve water quality and aquatic habitat.

- NRCS completed NWQI work in the Alder Stream area of the Sebasticook watershed. DEP and NRCS produced a 3-page briefing about the NPS and point source water pollution control work over the past 40 years that has greatly improved the water quality of Sebasticook Lake.

- NRCS added the Unity Pond watershed including Sandy Stream into the NWQI program. Unity pond is



Sebasticook Lake

impaired by severe nuisance algal blooms which occur every year. EPA approved the DEP TMDL assessment report for Unity Pond in 2004. The Sandy Stream watershed has considerable agricultural cropland production, and it flows into Unity pond during significant rain events when the lake level is low.

- The NRCS expanded the scope of NWQI work in the Meduxnekeag River watershed. The NRCS added the Smith Brook watershed. Smith Brook is adjacent to the Nickerson watershed which was previously enrolled as an NWQI watershed. Improved conservation practices on cropland and livestock operations in both watersheds are needed to make progress reducing impairments in the Meduxnekeag River.

Urban Impaired Streams Recovery Potential

DEP adapted an EPA recovery potential screening model to assess recovery potential for Maine's 29 urban impaired stream watersheds. The outcome was somewhat predictable based on our existing working knowledge of these watersheds. However, the evaluation did confirm that the model will have value for impaired or threatened watersheds where less knowledge is available. DEP plans to conduct an evaluation of watersheds that are considered at risk due to the extent of urbanization and likelihood of future development.

EPA's Recovery Potential Screening Model provides a systematic approach for comparing watersheds and potential response to restoration efforts. It is a method for comparing the relative restorability of large numbers of water bodies. It ranks each watershed using several ecological, stressor, and social context indicators that are associated with the likelihood that a restoration effort may succeed. The user selects the indicators based on what is most appropriate to the watersheds being assessed, the availability of quality data, and the goals of the restoration effort. The model offers a flexible method that can be customized.
FMI: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/index.cfm

Ducky II PSA

The Water Environment Federation selected Maine's Ducky II stormwater runoff public service announcement as a first place winner in the Public Education and Outreach Category under their StormTV competition for 2014. Maine's municipal separate storm sewer system community has used the video as part of a statewide media campaign including television and online advertising. DEP helped produce the PSA in 2011.

E. NPS Grants Program

1. Overview – NPS Grants Program

DEP uses a watershed-based approach as the coordinating framework to organize public and private sector efforts to identify, prioritize, and then implement activities to restore or protect waters. A pass-thru grants program is administered that awards and monitors sub-grants of federal CWA Section 319 and 604b funds for watershed projects to help restore or protect lakes, streams, rivers or coastal waters from NPS pollution. These grants help communities identify

nonpoint water pollution sources, prepare watershed-based management plans, and adopt needed best management practices. DEP issues grants to local project sponsors to help fund two types of watershed-based projects:

- **Watershed-based Plan Development.** DEP offers grants to help communities develop a watershed-based management plan. A plan provides assessment and management information and describes actions needed over a 5-10 year period to restore a NPS-impaired water or to protect unimpaired waters considered threatened by NPS pollution. A thorough assessment of NPS problems (an NPS watershed survey) is needed to prepare an informed watershed plan.
- **Watershed-based Plan Implementation**. DEP offers grants to help communities implement their watershed-based plans and carry out actions called for in the plan to make progress restoring or protecting a waterbody.

2. Request for Proposals: FFY 2015 Grants for NPS Pollution Control Projects

In June, DEP issued an RFP for projects to help communities implement their watershed-based plans by carrying out actions to make progress restoring or protecting a waterbody. Ten proposals were received requesting $955,699. DEP issued conditional grant awards for eight projects summing to $763,809. Also DEP issued an RFP for projects to develop a watershed-based management plan. DEP received only one proposal. The City of Bangor will receive a grant ($42,000 in 604(b) funds) for Artic Brook. DEP anticipates projects will begin by April 2015.

Conditional Grant Awards for NPS Projects

Project Title	Grantee	Project #	Grant Section 319	Match
Capehart Brook Restoration Phase II	City of Bangor	2015RT01	150,000	125,500
Great East Lake and Wilson Lake Watershed Implementation - Phase 2	Acton Wakefield Watersheds Alliance	2105RR02	55,356	54,409
Lake Auburn Watershed Improvement Project-Phase 1	Lake Auburn Watershed Protection Commission	2015RT03	148,438	116,472
Phillips Lake Watershed Protection Project- Phase II	Hancock County SWCD	2015RR04	98,447	65,665
Red Brook Restoration Project, Phase I	Town of Scarborough	2015RT05	119,358	82,090
Spruce Creek Watershed Restoration Project, Phase IV	Town of Kittery	2015RT06	59,050	62,875
Topsham Fair Mall Watershed Restoration Project Phase I	Town of Topsham	2015RT07	95,997	66,405
Upper Prestile Stream Main Stem I Subwatershed Restoration Phase 1	Central Aroostook County SWCD	2015RT08	37,164	24,776
		Totals	$763,810	$598,192

3. NPS Water Pollution Control Projects Funded in 2014

DEP issued 16 grants totaling $1,006,710 to help communities: (1) develop watershed-based plans for five watersheds or (2) start-up or continue on-the-ground implementation of BMPs according to watershed-based plans to make progress on improving water quality in 11 watersheds. Clean Water Act Section 319 and 604(b) funding for these grants was provided to DEP by EPA.

Project Title	Grantee	Project #	Grant	Match
Alamoosook Lake Watershed-based Plan and Survey	Hancock County SWCD	2013RR24	21,135	15,000
Capisic Brook Watershed Restoration Project, Phase I	Cumberland County SWCD	2014RT04	86,635	73,630
Cochnewagon Lake Watershed-based Plan Development	Cobbossee Watershed District	2013RT26	10,800	7,600
Crescent Lake NPS Watershed Protection Project, Phase II	Town of Raymond	2014RR03	82,049	76,518
Dudley Brook Restoration Project, Phase I	Central Aroostook SWCD	2012RT24	14,689	9,793
Goosefare Brook Watershed Plan Management Development	City of Saco	2013RT25	45,952	31,790
Little Sebago Lake Protection Project, Phase IV	Cumberland County SWCD	2013RR27	96,670	69,786
Long Pond NPS Watershed Restoration Project, Phase III	Belgrade Regional Conservation Alliance	2014RT06	74,460	72,500
Ogunquit River Watershed Restoration Project, Phase I	Town of Ogunquit	2014BB09	92,050	72,730
Sebago Lake Watershed Assessment and Prioritization	Cumberland County SWCD	2013PP05	41,577	33,640
Sucker Brook Watershed-based Management Plan Development	Town of Hampden	2014PT13	44,000	30,450
Thompson Lake NPS Watershed Protection Project, Phase IV	Cumberland County SWCD	2014RR07	87,938	64,005
Toddy Pond Watershed Protection Project	Hancock County SWCD	2014RR01	82,257	54,940
Trout Brook Restoration Project, Phase II	Town of Cape Elizabeth	2014RT08	109,588	72,979
Wilson Pond NPS Watershed Restoration Project, Phase II	Cobbossee Watershed District	2014RT05	65,200	45,590
Woods Pond Watershed Protection Project, Phase I	Lakes Environmental Association	2014RR02	60,000	42,810
		Totals	$1,015,000	$773,761

4. NPS Pollutant Load Reductions

NPS load reductions for Section 319-funded implementation projects are reported in the EPA Grants Reporting and Tracking System database.

2014 NPS Pollutant Load Reductions 15 Implementation Projects		
Sediment	Phosphorus	Nitrogen
427 tons/year	381 lbs/year	594 lbs/year

Six implementation projects funded in previous years were successfully completed. BMPs were installed to reduce polluted runoff in four lake and one stream watersheds: Beech Hill Pond, Great Pond, Long Pond, Phillips Lake, Sebago Lake, and Whitten Brook. These six projects reduced pollutant loading by 396 tons of sediment (equivalent to 34 dump truck loads) and 336 pounds of phosphorus per year.

EPA 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 grantees use methods described in the EPA "Region 5 Model" and/or the USDA Forest Service Water Erosion Prediction Project - Road computer model to estimate NPS load reductions. These models are described at these websites: http://it.tetratech-ffx.com/steplweb/ and http://forest.moscowfsl.wsu.edu/fswepp/.

F. Summaries of NPS Water Pollution Control Projects Completed in 2014

Thirteen NPS watershed projects funded through the NPS grants program in previous years were successfully completed. DEP provided technical assistance and granted $745,238 of Federal Clean Water Act funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at $869,312.

- BMPs were installed to reduce polluted runoff in five watersheds: Whitten Brook (Skowhegan); Beech Hill Pond (Otis); Long Pond and Great Pond (Belgrade); Phillips Lake (Dedham) and Sebago Lake. NPS projects reduced pollutant loading to these waters by 336 pounds of phosphorus and 396 tons of sediment per year - equivalent to about 34 dump truck loads.
- NPS watershed survey projects were completed for three watersheds: Bear Pond (Waterford); Stroudwater River (Gorham); and Sucker Brook (Hampden). An NPS

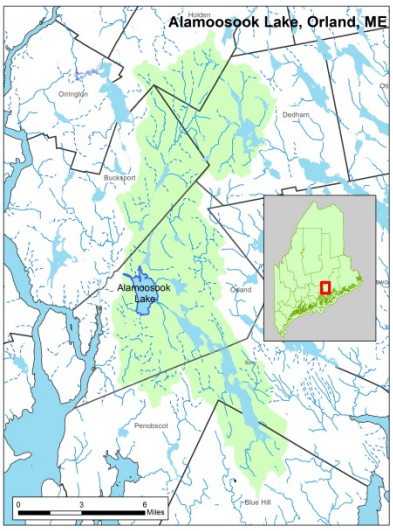
survey finds, describes, and prioritizes NPS pollution sources in a watershed and recommends BMPs to reduce polluted runoff.

- Watershed-based plans were completed for Alamoosook Lake (Orland); Goodall Stream (Sanford); Thatcher Brook (Biddeford); and Topsham Fair Mall Stream (Topsham). A plan provides assessment and management information and describes actions needed to restore NPS-impaired water bodies, or to protect water bodies threatened by NPS pollution.

Concise two-page summaries of each project are included in the following pages. These two-page summaries will be uploaded to the Knowledgebase database located at: http://www.gulfofmaine.org/kb/2.0/search.html.

Alamoosook Lake Watershed-based Plan & Watershed Survey #2013RR24

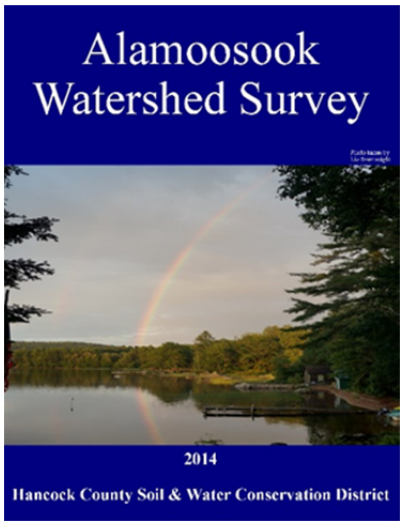
Waterbody Name:	Alamoosook Lake
Location:	Towns of Orland, Bucksport, and Penobscot-Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County Soil & Water Conservation District
Project Duration:	March, 2014 - October, 2014
319 Grant Amount:	$21,135
Local Match:	$15,404



PROBLEM:

Water quality data has been collected by the Maine DEP and the Volunteer Lake Monitoring Program since 1977. Alamoosook Lake water quality is considered to be average and the potential for nuisance algae blooms is low. However, the watershed is experiencing significant development pressure. Poorly built and inadequately maintained camp roads and driveways are getting increased use due to conversions of summer cottages into year round residences. Steep topography on the northern and eastern sides of the lake contributes to erosion problems. These factors increase the threat of NPS pollution entering the lake. A NPS watershed survey was needed to document erosion problems, raise community awareness, and develop a watershed-based plan to guide efforts to correct NPS issues to help prevent decline in water quality.

PROJECT DESCRIPTION:



The Alamoosook Lake Watershed Survey was coordinated by the Hancock County Soil and Water Conservation District (HCSWCD) and guided by a steering committee of members of the Alamoosook Lake Association, Craig Brook National Fish Hatchery staff, Maine DEP, the towns of Bucksport, Orland and Penobscot, and Alamoosook Lake watershed residents. The Steering Committee was the organizational force behind the planning and implementation of the watershed survey and development of the watershed-based plan. The entire Alamoosook Lake watershed was surveyed using methods described in Maine DEP's *A Citizen's Guide to Lake Watershed Surveys*. Watershed survey results were used to help inform development of a watershed plan describing actions needed to help protect the lake over the next ten years (2015 to 2025).

PROJECT OUTCOMES:

- Successfully completed a NPS watershed survey. The Alamoosook Lake Watershed Survey Report summarizes the findings of the watershed survey and gives information on the number and type of NPS sites, the severity of each site's erosion problems, recommended fixes, impacts to the lake, and the cost and technical level of efforts needed to fix the problem.
- Developed the Alamoosook Lake Watershed-based Protection Plan, which lays out a strategy and schedule for NPS mitigation and water quality protection efforts over the next ten years.
- Produced estimates of the pollutant loads from the worst 12 sites in the watershed. About 50 tons of sediment and 46 lbs. of phosphorus are estimated to reach the lake each year.
- Developed a NPS Sites Tracker database for the watershed, allowing the lake association to efficiently record information about the condition of NPS sites over the year as part of long-term watershed stewardship activities.
- Informed people living in the watershed about NPS pollution and potential adverse impacts on Alamoosook Lake and motivated parties who are interested in protecting the lake to work together.

Volunteers document erosion and sediment problems in the Alamoosook Lake watershed

PROJECT PARTNERS:

Alamoosook Lake Association

Craig Brook National Fish Hatchery

Towns of Bucksport, Orland, and Penobscot

CONTACT INFORMATION:

Megan Facciolo, Hancock County SWCD (207) 667-8663 mfacciolo@hancockcountyswcd.org
Greg Beane, DEP (207) 299-4703 greg.e.beane@maine.gov

Bear Pond Watershed Survey
#2012PP21

Waterbody Name: Bear Pond

Location: Waterford- Oxford County

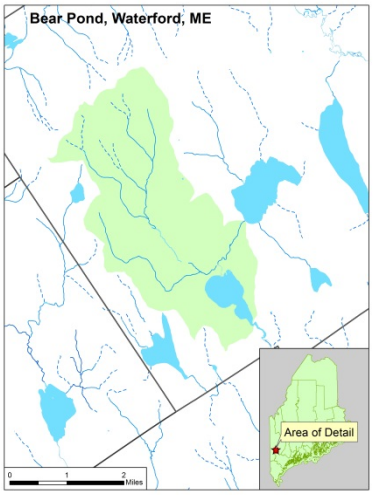
Waterbody Status: NPS Priority Watershed

Project Grantee: Oxford County SWCD

Project Duration: January 2013 – January 2014

604(b) Grant Amount: $14,586

Local Match: $10,488



PROBLEM:

Bear Pond's surface area is 250 acres and has a watershed of 5,331 acres (8.3 sq. mi.). Bear Pond is Waterford's deepest lake, reaching a maximum depth of 72 feet. It provides excellent habitat for cold- and warmwater fish and is stocked with landlocked salmon and brook trout. Bear Pond's shoreline is fringed with 70 seasonal and year-round residences and has a summer youth camp, Camp Wigwam.

Lakes Environmental Association (LEA) and volunteer monitors have tested Bear Pond's water quality since 1978. According to LEA, three key parameters were worse in 2011 than the long-term average: Secchi disk transparency, chlorophyll, and phosphorus. However in late summer 2011, Bear Pond still retained a good volume of well-oxygenated, cold water below the thermocline, necessary to maintain a coldwater fishery. Bear Pond rates an "average/moderate" degree of concern by LEA. Town and camp roads are thought to contribute phosphorus pollution to Bear Pond. Residential areas near the shoreline and throughout the watershed may also affect the lake, along with timber harvesting.

PROJECT DESCRIPTION:

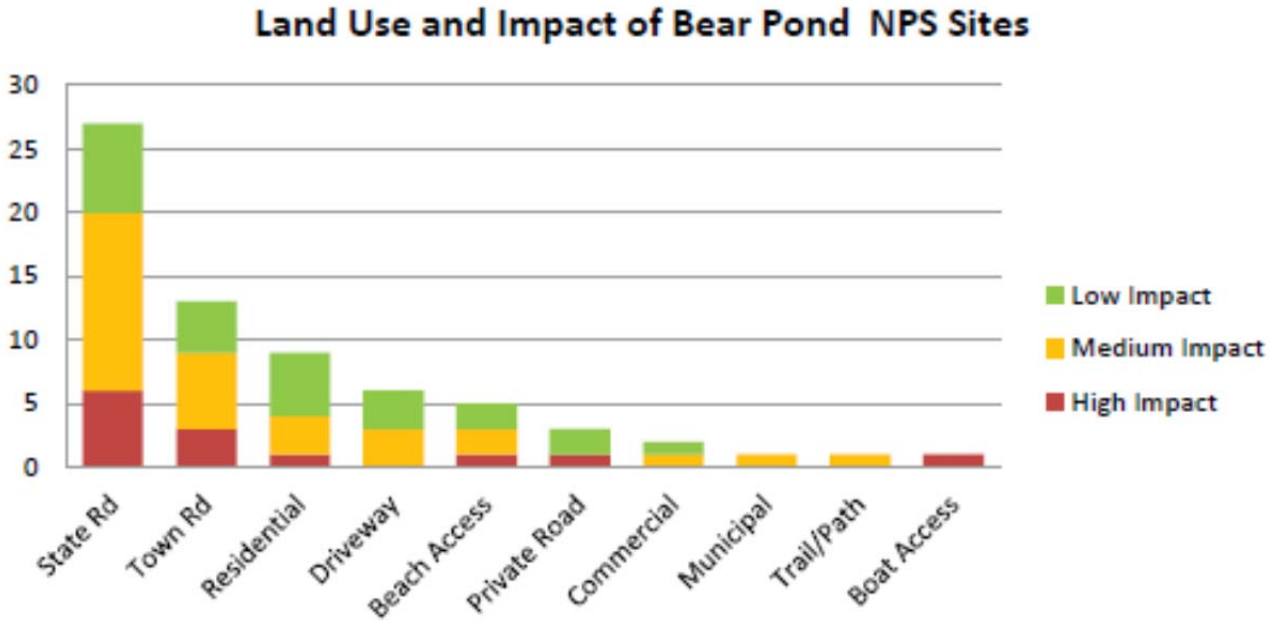
The primary purpose of the watershed survey was to identify and prioritize existing sources of polluted runoff, particularly soil erosion sites. However, the following goals were also important:

- Raise public awareness of the connection between land use and water quality, and the impact of polluted runoff.
- Inspire people to become active stewards of the watershed.
- Use the information gathered for a long-term lake protection strategy.
- Provide recommendations to landowners to fix erosion problems on their properties.

Prior to the watershed survey, OCSWCD sent a letter to approximately 218 landowners in the watershed informing them about the survey and providing an opportunity to opt out of the survey. Only eight landowners opted out. Over 24 people attended the watershed survey training held on May 11, 2013. Surveying began that day and was completed by the end of June.

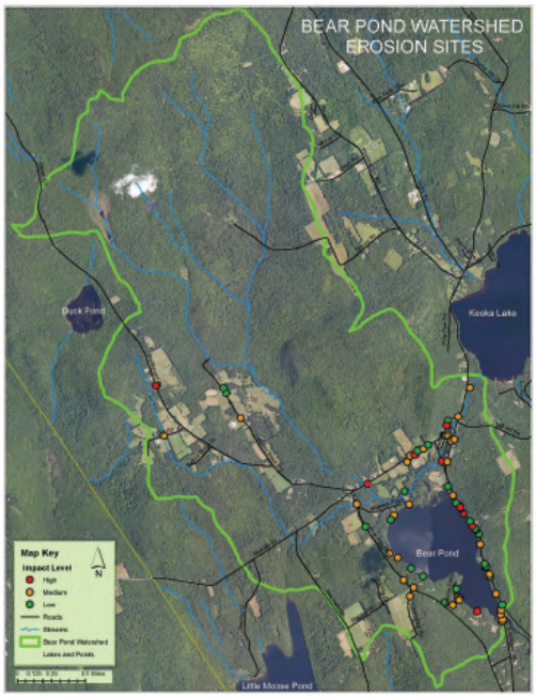
PROJECT OUTCOMES:

- Completed an NPS survey of the Bear Pond Watershed and identified and prioritized 68 NPS sites.
- Developed strong local support for the survey, including participation of 26 volunteers and several local entities.
- Created and distributed the Bear Pond Watershed Survey Report (November 2013) and summary factsheet.
- Developed a draft watershed-based lake protection plan.



PROJECT PARTNERS:

Bear Pond Association
Fiddlehead Environmental Consulting
Lakes Environmental Association
Portland Water District
Town of Waterford



CONTACT INFORMATION:

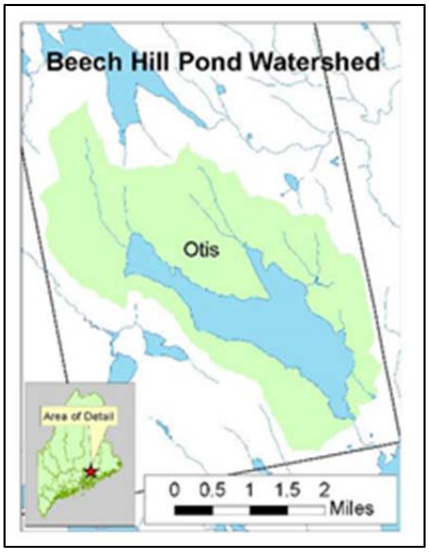
Michele Windsor, OCSWCD, 207-743-5789 x101, michele.windsor@me.nacdnet.net

Kristin Feindel, DEP 207-215-3461, Kristin.b.feindel@maine.gov

Beech Hill Pond Watershed Improvement Project - Phase I

2012RR02

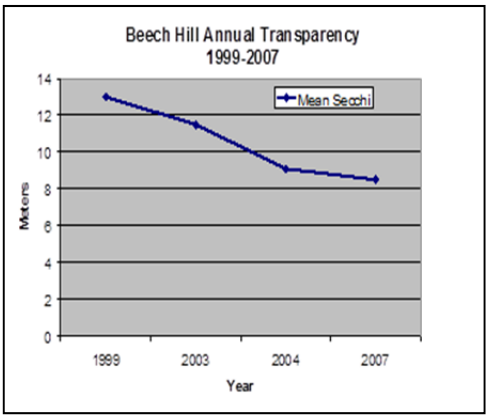
Waterbody Name:	Beech Hill Pond
Location:	Otis, Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County Soil and Water Conservation District
Project Duration:	January 2012 - February 2014
319 Grant Amount:	$58,120
Local Match:	$117,019



PROBLEM:

Water quality data has been collected by the DEP and the Maine Volunteer Lake Monitoring Program since 1974. Water quality of Beech Hill Pond is considered to be above average and the potential for nuisance algae blooms is low. However, secchi disk transparency readings from the last fifteen years indicate a decline in water quality. The pond has a very slow flushing rate of only 0.23 flushes per year which makes the pond sensitive to increases in phosphorus loading.

In 2010, Hancock County Soil and Water Conservation District (HCSWCD) conducted a watershed survey of erosion sources which identified 167 NPS sites and completed a watershed survey report. Of the 167 erosion sites, 52 were on private roads and 115 sites were located at residential sites. Of the 167 sites, 79 were designated as "high" or "medium" priority due to the amount of erosion, the proximity of that erosion to the lake, and evidence that eroded soil is moving off-site to the water.



PROJECT DESCRIPTION:

This project helped protect Beech Hill Pond and maintain Class GPA water quality standards by reducing the export of sediment and phosphorus from the watershed to the pond. HCSWCD managed the project guided by a steering committee with representatives from the Beech Hill Pond Lake Association, the Town of Otis, the University of Maine Cooperative Extension, and Maine DEP. Work focused on reducing sediment loadings by restoring 21 high and medium priority road sites selected from the 2010 watershed survey. The 17 lower priority sites were addressed through technical assistance from the HCSWCD and local in-kind match. Residential NPS site work included technical assistance and the opportunity for up to $500 (50% cost share) for installing conservation practices such as vegetative buffers, drip-line trenches, water bars, or other runoff diverters.

PROJECT OUTCOMES:

- 38 erosion sites (17 residential and 21 road sites) were successfully fixed to reduce erosion and sediment to help protect water quality. Some of the best management practices (BMPs) installed included vegetative buffers, new culverts, road ditches, road ditch turnouts, and open-top culverts. Over 500' of shoreline/streambank was stabilized.

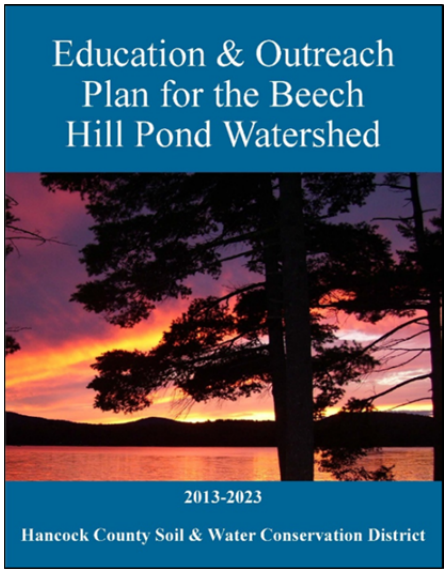
- Pollutant loading to Beech Hill Pond was reduced by an estimated 58 tons of sediment, 49 pounds of phosphorus, and 98 pounds of nitrogen per year.

- An education and outreach plan was developed to guide watershed outreach activities for the next 10 years based on the results of the Before Knowledge Survey to gauge awareness of NPS pollution, soil erosion, and septic systems.

- Education and outreach also included creation of a Beech Hill Pond Lake Association Newsletter, a Forming Road Associations Workshop, starting a Septic Pumping Discount Program for watershed residents, and technical assistance to over 35 residential properties.

- Local support exceeded expectations. The non-federal match contributed for Phase I totaled $117,019. That was $78,000 more than estimated in the work plan.

Gravel road stabilized by crowning its surface & installing a road ditch with turnouts



PROJECT PARTNERS:

Beech Hill Pond Lake Association
Town of Otis
University of Maine Cooperative Extension, Water Quality Program

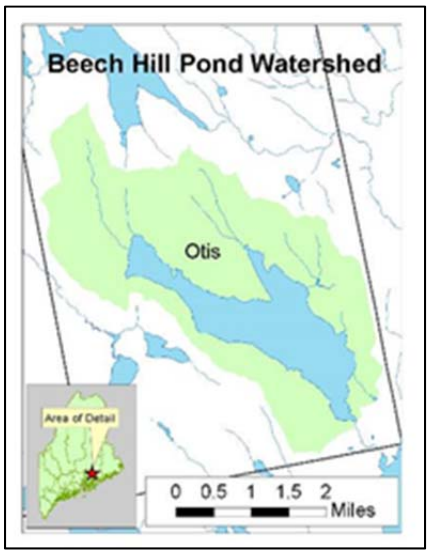
CONTACT INFORMATION:

Megan Facciolo, Hancock County SWCD (207) 667-8663 mfacciolo@hancockcountyswcd.org
Greg Beane, DEP (207) 299-4703 greg.e.beane@maine.gov

Beech Hill Pond Watershed Protection Project – Phase II

2013RR01

Waterbody Name:	Beech Hill Pond
Location:	Otis- Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County Soil and Water Conservation District
Project Duration:	April 2013 – March 2015
319 Grant Amount:	$48,780
Local Match:	$47,381



PROBLEM:

Water quality data for Beech Hill Pond has been collected by Maine DEP and the Maine Volunteer Lake Monitoring Program since 1974 and water quality is considered to be above average. However, secchi disk transparency readings from the last 15 years show a decline in water clarity of about 3 meters. Beech Hill Pond has a very slow flushing rate of only 0.23 flushes per year which makes the lake more sensitive to changes in phosphorus loading.

In 2010, a watershed survey of the entire watershed identified 167 NPS sites and a watershed survey report was produced (Beech Hill Pond Watershed Survey). Given the relatively small size of the Beech Hill Pond watershed, 167 sites was a large number. Of these sites, 52 were on private roads and 115 sites were classified as residential. During the Phase I implementation project in 2012 and 2013 BMPs were implemented at 38 NPS sites (21 road and 17 residential sites).

Sediment from eroding gravel camp roads carried in runoff to the lake

PROJECT DESCRIPTION:

The project helped protect Beech Hill Pond and maintain Class GPA water quality standards by reducing the export of sediment and phosphorus from the watershed to the pond. The Hancock County SWCD managed the project guided by a steering committee with representatives from the Beech Hill Pond Lake Association, University of Maine Cooperative Extension, the Town of Otis, and Maine DEP.

Phase II reduced sediment loadings by implementing erosion and sedimentation control best management practices (BMPs). BMPs were installed at 32 high and medium priority road sites identified during the 2010 survey. Lower priority sites were addressed through technical assistance and in-kind match which helped landowners install BMPs at residential properties.

PROJECT OUTCOMES:

- Successfully fixed 38 erosion sites, primarily on gravel roads in the watershed. Some of the BMPs installed included new culverts, road ditches, road ditch turnouts and vegetative buffers. Also 90 lineal feet of shoreline was protected. Pollutant loading to Beech Hill Pond was reduced by an estimated 79 tons of sediment, 65 pounds of phosphorus, and 132 pounds of nitrogen per year.

- Education and outreach efforts aimed at property owners in the watershed included publishing three Beech Hill Pond Lake Association Newsletters, sponsoring a "Forming Road Associations" workshop for residents on private roads, creation of a septic system pumping discount program for all watershed residents, and technical assistance at over 29 residential properties.

- Phase II continued engaging landowners, municipal officials, road commissioners, and professionals to work together to reduce erosion and protect the water quality of Beech Hill Pond. The residents of the Town of Otis voted for the third time (3 years in a row) to allocate $10,000 worth of town funds to match private road projects.

- Local support exceeded expectations. The total non-federal match for Phase II was $47,381 which was $13,626 more than work plan estimates.

Shoreline buffer installed at Beech Hill Pond

Rock-lined culvert outlet on unpaved camp road

PROJECT PARTNERS:

Beech Hill Pond Lake Association Town of Otis
University of Maine Cooperative Extension, Water Quality Program

CONTACT INFORMATION:

Megan Facciolo, Hancock County SWCD (207) 667-8663 mfacciolo@hancockcountyswcd.org
Greg Beane, DEP (207) 299-4703 greg.e.beane@maine.gov

Goodall Brook Watershed Management Plan Development
#2012RT17

Waterbody Name:	Goodall Brook
Location:	Sanford – York County
Waterbody Status:	Impaired, NPS Priority Watershed
Project Grantee:	City of Sanford
Project Duration:	June 2012 – December 2014
319 Grant:	$40,154
Local Match:	$32,508

PROBLEM:

Goodall Brook is a small, 1.54 mile long stream that flows into the Northern Great Works River and Bauneg Beg Lake. The 0.76 square mile (489 acres) watershed includes forested areas in the upper and lower watershed. However, the watershed is also developed with high density residential and commercial land uses, which contribute to the watershed's high impervious area (23.7%). Sections of the stream have also been channelized, straightened, and widened.

Although water quality in the lower segments meets Class B standards, Goodall Brook is listed as impaired because an upstream monitoring station does not meet aquatic life standards. Past monitoring by local groups also found elevated bacteria levels in the stream. In 2012 Goodall Brook was included in the DEP's Impervious Cover TMDL. A buffer restoration project was completed along 300 feet of the brook in 2008 as part of the Northern Great Works River 319 project (#2006R02), and in 2009 the Goodall Brook survey project (#2007PP09) assessed potential pollution sources and restoration opportunities.

PROJECT DESCRIPTION:

The project purpose was to develop a locally-supported watershed management plan outlining a strategy to restore Goodall Brook. The project was coordinated by the City of Sanford and York County SWCD and guided by a Technical Advisory Committee. About 18 people attended a project meeting in June 2013 to learn about the project and provide input using keypad polling.

Information about Goodall Brook was compiled from past studies, and additional monitoring data was also collected to identify stressors to different parts of the stream. Watershed and stormwater outfall catchments were mapped; a fluvial geomorphologist evaluated restoration needs; and stormwater retrofit and restoration projects were identified. Project staff incorporated this information into a plan, which was presented to the Sanford City Council and Planning Board in December 2014.

PROJECT OUTCOMES:

- The *Goodall Brook Watershed Management Plan* was completed in December 2014. The Plan includes results of stream and watershed assessments, a description of stream stressors, and an action plan that will guide restoration efforts from 2015-2025.

- In November 2012, Sanford High School students conducted an intercept survey at polling stations to assess public awareness about water quality issues and Goodall Brook. Over 350 local residents completed the survey, and results revealed a strong appreciation and support for clean water but little knowledge about Goodall Brook. Another survey can be conducted in the future to assess changes in public awareness, pollution prevention behaviors, and project success.

- The City of Sanford was actively involved in the development of the plan and donated 435 hours to the project. City staff assisted with field work, and the Technical Advisory Committee included staff from the Sanford Sewerage District and the City's Planning, Highway, Public Works and Parks & Recreation Departments. The City saw this project as a model and pilot for future City-wide efforts to protect and restore other city water resources.

Past channelization along Goodall Brook has led to degraded habitat for aquatic life

Sanford High School students conduct an intercept survey at polling stations

PROJECT PARTNERS:

Bauneg Beg Lake Association
Field Geology Services
Sanford Sewerage District
FB Environmental
Sanford High School
Waban Projects
Wells Reserve National Estuarine Research Reserve
York County SWCD

CONTACT INFORMATION:

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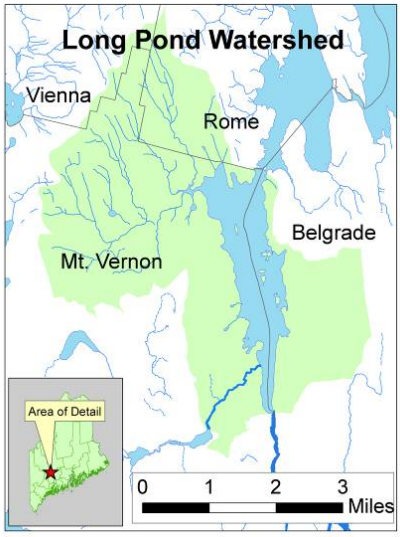
Jim Gulnac, City of Sanford (207) 608-4152 jqgulnac@sanfordmaine.org
Wendy Garland, DEP (207) 615-2451 wendy.garland@maine.gov

Long Pond Watershed Restoration Project, Phase II
#2011RT07

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:	January 2011 – March 2014
319 Grant Amount:	$99,500
Local Match:	$160,197



PROBLEM:

Long Pond of the Belgrade chain of lakes has a 2,666 acre surface area and 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. In 2006 DEP designated Long Pond as impaired because it does not attain state water quality standards.

In 2002, Belgrade Regional Conservation Alliance (BRCA) led a watershed survey and documented 211 NPS sites. Of these, 69% were associated with residential sites; 11% associated with driveways; and 6% 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 and Total Maximum Daily Load (TMDL) were approved in April 2008. The Long Pond Watershed Management Plan was completed in 2009.

PROJECT DESCRIPTION:

BRCA completed Phase I from 2009 to 2011. Phase II continued work implementing actions called for in the watershed plan to reduce phosphorus loading to the lake. Phase II primary goals were to:

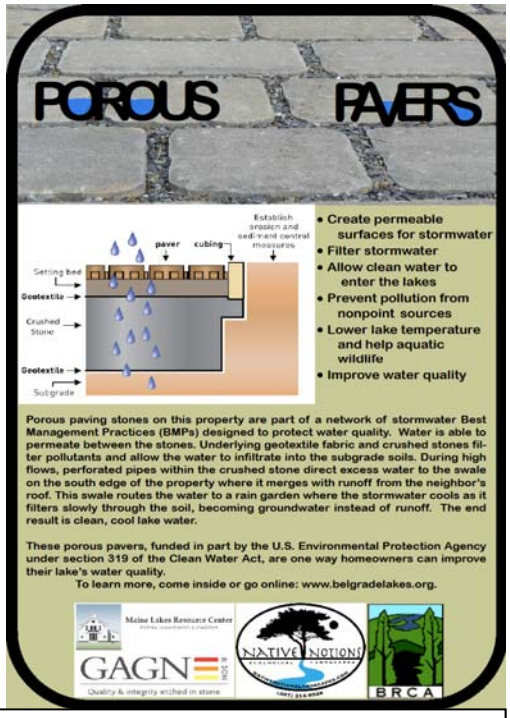
- Implement erosion and sediment control BMPs on at least 25 high priority NPS sites on camp roads.
- Provide technical assistance to road associations and to develop up to 20 Road Management Plans.
- Implement BMPs on 40 NPS sites by the BRCA Youth Conservation Corps (YCC); and
- Conduct outreach to help 40 homeowners become certified by the LakeSmart landowner recognition program for environmentally friendly landscaping and property management to help protect lake water quality.

PROJECT OUTCOMES:

- Erosion and sediment control BMPs were installed on 54 NPS sites including 14 camp roads, two home sites, and at the Maine Lakes Resource Center, exceeding the goal - 25 NPS sites;
- Technical assistance was provided to over 20 road associations: 19 road management plans were developed. Several plans were modified as construction projects were implemented based on feedback from road associations, homeowners, and contractors;
- Youth Conservation Corps (YCC) projects to control erosion and sedimentation were completed on 50 NPS sites, exceeding the project goal of 40 NPS sites;
- Outreach in support of LakeSmart recognition was conducted with 45 homeowners. LakeSmart visits frequently yield YCC referrals and lead to BMP installation projects; and
- Pollutant loading to Long Pond was reduced by an estimated 6.7 tons of sediment and 6.7 pounds of phosphorus and to Great Pond by 42.7 tons of sediment and 37.6 pounds of phosphorus per year.

Rain Garden

Porous Paver Installation



The Maine Lakes Resource Center installed low impact development BMPs - porous pavers, grass pavers, and rain gardens with explanatory signs as a permanent demonstration of BMPs to protect lake water quality. In 2013, over 5000 visited the MLRC and learned about lake-friendly BMPs.

PROJECT PARTNERS:

Belgrade Lakes Association
Maine Lakes Resource Center
Kennebec County SWCD
Town of Belgrade

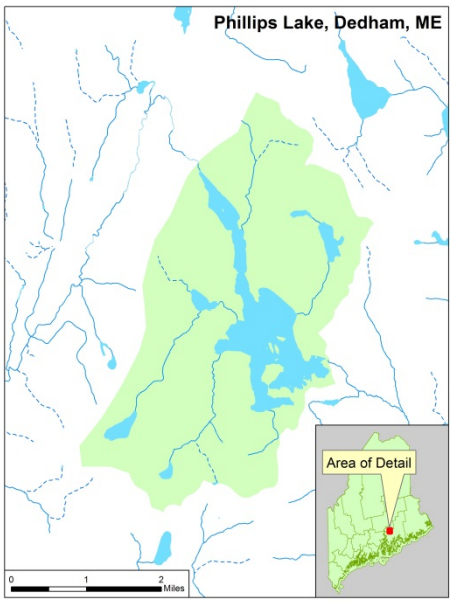
CONTACT INFORMATION:

Charles Baeder, BRCA – (207) 495-6039 brcacb@belgradelakes.org
Norm Marcotte, DEP – (207) 215-6277 norm.g.marcotte@maine.gov

Phillips Lake Watershed Protection Project – Phase I

2013RR02

Waterbody Name:	Phillips Lake
Location:	Dedham and Village of Lucerne-Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County Soil and Water Conservation District
Project Duration:	April 2013 – December 2014
319 Grant Amount:	$59,310
Local Match:	$66,575



PROBLEM:

Water quality data has been collected by DEP and the Maine Volunteer Lake Monitoring Program since 1974. Phillips Lake water quality is considered to be above average and the potential for nuisance algae blooms is low. However, Secchi disk transparency from the last 10 years show a 2 meter decline in water clarity. Phillips Lake has a very slow flushing rate of only 0.52 flushes per year which makes the lake more sensitive to increases in phosphorus loading.

In 2012 Hancock County Soil and Water Conservation District (HCSWCD) re-surveyed all road sites identified in the watershed survey completed in 2009 to ensure all information was up-to-date. The watershed survey update found 44 total road sites, 7 private roads and 37 on town roads. Out of the 44 road sites identified in the 2012 update, 27 were considered high or medium priority sites due to the amount of erosion, the proximity of that erosion to a ditch, stream, or the lake, and evidence that eroded soil is moving off site toward the water.

Phillips Lake Project Steering Committee meeting

PROJECT DESCRIPTION:

The project was coordinated by the HCSWCD and guided by a steering committee of representatives from the Phillips Lake Association, the University of Maine Cooperative Extension, the Town of Dedham, and Maine DEP. Goals were to reduce sediment loadings by fixing 27 high and medium priority road sites selected from the updated 2012 watershed survey. The remaining lower-priority sites were addressed through technical assistance from the HCSWCD and local in-kind match. This project included a 50% cash match and technical assistance offered to residential property owners to carry out NPS 'fixes' such as the installation of vegetative buffers or water diverters on driveways. Conservation practices were implemented at 42 sites.

PROJECT OUTCOMES:

- Successfully implemented erosion and sedimentation BMPs at more than 40 erosion sites in the Phillips Lake watershed. Over 75 feet of shoreline was protected. Pollutant loading to Phillips Lake was reduced by an estimated 138 tons of sediment and 116 pounds of phosphorus per year.

- Local support exceeded expectations. The total local matching contributions ($66,575) was $27,000 more than what was planned.

- The Phillips Lake Education and Outreach Plan was developed to guide watershed outreach activities for the next 10 years. Education and outreach efforts to residents of the watershed which included the creation of a Phillips Lake Association Newsletter, shoreland zoning information presented in the town calendar, two mailings of watershed related information to all 725 watershed residents, and technical assistance to over 39 individuals.

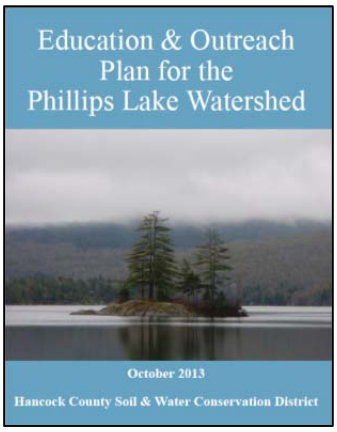
- A Before Knowledge Survey was completed at the beginning of the project to gauge awareness of NPS pollution, effectiveness of outreach on shoreland zoning regulations, awareness of the impact of development on water quality, and increase Lake Association membership. An After Knowledge Survey to gauge the effectiveness of outreach efforts was conducted at the end of the project. A majority of participants are aware of the Phillips Lake Association, all respondents know there are regulations regarding development around the lake, and almost all respondents are concerned about lake water quality.

BMPs installed on gravel roads

Rock-lined road ditches prevents erosion, keeps sediment from reaching lake

PROJECT PARTNERS:

Phillips Lake Association
Dedham/Village of Lucerne
University of Maine Cooperative Extension

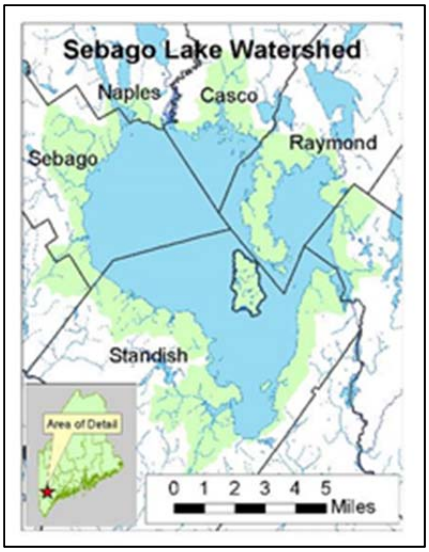


CONTACT INFORMATION:

Megan Facciolo, Hancock County SWCD (207) 667-8663
mfacciolo@hancockcountyswcd.org
Greg Beane, DEP (207) 299-4703 greg.e.beane@maine.gov

Sebago Lake Watershed Implementation Project - Phase II
#2012RR04

Waterbody Name:	Sebago Lake
Location:	Standish, Frye Island - Cumberland County
Waterbody Status:	NPS Priority Watershed, Most At Risk
Project Grantee:	Portland Water District
Project Duration:	March 2012 – December 2014
319 Grant Amount:	$78,996
Local Match:	$107,525



PROBLEM:

Sebago Lake, Maine's 2nd largest lake, has a surface area of 30,513 acres. Its 100 miles of shoreline is developed with 2,300 seasonal and year-round homes, 12 public boat launches, eight marinas, seven summer camps and Sebago Lake State Park. Sebago is the primary drinking water supply for 200,000 people in 11 communities. The direct watershed covers 171 square miles and the entire watershed is 361 square miles. Portland Water District (PWD) has monitored water quality since 1970. Sebago Lake has excellent water quality, Secchi transparency averages over 31 feet deep. However, there are concerns about declining trends in water clarity in recent years.

Sediment washing into lake, is now trapped by an open-top culvert

Implementation has been conducted in phases due to the large size of the lake and watershed. Phase I, completed in 2011, focused work in Naples and Sebago. PWD and Cumberland County SWCD installed conservation practices at 10 high-impact private and public roads and provided technical assistance to 31 landowners. PWD staff inspected 255 properties in the lake shoreland zone. The Casco Bay Youth Conservation Corps installed conservation practices on two sites in the project area.

PROJECT DESCRIPTION:

Phase II continued work to reduce erosion and export of sediment and phosphorus into Sebago Lake. Work focused on the lake's lower bay in the towns of Standish and Frye Island. Goals included: installing conservation practices to reduce erosion and polluted runoff at 11 high priority road sites; 20 watershed property consultations; and inspection of construction sites to ensure proper installation and use of erosion controls, and outreach to promote sediment and erosion control.

PROJECT OUTCOMES:

- Conservation practices were installed at 15 priority NPS sites. Eroded sites were stabilized and stormwater was controlled at various sites including roads, culvert crossings, parking areas, boat launches and lake access sites. For example, there was severe erosion at Recreation Beach on Frye Island. Stormwater was redirected to a level lip spreader to slow it down and spread it out over forested land before reaching Sebago Lake. A project to pave/stabilize the Frye Island Ferry Dock area was designed, but not completed. The community decided not to move forward with the work.
- PWD provided 118 watershed property consultations to landowners in the watershed. These consultations provided recommendations to help landowners address erosion and sedimentation problems.
- PWD updated its list of road association contacts and reached out to those associations to offer erosion control technical assistance services.
- Four Lake Living Seminars were held: two on septic systems; and two on homeowner conservation practices. Over 50% of the membership attended from the Sebago Acre Association and the Shaw Acres Community Association.
- Pollutant loading to Sebago Lake was reduced by an estimated 47 tons of sediment and 40 pounds of phosphorus.

Before: Eroded area, sediment entering lake

After: Settling basin installed to trap sediment

PROJECT PARTNERS:

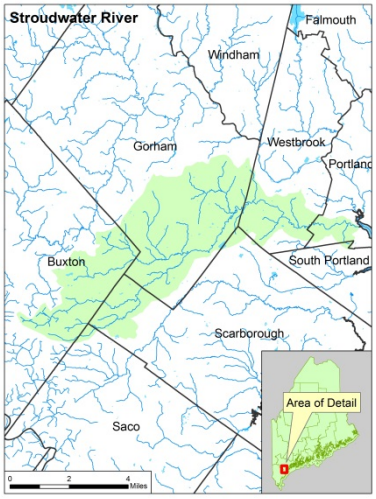
Cumberland County SWCD
Towns of Frye Island and Standish

CONTACT INFORMATION:

Heather True, CCSWCD – (207) 892-4700 htrue@cumberlandswcd.org
Paul Hunt, PWD – (207) 774-5961 phunt@pwd.org, www.pwd.org
Kristin Feindel, DEP – (207) 615-3461 kristin.b.feindel@maine.gov

Stroudwater River NPS Watershed Survey
#2013RT16

Waterbody Name:	Stroudwater River
Location:	Buxton, Gorham, Portland, Scarborough, Westbrook- Cumberland and York Counties
Waterbody Status:	Impaired, NPS Priority Watershed
Project Grantee:	Cumberland County Soil & Water Conservation District
Project Duration:	April 2013 – June 2014
319 Grant Amount:	$18,333
Local Match:	$14,766



PROBLEM:

The Stroudwater River has a 27.8 square mile watershed and is located in Buxton, Gorham, Scarborough, Westbrook, and Portland. The 15.2 mile river begins at Duck Pond and ends in Stroudwater Village, which is a highly developed and historic residential and commercial area in Portland, before flowing to the Fore River Estuary. Land use within the Stroudwater River watershed includes forest lands (54.5%), developed area (20.6%), cultivated/pasture (19.6%), wetlands (2.9%) and scrub/grass (2.3%). Population has increased rapidly over the past decade.

Stroudwater River is impaired due to nonpoint source (NPS) pollution washing into the river from its surrounding watershed. Increased watershed development and runoff from residential and commercial areas and roadways are the likely source of pollution to the river.

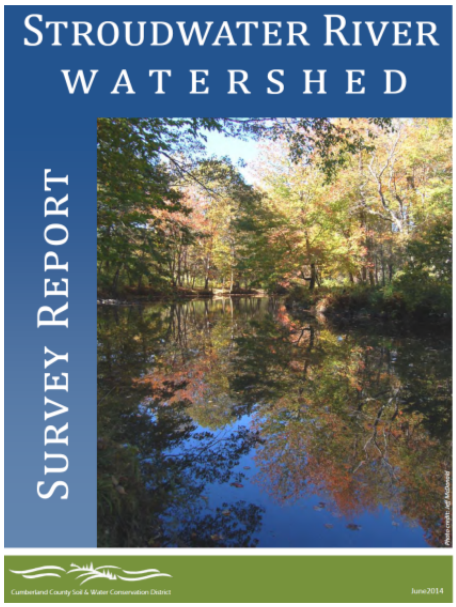
PROJECT DESCRIPTION:

The purpose of this project was to produce a watershed survey report that identifies, documents, and prioritizes NPS sites in the Stroudwater River watershed and recommend best management practices (BMPs) to be implemented to reduce polluted runoff. Data gathered from this survey will be used to guide implementation, maintenance, and restoration efforts.

A steering committee to guide the project met three times. The watershed survey started in May 2013 with the assistance of 21 volunteers and was completed over the summer with Cumberland County SWCD staff and additional volunteers. The survey evaluated all developed parcels within the shoreland zone along 11 miles of the river and along two miles of the South Branch. During the fall of 2013 CCSWCD completed a Neighborhood Source Assessment and Hotspot Site Investigation. The final survey report includes a summary of findings from all three survey findings and recommended next steps.

PROJECT OUTCOMES:

- A comprehensive watershed survey report that includes NPS pollution sites, Neighborhood and Hotspot (primarily commercial properties) Source Assessment, and impervious cover analysis was completed.
- Fifty six NPS pollution sites and 19 fish barrier sites were identified. The majority of sites (35 sites) were associated with state and town roads. Many of these road sites were rated as having a high impact on water quality.
- The project was successful due in part to a proactive and involved steering committee consisting of the Stroudwater Village Association, Cumberland County SWCD, MDEP, the municipalities of Portland, Westbrook and Gorham, and watershed residents.



Erosion at road embankment

Impervious cover includes rooftops, driveways, sidewalks, and roads

PROJECT PARTNERS:

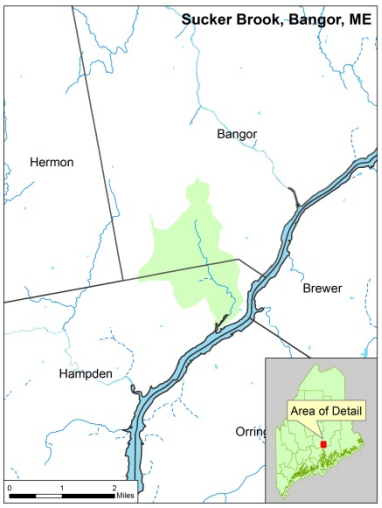
Casco Bay Estuary Partnership
City of Portland
City of Westbrook
Friends of Casco Bay
Stroudwater Village Association
Town of Gorham
White Brothers

CONTACT INFORMATION:

Heather True, CCSWCD – (207) 892-4700, htrue@cumberlandswcd.org
Mary Ellen Dennis, DEP – (207) 215-7946, mary-ellen.c.dennis@maine.gov

Sucker Brook Watershed & Stream Corridor Survey
#2012PT22

Waterbody Name:	Sucker Brook
Location:	Bangor and Hampden - Penobscot County
Waterbody Status:	Urban Impaired Stream
Project Grantee:	City of Bangor
Project Duration:	April 2013 – December 2014
604(b) Grant Amount:	$28,942
Local Match:	$36,548



PROBLEM:

Sucker Brook does not attain Class B water quality standards for dissolved oxygen and full support of aquatic life. In 2012, DEP completed an assessment of pollution problems for Sucker Brook and 29 other streams, the Maine Statewide Impervious Cover TMDL. Stormwater runoff from impervious cover is the largest source of pollution and stream channel alteration. Runoff from roads, roofs, and parking lots in developed areas flows quickly off these impervious surfaces, carrying dirt, oils, metals, and other pollutants, and high volumes of flow directly into the brook. The TMDL Assessment Summary for Sucker Brook recommends installing structural and applying non-structural best management practices (BMPs). Development of specific BMPs requires a detailed evaluation of the brook and watershed including impervious areas and stormwater outfalls. The towns will need to reach out to landowners to build support for actions needed to successfully restore the brook.

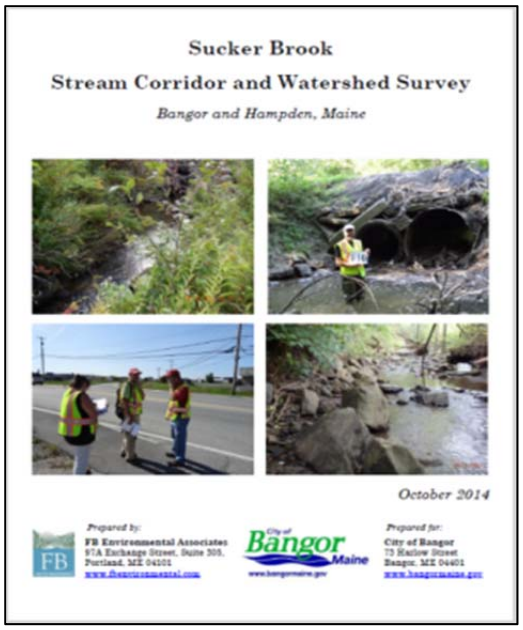
Example of stream bank disturbance encountered during the corridor survey. The person is standing in the brook

PROJECT DESCRIPTION:

Bangor conducted a stream corridor survey of the 2.5 mile long brook and a NPS watershed survey of the 1,766 acre watershed. Survey work was guided by the DEP manual, *"A Citizen's Guide to Basic Watershed, Habitat and Geomorphology Surveys in Stream & River Watersheds"* (February 2009). The project was designed to evaluate the stream corridor; document NPS pollution sources in the watershed and rate their relative importance; and provide a preliminary recommendation for fixing each site. An education and outreach campaign was developed and executed by both towns to engage key decision makers, planners, property owners, and other stakeholders. Bangor and Hampden provided information to landowners and other stakeholders in the watershed about the brook and benefits of restoration.

PROJECT OUTCOMES:

- Produced the *Sucker Brook Stream Corridor and Watershed Survey* report, which identifies and prioritizes NPS pollution in the Sucker Brook watershed.
- Brought Bangor and Hampden together to identify hot spots in this shared watershed and started the conversation regarding stakeholder engagement aimed at identifying problems and actions needed to reduce NPS pollution.
- Bangor engaged a major stakeholder (Freightliner of Maine) which will result in installation of a stormwater BMP slated for the spring of 2015.
- Mailings were sent to all property owners in the Sucker Brook Watershed to provide information about the grant project and the surveys. Two public meetings were held in December 2014, one Bangor and one in Hampden, to present the findings of the stream corridor and watershed survey. Bangor's consultant also presented these findings to the Bangor Citizens Stormwater Review Panel, the presentation was recorded for use on Bangor Access Television.



Water quality sampling in April, adjacent to Coles Transportation Museum

PROJECT PARTNERS:

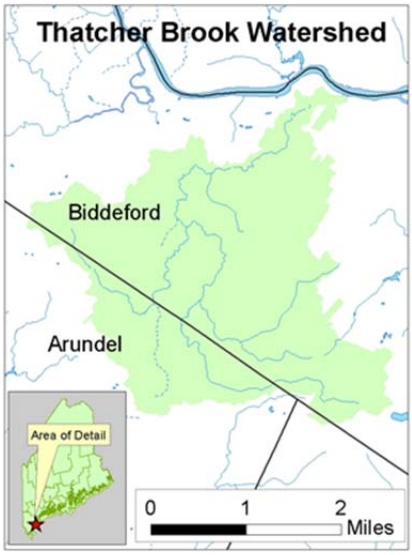
Town of Hampden
FB Environmental Associates

CONTACT INFORMATION:

Wynne Guglielmo, Bangor (207) 949-3819 Wynne.Guglielmo@bangormaine.gov
Greg Beane, DEP (207) 299-4703 greg.e.beane@maine.gov

Thatcher Brook Watershed Based Management Plan
#2012RT20

Waterbody Name:	Thatcher Brook
Location:	Biddeford and Arundel – York County
Waterbody Status: Watershed	Impaired Stream, NPS Priority
Project Grantee:	City of Biddeford
Project Duration:	May 2012 – December 2014
319 Grant:	$59,958
Local Match:	$63,731



PROBLEM:

Thatcher Brook is a Class B stream located in Biddeford and Arundel that flows into the Saco River. The stream is 7.7 miles long and has a 7.12 square mile watershed that includes large tracts of forested, wetland, and pasture lands. The watershed also includes several major state roads and a designated growth area with existing retail and commercial development, industrial parks, and residential housing.

Thatcher Brook is listed as impaired because it does not meet aquatic life or bacteria standards. The stream has consistently met aquatic life standards at the DEP's monitoring station on Lower Thatcher Brook. However, the upstream station located below the confluence with the major tributary, Richardson Brook, failed to meet standards in 2004 and 2012. Thatcher Brook was included on the DEP's Bacteria TMDL (2009) and Impervious Cover TMDL (2012).

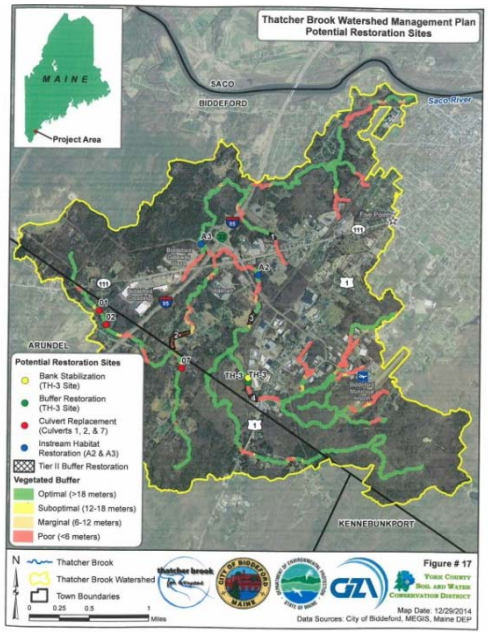
PROJECT DESCRIPTION:

The project's purpose was to develop a locally-supported plan containing a strategy to restore and protect Thatcher Brook. The project was coordinated by City of Biddeford with assistance from GZA Geoenvironmental and York County SWCD and guided by a Technical Advisory Committee (TAC). To better understand the stream, DEP, GZA and City staff collected water quality and biological data and completed a Rapid Geomorphic Assessment and cross-sectional surveys on five stream reaches. The TAC met four times to evaluate historic and new data, identify stream stressors and develop recommendations, which were incorporated into the plan.

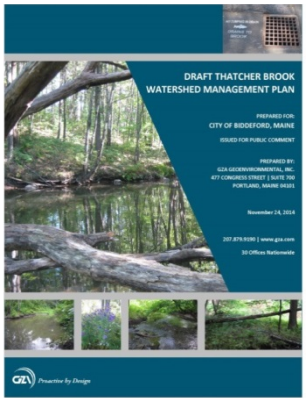
Public outreach included developing a Thatcher Brook website, mailing information to 113 large landowners, and prompting two newspaper articles about the project. In July 2013, approximately 20 people attended a public meeting to learn about Thatcher Brook and provide input on stream and watershed issues. Project staff hosted a second public meeting in September 2014 to share the major findings and recommendations in the plan.

PROJECT OUTCOMES:

- The *Thatcher Brook Watershed Management Plan* was completed in December 2014. The Plan includes results of stream and watershed assessments, conceptual designs for priority stormwater retrofits and an action plan.
- The project identified and prioritized nine stormwater retrofit projects and 11 stream habitat restoration projects in the watershed. Engineering staff developed conceptual designs and preliminary cost estimates for the stormwater projects. Site visits were conducted with MDOT and MTA to discuss potential future construction, limiting factors, and possible funding scenarios.
- The plan includes a high priority action item to develop an ordinance to require stormwater treatment for projects under one acre in size. This would help codify the City's existing efforts to work with businesses to incorporate additional stormwater practices on a voluntary basis.
- The City of Biddeford contributed significant cash and in-kind services to the project. City staff assisted with water quality monitoring, stream surveying, and other fieldwork and informed the City Council and committees about project activities. As such, project match was almost $64,000, almost $5,000 beyond the amount proposed in the project workplan.



GZA biologist, Tracy Tarr, conducts kicknet monitoring to identify aquatic organisms in the stream



PROJECT PARTNERS:

GZA Geoenvironmental, Inc. Maine Department of Transportation York County SWCD
Maine Turnpike Authority Town of Arundel

CONTACT INFORMATION:

Jennie Franceschi, City of Biddeford – (207) 284-9115, jfransceschi@biddefordmaine.org
Wendy Garland, DEP – (207) 615-2451, wendy.garland@maine.gov

Topsham Fair Mall Stream Watershed Management Plan Project #2012RT16

Waterbody Name: Topsham Fair Mall Stream

Location: Topsham- Sagadahoc County

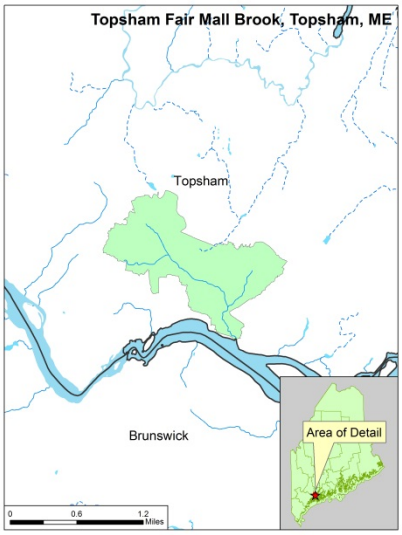
Waterbody Status: Urban Impaired Stream

Project Grantee: Town of Topsham

Project Duration: July 2012 – June 2014

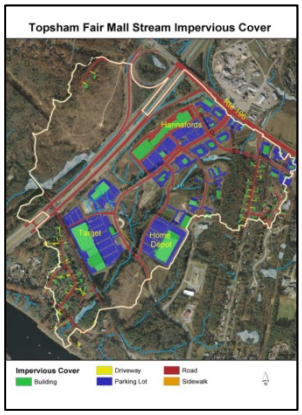
319 Grant Amount: $38,912

Local Match: $40,150



PROBLEM:

Topsham Fair Mall Stream is an urban impaired stream. Several road crossings block the floodplain and significantly alter the flow and ecology of the stream. In the 320 acre watershed 79% of the land area is developed, with 30% impervious surfaces. This Class B stream was listed as impaired in 2008 due to habitat assessment. The stream is included in the 2011 Maine Impervious Cover TMDL.



Heavy salt application in the winter enters the stream both directly and via groundwater, causing elevated chloride levels in both winter and summer. Undeveloped portions of the watershed are slated for growth in Topsham's Comprehensive Plan. Despite impairments due to development, the stream is well-oxygenated and groundwater recharge keeps temperatures low enough to make it a potentially valuable refuge for coldwater fish from the Androscoggin River.

PROJECT DESCRIPTION:

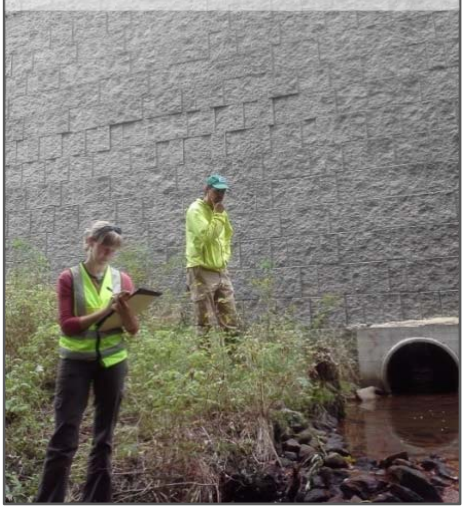
The project produced a watershed-based management plan outlining effective actions to help the Topsham Fair Mall Stream meet its Class B water quality classification. The plan was developed by the Town of Topsham, local consultants, and an advisory committee of watershed stakeholders including local business owners and managers, engineers, environmental professionals, and residents.

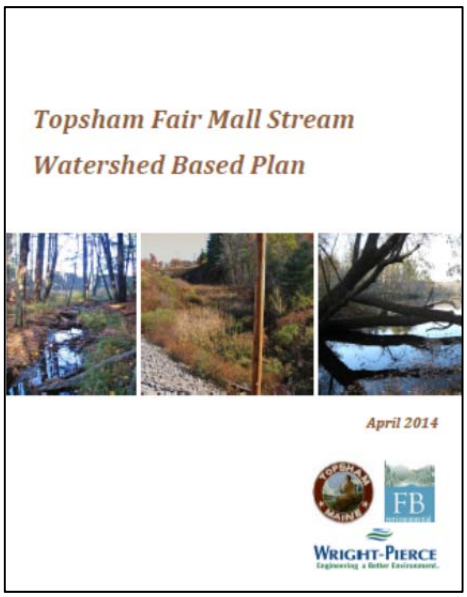
Additional stream assessment was needed to enable a stream stressor analysis. Studies included hydrogeomorphic assessment, in-stream/riparian habitat survey, monitoring of water quality (temperature, dissolved oxygen, and conductivity), chloride sampling, and a terrain conductivity study. A stormwater retrofit reconnaissance inventory identified 49 stormwater retrofits on 24 sites. The Technical Advisory Committee prioritized 11 sites as high priority, five as moderate-high, and 13 as moderate.

PROJECT OUTCOMES:

- Developed the *Topsham Fair Mall Stream Watershed Based Plan* (April 2014). The plan was adopted by the Topsham Board of Selectmen in April 2014. The plan identifies problems, priorities, and actions that are needed to improve the water quality of the stream.
- Produced a better understanding of the stream's water quality, geomorphology, habitat, and stressors. Chloride was found to be a major stressor contributing to stream water quality impairment.
- Developed a prioritized list of stormwater retrofits and non-structural best management practices to address identified stressors. This 'action plan' includes listing who would lead implementation of each task, on what timeline, and an estimate of the cost.
- The Plan development process created awareness of the stream's issues and affected the Topsham Planning Office review and inspection process. The original plans for two developments that occurred in the watershed during the plan development were adjusted to better address the stream's needs in regard to stormwater and salt management.

Assessment of the stream at one of the large road crossings





PROJECT PARTNERS:

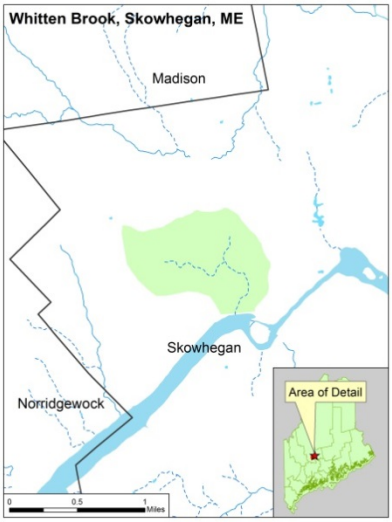
FB Environmental	Wright-Pierce	Belanger Engineers
Ecoanalysts	Field Geology Services	Sitelines
Stantec	Topsham Fair Mall	
Maine Dept. of Transportation	Site Design Associates	

CONTACT INFORMATION:

Rod Melanson, Town of Topsham, 207-725-1724, rmelanson@topshammaine.com
Kristin Feindel, DEP, 207-215-3461, kristin.b.feindel@maine.gov

Whitten Brook Watershed Restoration Project, Phase I 2012RT15

Waterbody Name:	Whitten Brook
Location:	Skowhegan- Somerset County
Waterbody Status:	Urban Impaired Stream
Project Grantee:	Town of Skowhegan
Project Duration:	April 2012 – July 2014
319 Grant:	$90,649
Local Match:	$70,124



PROBLEM:

Whitten Brook is valued by local fishermen for its native brook trout fishery. However the brook does not attain Class B water quality standards for aquatic life use. Stormwater runoff from impervious cover (IC) is the largest source of pollution and stream channel alteration. Stormwater falling on developed areas flows quickly off impervious surfaces and carries dirt, oils, metals, and other pollutants, and sends high volumes of flow to the brook. Reducing the effective IC in the watershed from 14% to 9% is needed to restore water quality to class B standards.

In 2010, DEP delineated the extent of IC in the watershed. The study examined the existing stormwater system and identified areas that discharge high volumes of stormwater to the brook. A stormwater retrofit inventory was conducted to identify sites with high impact including high priority sites at Russell Road Conservation Area and upper Madison Avenue stormwater outfall.

PROJECT DESCRIPTION:

Fluvial geomorphic assessment

Phase I began implementing the Whitten Brook Watershed Restoration Plan to reduce NPS pollution and improve the health of the brook. A bioretention cell and pervious pavement were installed at the Russell Road Conservation Area. Outreach efforts contributed to community recognition of NPS pollution problems and engaged residents, town officials, and project partners to support implementation of the restoration plan. The project was guided by steering and technical advisory committees. The technical committee oversaw a fluvial geomorphological study of the brook and a hydrogeological assessment of an existing detention pond. These studies were needed to develop an engineered design to retrofit the detention pond to treat runoff from upper Madison Avenue (to be implemented during Phase II).

PROJECT OUTCOMES:

- Installation of BMPs at the Russell Road Conservation Area which included construction of a subsurface bioretention cell, creating a pervious parking area, and stabilizing approximately 200 feet of ditch along Russell Road with rip rap and check dams.
- Fluvial geomorphic assessment report (March 2013) of the entire length of Whitten Brook.
- Site evaluations including hydrogeological assessment and development of a preliminary design to retrofit an existing detention pond adjacent to the upper Madison Avenue outfall to optimize stormwater treatment.
- Installation of a project informational kiosk at the Russell Road Conservation Area. Four press releases to local papers/community newsletters, and distribution of a public event flyer for the Russell Road Conservation Area ribbon cutting ceremony.

Subsurface biorention cell to treat stormwater runoff

Volunteers adding plants to subsurface bioretention cell at the Russell Road Conservation Area

PROJECT PARTNERS:

Skowhegan Conservation Commission
FB Environmental
Somerset County Cooperative Extension/Master Gardeners
Maine Department of Transportation
Somerset Woods Trustees
Acorn Engineering
Field Geomorphology Consultants
Somerset County Soil and Water Conservation District

CONTACT INFORMATION:

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Greg Beane, DEP (207) 299-4703 greg.e.beane@maine.gov

Appendix A. NPS Watershed Projects Active in 2014

Project ID# Codes:
20XX Appropriation year of funding source
RR Funding source - Section 319 Clean Water Act / waterbody is threatened
RT Funding source - Section 319 Clean Water Act / waterbody is impaired
PP Funding source - Section 604(b) Clean Water Act

Project Title	Project ID#	Grantee	Grant Amount	Non-federal Match	Date Completed **(bold)** or To Be Completed
Alamoosook Lake Watershed- based Plan and Survey	2013RR24	Hancock County SWCD	21,135	15,000	**10/31/14**
Bear Pond Watershed Survey	2012PP21	Oxford County SWCD	15,960	12,021	**02/26/14**
Beech Hill Pond Watershed Protection Project, Phase I	2012RR02	Hancock County SWCD	58,125	38,770	**03/06/14**
Beech Hill Pond Watershed Protection Project, Phase II	2013RR01	Hancock County SWCD	48,780	33,755	**11/12/14**
Capisic Brook Watershed Restoration Project, Phase I	2014RT04	Cumberland County SWCD	86,635	73,630	12/31/16
Cobbossee Lake Watershed Survey	2013RR17	Cobbossee Watershed District	23,089	16,062	03/01/15
Cochnewagon Lake Watershed-based Plan Development	2013RT26	Cobbossee Watershed District	10,800	7,600	12/31/15
Concord Gully Brook Watershed Management Plan	2012RT18	Cumberland County SWCD	36,720	29,018	04/30/15
Crescent Lake NPS Watershed Protection Project, Phase II	2014RR03	Raymond, Town of	82,049	76,518	12/31/16
Crooked River Protection Project, Phase I	2013RR15	Cumberland County SWCD	98,542	67,418	12/31/15
Dudley Brook Restoration Project, Phase I	2012RT24	Central Aroostook SWCD	14,689	9,793	11/30/16
Goodall Brook Watershed Management Plan Development	2012RT17	Sanford, Town of	40,154	43,151	**01/15/15**
Goosefare Brook Watershed-based Plan Mgt Development	2013RT25	Saco, City of	45,952	31,790	12/31/16

Project Title	Project ID#	Grantee	Grant Amount	Non-federal Match	Date Completed **(bold)** or To Be Completed
Horne Pond NPS Watershed Protection Project	2013RR03	York County SWCD	56,715	57,666	12/31/15
Little Sebago Lake Protection Project, Phase IV	2013RR27	Cumberland County SWCD	96,670	69,786	12/31/16
Long Pond NPS Watershed Restoration Project, Phase II	2011RT07	Belgrade Regional Conservation Alliance	99,500	88,544	**05/06/14**
Long Pond NPS Watershed Restoration Project, Phase III	2014RT06	Belgrade Regional Conservation Alliance	74,460	72,500	12/31/16
Meduxnekeag River Watershed Based Plan	2012RT19	Southern Aroostook County SWCD	13,748	12,580	03/31/15
Nickerson Lake Protection Projec, Phase II	2013RR04	Southern Aroostook County SWCD	58,362	38,928	12/31/15
Ogunquit River Watershed Restoration Project, Phase I	2014BB09	Ogunquit, Town of	92,050	72,730	12/31/16
Parker Pond Watershed Protection Project	2012RR23	30 Mile River Watershed Association	62,372	47,124	12/31/15
Phillips Lake Watershed Protection Project	2013RR02	Hancock County SWCD	59,310	39,560	**12/19/14**
Sebago Lake Watershed Assessment and Prioritization	2013PP05	Cumberland County SWCD	41,577	33,640	09/30/15
Sebago Lake Watershed Implementation, Phase II	2012RR04	Portland Water District	86,484	96,253	**01/31/15**
Spruce Creek Watershed Protection Project, Phase III	2013RT06	Kittery, Town of	75,750	74,055	12/31/15
Stroudwater River NPS Watershed Survey	2013RT16	Cumberland County SWCD	18,333	12,905	**10/17/14**
Sucker Brook Regional Corridor Survey and Watershed Survey	2012PP22	Bangor, City of	27,942	30,910	**12/31/14**
Sucker Brook Watershed-based Management Plan Development	2014PT13	Hampden, Town of	44,000	30,450	12/31/15
Thatcher Brook Watershed Based Management Plan	2012RT20	Biddeford, City of	59,958	59,260	**12/31/14**
Thompson Lake NPS Watershed Protection Project, Phase IV	2014RR07	Cumberland County SWCD	87,938	64,005	12/31/16

Project Title	Project ID#	Grantee	Grant Amount	Non-federal Match	Date Completed **(bold)** or To Be Completed
Toddy Pond Watershed Protection Project	2014RR01	Hancock County SWCD	82,257	54,940	12/31/16
Togus Pond Watershed Restoration Project, Phase 3	2013RT07	Kennebec County SWCD	40,800	27,650	12/31/15
Topsham Fair Mall Stream Watershed Management Plan	2012RT16	Topsham, City of	38,912	26,500	**07/07/14**
Trout Brook Restoration Project, Phase I	2013RT08	Cape Elizabeth, Town of	70,363	48,072	04/01/15
Trout Brook Restoration Project, Phase II	2014RT08	Cape Elizabeth, Town of	109,588	72,979	01/31/16
Whitten Brook Watershed Restoration Project, Phase I	2012RT15	Skowhegan, Town of	88,649	59,223	**07/14/14**
Wilson Pond NPS Watershed Restoration Project, Phase II	2014RT05	Cobbossee Watershed District	65,200	45,590	12/31/16
Woods Pond Watershed Protection Project, Phase I	2014RR02	Lakes Environmental Association	60,000	42,810	12/31/16

Volunteer Surveyors Stroudwater River Watershed
Survey 2014

Clean water starts with you!

Maine Department of Environmental Protection
Bureau of Land & Water Quality
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Document available for download at:
http://www.maine.gov/dep/water/grants/319-documents/reports/