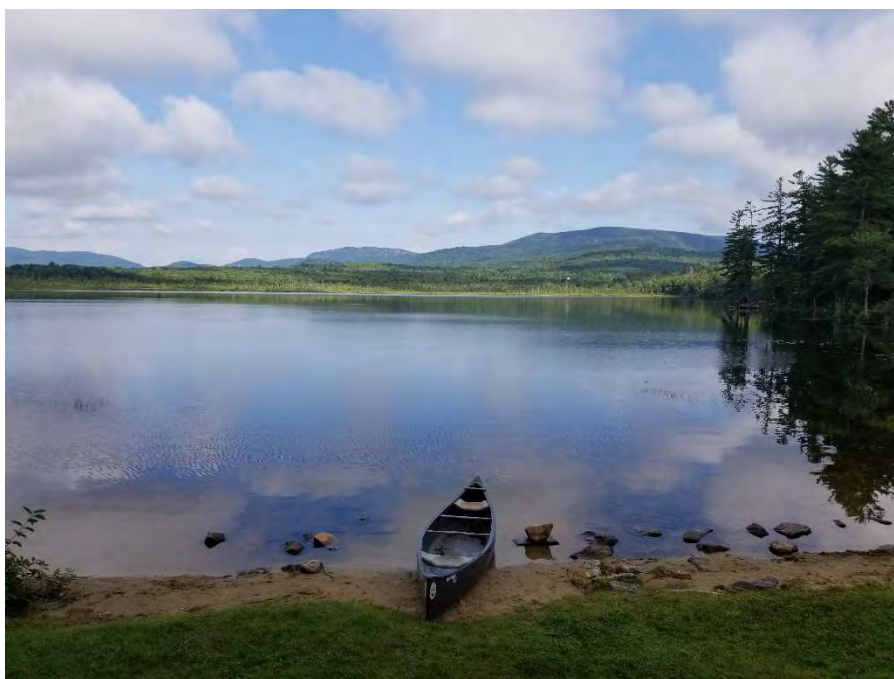


# Nonpoint Source Management Program 2018 Annual Report

*May 2019*

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Labrador Pond, Summer  
Photo credit: Emily Zimmerman



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
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## Executive Summary

This report summarizes activities and accomplishments of Maine's Nonpoint Source Management Program (NPS Program) in 2018. Maine Department of Environmental Protection (DEP) prepared this report to inform the public and the U.S. Environmental Protection Agency (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 Management Program and works with other State agencies to achieve widespread use of state-agency best management practice (BMP) guidelines 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 by the U.S. EPA under Sections 319(h) and 604(b) of the Clean Water Act (CWA).

Maine DEP uses a watershed-based approach as the coordinating framework to organize public and private sector efforts to protect and restore waters. DEP administers a pass-through grant program that awards and monitors grants of federal CWA Section 319 and 604(b) 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 act to reduce or prevent NPS pollution.

In 2018, 13 NPS watershed projects funded through the NPS grants program in previous years were successfully completed. These projects reduced pollutant loads to waters by 723 tons of sediment, 645 pounds of phosphorus and 1011 pounds of nitrogen per year. DEP provided technical assistance and granted \$885,147 of CWA funds provided by EPA for these projects. Grantees, partners, and landowners contributed matching funds or services valued at \$736,472. This report provides two-page summaries for each project.

DEP issued seven new grants (\$728,712) in 2018 using CWA Section 319 funds to help communities implement actions called for in their watershed management plans to restore impaired waters or protect waters threatened by NPS pollution. DEP also issued four grants using CWA Section 604(b) funds to develop watershed-based plans for Great Pond in Belgrade (\$18,622), Highland Lake in Windham (\$16,540 and \$5,460), and Kennebunk River in Kennebunk (\$41,600).



Pickett Mountain Pond, North Penobscot  
Photo credit: Marianne Senechal

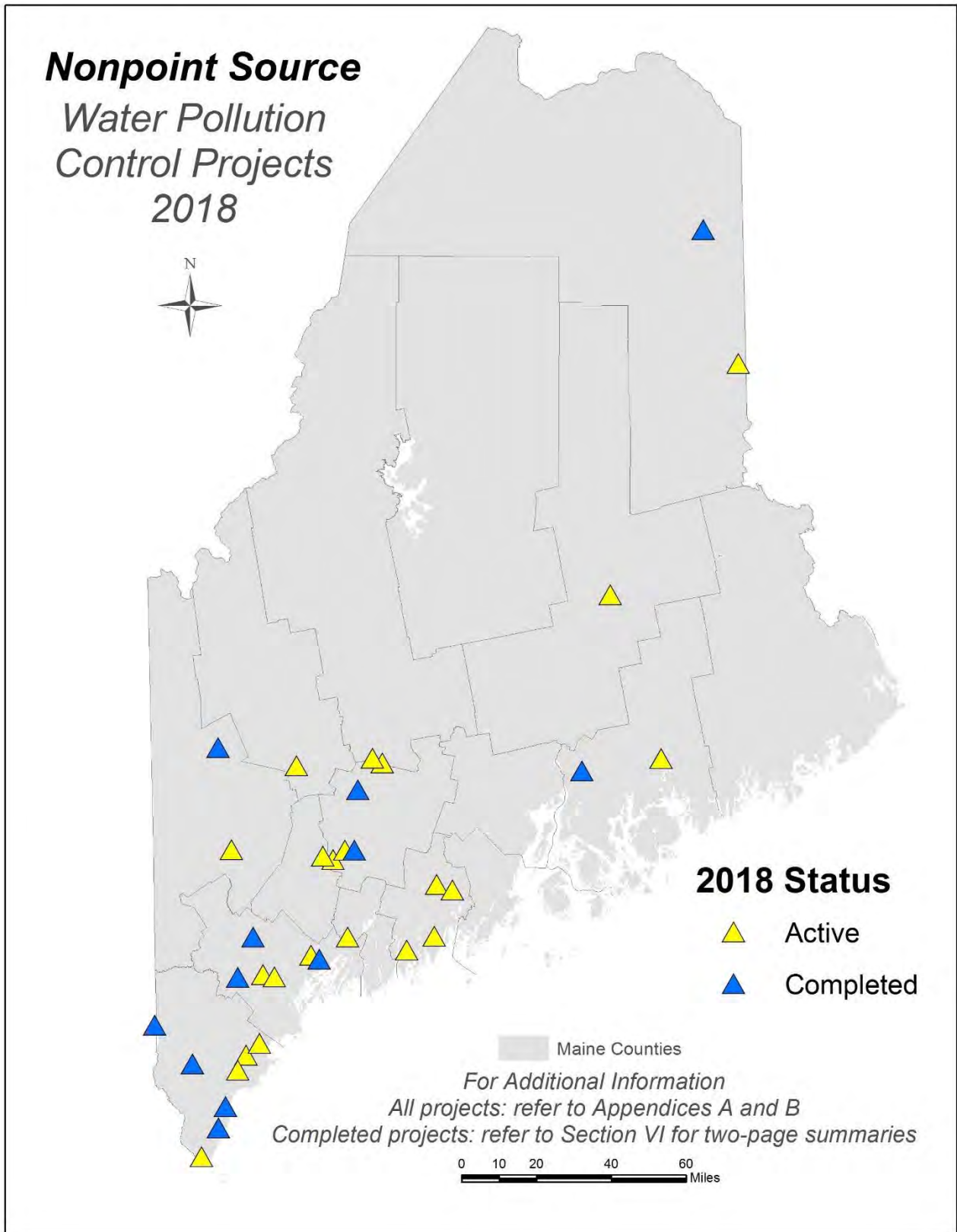
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Document available for download at: <http://www.maine.gov/dep/water/grants/319-documents/reports/>

**NPS Water Pollution Control Projects Active in 2018**



## I. Introduction

Nonpoint source pollution impacts 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 picks up and carries hitchhiking pollutants into our waters. Pollutants include sediment from erosion; nutrients from fertilizers or animal waste; bacteria from animal waste and failing septic systems; and toxics such as road salt or spilled petroleum products.

The Maine DEP coordinates the State of Maine Nonpoint Source Pollution Program (38 MSRA 410) to achieve widespread use of state-agency "best management practice guidelines" to prevent NPS pollution. Since 1990, EPA has awarded funds under CWA Section 319(h) to help states and tribes address the most pressing NPS pollution problems. Section 319 funds that are provided by EPA to the State help support a significant portion of Maine's NPS Program. NPS Program services are guided by the *Maine Nonpoint Source Management Program Plan 2015-2019*.

DEP helps communities and watershed groups assess water quality problems and act to reduce or stop NPS pollution. CWA Sections 604(b) and 319 funds are used to provide grants for watershed projects to help local communities identify water pollution sources in watersheds and act to restore or protect lakes, streams, or coastal waters.

This report summarizes the Nonpoint Source Program's activities and accomplishments in 2018. Each year, DEP prepares this report to inform the public and the EPA about Maine's progress controlling NPS water pollution and fulfill annual reporting requirements of Section 319(h) of the Federal CWA.

## II. 2018 Highlights - NPS Management Program

**A. Projects Closed Out** - 13 NPS watershed projects funded through the NPS grants program in previous years were successfully completed. DEP provided technical assistance and granted \$885,147 of Federal CWA Section 319 and 604(b) funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at \$736,472.

- BMPs were installed to reduce polluted runoff in the following 12 watersheds, thereby reducing pollutant loading to these waters by an estimated 723 pounds of phosphorus, 645 pounds of nitrogen and 1,011 tons of sediment per year<sup>1</sup> - equivalent to about 38 dump truck loads:
 

Alamoosook Lake (Orland)	Great East Lake (Acton)
Cape Neddick River (York)	Great Pond (Franklin)
Cobbossee Lake (Monmouth)	Long Pond (Belgrade)
Concord Gully Brook (Freeport)	Ogunquit River (Ogunquit)
Ellis Pond (Roxbury)	Panther Pond (Raymond)
Goodall Brook (Sanford)	Sebago Lake (Windham)
- A watershed-based plan was completed for Kennedy Brook (Presque Isle). 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.

<sup>1</sup> Pollutant load reduction estimates are based on approved methods and assume proper installation and maintenance of Best Management Practices. (See Section III.D.)

- B. New Grant Awards** - EPA awarded \$1,873,001 FFY 2018 Section 319 Clean Water Act funds to the DEP. Funds were used to fund programs designed to evaluate, prevent, and reduce NPS pollution problems. Ten new NPS grants totaling \$845,757 were issued to municipalities, Soil and Water Conservation Districts, and watershed groups for watershed implementation projects.
- C. Maine DEP's Clean Water State Revolving Fund (CWSRF)** – The CWSRF program helped fund \$5.3 million in NPS projects in 2018. This includes \$4.8 million in the CWSRF linked-deposit forestry program, which makes below-market-rate financing available for forestry BMPs and environmentally friendly logging equipment. Another \$0.5 million was provided in financing for the removal and replacement of two oil storage facilities through a program established in 2017.
- D. Maine NPS Success Stories** – In 2018, the West Branch Sheepscot River (Windsor) and Webster Brook (Limestone) were highlighted as two of EPA's National NPS Program Success Stories. Both waters were previously listed as impaired on Maine's 303(d) list and were subsequently removed from the list following work that addressed NPS sources contributing to the impairments. With these additions, there are now nine stories from Maine on EPA's NPS Success Stories website.



Atlantic Salmon, West Branch of the Sheepscot River.  
Credit: Maine DMR

### III. Maine NPS Management Program

#### A. Overview

The *Maine Nonpoint Source Management Program Plan 2015-2019* establishes program goals and strategies that Maine uses to make progress controlling 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.

DEP administers the NPS Program in coordination with EPA and other federal, state, and local governmental agencies, and non-governmental organizations. Five Maine agencies share responsibility for implementing NPS programs: 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 that require meeting performance standards to protect water quality.



The NPS plan describes actions State agencies will take over five years to make progress controlling NPS pollution, including 37 five-year objectives with actions and milestones. Outputs or accomplishments in 2018 are summarized Appendix C.

The NPS plan is available at: <http://www.maine.gov/dep/land/watershed/nps-program-plan.html>.

## B. 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. Although considerable resources are focused on restoring impaired waters, DEP also invests in 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. Fortunately, 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

In 2018, eight new lake protection plans (indicated with an \* below) were developed by local entities following guidance developed by DEP and EPA. With the addition of these new plans, there are 29 active lake watershed-based protection plans that have been accepted by DEP and EPA.

#### Lake Watershed-based Protection Plans Accepted by DEP

Abrams Pond (Eastbrook)	Mousam Lake* (Acton)
Adams & Knickerbocker Lake (Boothbay)	North Pond (Buckfield)
Alamoosook Lake (Orland)	North Pond (Norway)
Cobbossee Lake (Manchester)	North Pond (Smithfield)
Cold Stream Pond (Enfield)	Panther Pond (Raymond)
Crescent Lake (Raymond)	Parker Pond* (Chesterville)
Damariscotta Lake (Jefferson)	Phillips Lake (Dedham)
Ellis Pond (Roxbury)	Sebago Lake & Crooked River (Naples)
Forest Lake* (Windham)	Thompson Lake (Oxford)
Georges Pond* (Franklin)	Toddy Pond (Orland)
Great Pond (Franklin)	Varnum Pond* (Wilton)
Hogan & Whitney Ponds* (Oxford)	Whetstone Pond* (Blanchette)
Lake Auburn (Auburn)	Wilson Lake (Wilton)
Little Sebago Lake (Windham)	Woods Pond (Bridgton)
McGrath Pond & Salmon Lake* (Oakland)	



### **Implementation Projects to Protect Lakes**

DEP invests Section 319 funds provided by EPA for NPS watershed projects to implement BMPs that reduce polluted runoff. These projects help protect clean waters that are threatened by NPS pollution. In 2018, Section 319 funds helped sustain or start NPS watershed implementation projects in the following 12 lake watersheds:

Adams & Knickerbocker (Boothbay)	Ellis Pond (Roxbury)	North Pond (Norway)
Cobbossee Lake (Winthrop)	Great East Lake (Acton)	Panther Pond (Raymond)
Coldstream Pond (Enfield)	Great Pond (Franklin)	Sebago Lake (Standish)
Damariscotta Lake (Jefferson)	North Pond (Smithfield)	Wilson Lake (Wilton)

## **C. 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, and drinking water supply, and if the waters support healthy habitats for fish and wildlife. DEP places waters 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) reported to EPA. Restoring impaired waters involves three steps:

- **Water Quality Assessment, including TMDLs & Alternative Approaches.** In addition to DEP's water quality monitoring and assessment programs, DEP establishes a pollution allocation, also called a 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 for the waterbody to meet the state water quality classification.
- **Watershed-based Planning.** A watershed-based plan (WBP) 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. For EPA guidance on watershed planning, refer to [https://www.epa.gov/sites/production/files/2015-12/documents/watershed\\_mgmnt\\_quick\\_guide.pdf](https://www.epa.gov/sites/production/files/2015-12/documents/watershed_mgmnt_quick_guide.pdf).
- **Implementing Pollution Reduction Measures.** Communities, agencies and individuals install conservation practices or BMPs to eliminate or control sources of NPS pollution. Typically 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.

### **Developing Plans to Restore NPS Impaired Waters**

DEP provided services and Section 604(b) grant funds to help communities develop WBPs, which will then be used to guide restoration of NPS impaired waters.

- In 2018, DEP accepted one nine-element WBP for Kennedy Brook (Presque Isle).
- Work began to develop nine-element WBPs for Great Pond (Belgrade), Highland Lake (Windham), and Kennebunk River (Kennebunk); and planning efforts continued for Annabessacook Lake (Winthrop), Medomak River (Waldoboro), and Lower Pemaquid River (Bristol).
- DEP also provided staff services to support locally-funded efforts to help update the Hart Brook WBP (Lewiston).

- Through 2018, there were 30 active nine-element WBPs for NPS impaired waters. The Togus Pond and Penjajawoc Stream WBPs expired in 2018 and will need to be updated since they are more than ten years old.

#### **Watersheds with Nine-Element Watershed Plans Accepted by Maine DEP**

Arctic Brook (Bangor)	Long Pond & Great Pond (Belgrade)
Birch Stream (Bangor)	Meduxnekeag River (Houlton)
Bond Brook (Augusta)	Ogunquit River (Ogunquit)
Cape Neddick River (York)	Pearce Brook (Houlton)
Capehart Brook (Bangor)	Penjajawoc Stream (Bangor)
Capisic Brook (Portland)	Phillips Brook (Scarborough)
China Lake (China)	Pleasant River (Windham)
Cochnewagon Lake (Monmouth)	Red Brook (Scarborough)
Concord Gully Brook (Freeport)	Spruce Creek (Kittery)
Dudley Brook (Castle Hill)	Thatcher Brook (Biddeford)
East Pond (Smithfield)	Topsham Fair Mall Brook (Topsham)
Goodall Brook (Sanford)	Trout Brook (Cape Elizabeth)
Goosefare Brook (Saco)	Upper Prestile Stream (Fort Fairfield)
Kennedy Brook (Presque Isle)	Whitten Brook (Skowhegan)
Long Creek (South Portland)	Wilson Pond (Monmouth)

#### **NPS Watershed Implementation Projects**

DEP allocates Section 319 funds to help communities implement their watershed-based plans to restore NPS-impaired waters. In 2018, Section 319 funds helped continue or start projects in the following 12 NPS-impaired watersheds:

Cape Neddick River (York)	East Pond (Smithfield)	Ogunquit River (Ogunquit)
Cochnewagon Lake (Monmouth)	Goosefare Brook (Saco)	Spruce Creek (Kittery)
Concord Gully Brook (Freeport)	Long Pond (Belgrade)	Thatcher Brook (Biddeford)
Goodall Brook (Sanford)	Meduxnekeag River (Houlton)	Topsham Fair Mall Stream (Topsham)

#### **319 NPS Program Success Stories**

In 2018, Webster Brook (Limestone) and the West Branch Sheepscot River (Windsor) were highlighted as two of EPA's Nonpoint Source Program Success Stories. Both waters were previously listed as impaired on Maine's 303(d) list and were subsequently removed from the list following work that addressed NPS sources contributing to the impairment. (See below and pages 9-12 for the two-page stories.) With these additions, there are now nine stories from Maine on EPA's NPS Success Stories website (<https://www.epa.gov/nps/success-stories-about-restoring-water-bodies-impaired-nonpoint-source-pollution>).

**West Branch Sheepscot River** - Prized as a Class AA water and home to the endangered native Atlantic salmon, the river began showing significant declines in salmon spawning and signs of degraded stream habitat/water quality in the 1990s. Runoff from eroding roads and stream crossings, agricultural lands, and inadequate stream buffers contributed to the river's bacteria and dissolved oxygen impairments. From 1996-2007, funding from local, state, and federal partners, including seven Section 319 grants, helped restore riparian buffers, stabilize erosion, and install livestock fencing along the river. After monitoring showed that the river supported viable populations of juvenile salmon and attained Maine's Class AA standards for dissolved oxygen, DEP removed the West Branch Sheepscot River from the Section 303(d) list of impaired waters for dissolved oxygen in 2010.

**Webster Brook** - Located in the northeastern-most corner of Maine's Aroostook County, Webster Brook flows through a patchwork of cropland and scattered rural development. Although several neighboring waters experience water quality impacts associated with agricultural runoff, in Webster Brook the impacts from untreated residential wastewater were the long-held concern. In 1996, DEP listed Webster Brook as impaired for high *Escherichia coli* (*E. coli*) bacteria. In 2004, Maine DEP partnered with the town of Limestone and a resident to replace a failing cesspool next to the stream with a new onsite subsurface wastewater treatment and disposal system (septic system). This action reduced bacteria levels in the stream. After DEP monitoring data confirmed that Class B water quality standards for bacteria were met, DEP removed Webster Brook from its section 303(d) impaired waters list in 2010.

#### D. NPS Pollutant Load Reductions

EPA's 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: <http://it.tetrattech-ffx.com/steplweb/> and <http://forest.moscowfsl.wsu.edu/fswepp/>.

NPS load reductions for Section 319-funded implementation projects are reported in the EPA Grants Reporting and Tracking System (GRTS) database. The following table shows load reductions reported for 21 active implementation projects in 2018.

2018 NPS Pollutant Load Reductions		
<b>Sediment</b> 644 tons/year	<b>Phosphorus</b> 424 pounds/year	<b>Nitrogen</b> 896 pounds/year



# NONPOINT SOURCE SUCCESS STORY

## Maine

### Water Quality Restored in West Branch Sheepscot River

#### Waterbody Improved

Once prized as a Class AA water and home to the endangered native Atlantic salmon, the West Branch Sheepscot River began showing significant declines in salmon spawning and signs of degraded stream habitat/water quality in the 1990s. Runoff from eroding roads and stream crossings, agricultural lands and inadequate stream buffers contributed sediment, bacteria, excess nutrients and elevated water temperatures that led to the river's impairments. Funding from local, state and federal partners, including Clean Water Act (CWA) section 319 grants, supported 11 years of restoration (e.g., riparian buffers, easements, stabilized roads/stream crossings, livestock fencing). After monitoring showed the river supported viable populations of juvenile salmon and attained Maine's Class AA standards for dissolved oxygen (DO), Maine Department of Environmental Protection (DEP) removed the West Branch Sheepscot River from the section 303(d) list of impaired waters for DO in 2010.

#### Problem

The West Branch Sheepscot River is a Class AA river (Maine's highest designation) that originates at the mouth of Branch Pond in Palermo and empties into the mainstem Sheepscot River. The Sheepscot River, including the West Branch, is one of eight Maine rivers providing essential spawning grounds for the endangered native Atlantic salmon. The West Branch's 50-square-mile watershed (Figure 1) includes forest (66 percent), agriculture (21 percent), wetlands (11 percent), and residential areas/roads (2 percent).

The West Branch (segment ME0105000305\_528R02) was listed as impaired for DO/aquatic life use in 1998 and bacteria/recreational use in 2002. At the seven stations monitored on the West Branch from 1994 to 2004, DO levels fell below the DO standard for 6 to 53 percent of the readings. For bacteria, two of the three stations monitored in 2007–2012 consistently exceeded the geometric mean standard.

The 2004 Integrated Report listed agricultural nonpoint source (NPS) pollution as a potential source associated with the impairments. Other threats included sediment and nutrients from roads, failing stream crossings and a lack of streamside vegetation. Several watershed surveys were conducted from 1994 to 1998 to identify specific sources of NPS pollution to the river. In 1994 the U.S. Fish and Wildlife Service (USFWS) identified four sites on the banks of the West Branch that had serious erosion problems. In 1996 the Kennebec County Soil and Water Conservation District

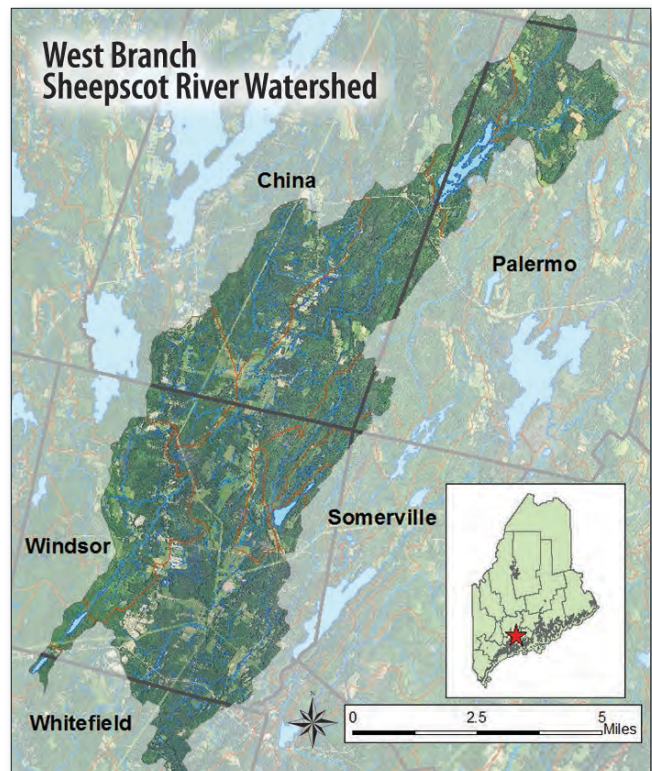


Figure 1. The West Branch is in southern Maine.

(SWCD) surveyed agricultural areas in the watershed and identified more than 1,050 acres of pasture, cropland and hay fields without riparian buffers. In 1996–2000, Sheepscot Valley Conservation Alliance (SVCA), Sheepscot River Watershed Council (SRWC), Maine



Figure 2. Marden Hill Road, before (top) and after (bottom) completion of an erosion control project.

State Planning Office (SPO) and Maine DEP conducted NPS surveys and identified 93 soil erosion sites.

## Story Highlights

From 1996 to 2007, partners implemented projects to restore the West Branch. Several state and federal grants, including seven CWA section 319-funded projects, helped fix 84 NPS pollution sites on town and state roads, trails, and private lands. Projects included replacing and stabilizing failing culverts (Figure 2); installing and stabilizing road ditches; installing sediment basins; and improving and grading roads. In addition, more than 200 volunteers planted vegetation to establish over 2,500 feet of riparian buffer, and another 4,000 feet of riparian buffer were protected through conservation easements held by the SVCA. The Kennebec County U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) staff worked with farmers to install four livestock exclusion projects, two stream crossings, 5.25 acres of riparian buffers, and 80 acres of integrated pest management.

Extensive public outreach was conducted through school visits and workshops focused on logging BMPs, proper stream culverts installation, salmon habitat restoration and road BMPs. Project staff provided landowners and towns with technical assistance and project updates through newsletters and public meetings.

## Results

Maine DEP monitoring in 2004–2006 showed readings generally remained at or above the DO standard. Continuous monitoring using datasondes (automated instrumentation) showed that drops below the standard were small and without a wide diurnal swing (which would indicate algae uptake and respiration). The improved DO findings were further supported by the low values measured in a Maine DEP biological oxygen demand study in 2004 and a U.S. Environmental Protection Agency (USEPA) sediment oxygen demand study in 2006. These data showed the river supported viable populations of juvenile salmon and attained Maine’s Class AA standards for DO. As a result, Maine DEP removed the West Branch Sheepscot River from the state’s list of impaired waters for DO in 2010. The river remains listed as impaired for bacteria.

## Partners and Funding

Numerous federal, state and local partners collaborated on the West Branch restoration effort. Kennebec County SWCD and SVCA served as the local project coordinators. Key project partners included Sheepscot River Watershed Council, Time and Tide Resource Conservation and Development Area, Knox–Lincoln SWCD, Atlantic Salmon Commission, Maine DEP, USDA NRCS, USFWS, USEPA, Maine Department of Transportation (DOT), Maine State Planning Office, and the towns of China, Whitefield, Windsor, and Palermo. USEPA provided \$501,313 in CWA section 319 funds for three projects focused solely on the West Branch and another \$278,944 in CWA section 319 funds for another four projects for the larger Sheepscot River watershed. The Kennebec County NRCS provided farmers with technical assistance and funding through Farm Bill programs. The Maine State Planning Office provided three grants for road, riparian and watershed assessments in the West Branch. Maine DOT, watershed towns, landowners and partners contributed \$813,150 in local match towards CWA section 319 projects (\$508,343 West Branch project match; \$304,807 Sheepscot project match).



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

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# NONPOINT SOURCE SUCCESS STORY

## Maine

### New Septic System Restores Water Quality in Webster Brook

#### Waterbody Improved

Located in the northeastern-most corner of Maine's Aroostook County, Webster Brook flows through a patchwork of cropland and scattered rural development. Although several neighboring waters experience water quality impacts associated with agricultural runoff, in Webster Brook the impacts from untreated residential wastewater were the long-held concern. In 1996, the Maine Department of Environmental Protection (DEP) placed Webster Brook on its Clean Water Act (CWA) section 303(d) list of impaired waters for high *Escherichia coli* (*E. coli*) bacteria. In 2004, Maine DEP partnered with the town of Limestone and a resident to replace a failing cesspool next to the stream with a new onsite subsurface wastewater treatment and disposal system (septic system). This action reduced bacteria levels in the stream. After DEP monitoring data confirmed that Class B water quality standards for bacteria were met, DEP removed Webster Brook from its section 303(d) impaired waters list in 2010.

#### Problem

Webster Brook is a small Class B stream (as defined under Maine's Water Classification Program) in Limestone and Fort Fairfield, Maine, near the Canadian border. The brook, which includes Trafton Lake (a 103-acre impoundment), flows easterly into Limestone Stream and then into the Aroostook River in Canada. The stream extends 4.9 miles and has a watershed area of 6.5 square miles (Figure 1). The watershed is mostly agricultural cropland, and the stream corridor includes forested areas, wetlands and limited residential development. There is a small settlement with a cluster of 12 homes downstream of Trafton Lake.

In 1996, Webster Brook (segment ME0101000413\_146R01) was included in Maine's 305(b) report because past monitoring showed that *E. coli* bacteria levels exceeded the Maine Class B geometric mean water quality standard of 64 most probable number per 100 milliliters (mpn/100 mL). *E. coli* bacteria are used as indicators of the presence of pathogens in water. Direct ingestion of water contaminated by pathogens (e.g., bacteria, viruses) can cause gastrointestinal illness, skin, ear, respiratory, eye, neurologic, and wound infections. The most commonly reported symptoms are stomach cramps, diarrhea, nausea, vomiting, and low-grade fever. Humans are exposed to waterborne pathogens during contact with and ingestion of recreational waters, ingestion of drinking water, and consumption of filter-feeding shellfish such as clams and mussels.

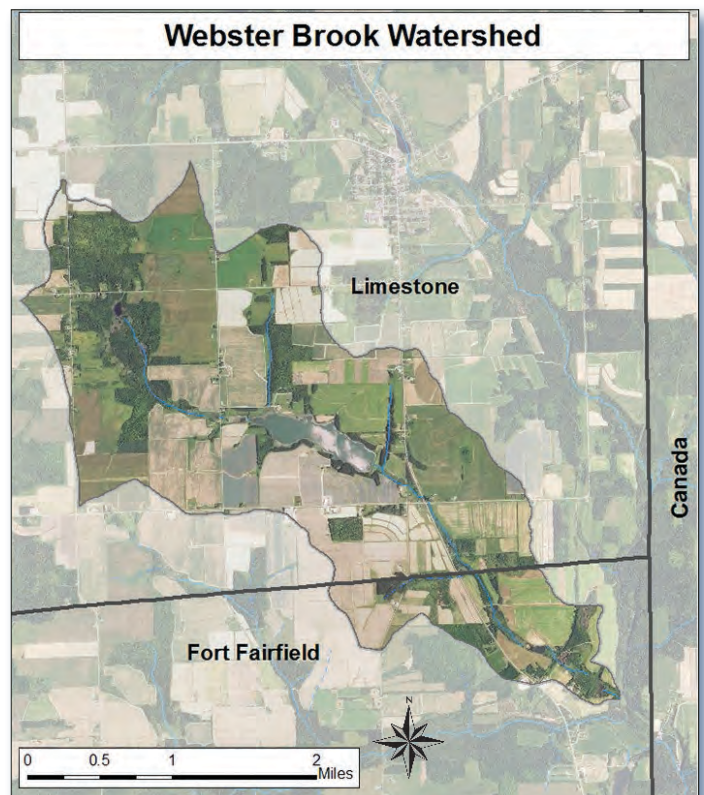


Figure 1. The Webster Brook watershed.

Waterborne pathogens enter surface waters from a variety of sources, including human sewage and the feces of warm-blooded wildlife. In Webster Brook,



Figure 2. The failed septic system was directly upstream of a DEP sampling station.

the excessive bacteria counts were primarily due to malfunctioning residential wastewater system(s).

## Story Highlights

In 2004, a landowner living next to Webster Brook approached the town of Limestone and Maine DEP about their cesspool system, originally installed in the 1940s, which had failed and was flowing untreated to the stream. Cesspools built before 1974 are allowed in Maine for wastewater disposal.

The landowner replaced the cesspool with a new septic tank and wastewater disposal system with concrete chambers. Maine DEP provided technical assistance and a \$10,000 grant to the town of Limestone through its Small Community Grant (SCG) program. The SCG program provides grants to towns to help individuals replace malfunctioning septic systems that are polluting a waterbody or causing a public nuisance. An actual pollution problem, such as the one identified in Webster Brook, must be documented to qualify for SCG funding.

## Results

In 2007, as part of the DEP's 2009 *Maine Statewide Bacteria TMDL (Total Maximum Daily Load)*, nine water samples were collected in Webster Brook just downstream of the location of the septic system replacement (Figure 2). Analysis showed that the *E. coli*



Figure 3. Webster Brook, seen here in 2018, now meets water quality standards.

geometric mean for Webster Brook was 61.8 mpn/100 mL, below the Class B geometric mean standard of 64 mpn/100 mL. Also, seven of the nine samples were well below the instantaneous (single sample) standard of 236 mpn/100 mL. As a result, Maine DEP removed Webster Brook from its CWA section 303(d) list in 2010 because it attained bacteria standards (Figure 3).

## Partners and Funding

The town of Limestone and a landowner partnered with Maine DEP's Division of Water Quality Management and Division of Environmental Assessment to identify the problem, oversee system replacement and conduct water quality monitoring. Maine DEP provided technical assistance and a \$10,000 grant through its SCG program to fund the new septic system. The SCG program is funded by state of Maine voter-approved bonds and serves as a source of nonfederal match to the funding Maine DEP receives through EPA's CWA section 319 program.



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

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## E. Section 319 Grant Administration

EPA awarded \$1,873,001 of FFY 2018 Section 319 funds to DEP. Of FFY 2018 Section 319 funds, 50% (\$936,191) were allocated for NPS grants to municipalities, Soil and Water Conservation Districts, and watershed groups for watershed implementation projects. Section 319 funds also supported eight DEP NPS program staff positions. DEP administered the Section 319 grants awarded to DEP under federal fiscal years 2016 - 2018, including monitoring sub-recipient performance on 35 grants for NPS projects and providing other DEP NPS program services. In May 2018, DEP issued the *NPS Management Program 2017 Annual Report*.

### Summary of FFY18 319 Grant and Match

Activity	Program Funds Subtotal	Project Funds Subtotal	Section 319 Total	Nonfederal Match
NPS Grants for Watershed Implementation	\$0	\$936,191	\$936,191	\$1,363,584
NPS Grants for Watershed Planning	\$18,622	\$0	\$18,622	\$21,271
DEP Staff (8 FTE), Other & Indirect	\$863,188	\$55,000	\$918,188	\$521,582
Totals	\$881,810	\$991,191	\$1,873,000	\$1,906,437

Of FFY 2018 Section 319 funds, 52.9% (\$991,191) were allocated for implementation of nine-element WBPs for restoration projects or alternative plans for protection projects. This includes funds (\$55,000) for DEP staff services to help implement WBPs and grant funds (\$936,191) for nine projects to implement WBPs. Six of the funded projects (\$720,865) will implement nine-element plans for impaired waters, and three projects (\$215,326) will implement alternative WBPs to protect NPS priority watersheds threatened by NPS pollution.



## IV. NPS Program Services

### A. 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 2018 included:

- **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 2018, assistance was provided to the following eight towns:
  - Benton
  - Eastport
  - Kingsbury Plantation
  - Islesboro
  - Newcastle
  - Somerville
  - Whiting
  - Veazie
- **Lake Watershed Surveys** - Volunteer watershed surveys find, describe, and prioritize NPS pollution sources and recommend BMPs needed at specific NPS sites to reduce polluted runoff to lakes. DEP grant funds are typically not available to help support watershed surveys. However, DEP provides technical assistance and project oversight to local groups that conduct locally-funded volunteer watershed surveys. After completing surveys, many of these groups use survey findings to develop lake watershed-based protection plans that will guide local stewardship efforts and open the door to possible 319 grant funding.

In 2018, DEP assisted with five watershed surveys:

- Bauneg Beg Lake (North Berwick)
- Great Pond (Belgrade)
- Highland Lake (Windham)
- West Harbor Pond (Boothbay)
- Walker Pond (Brooksville)



Volunteers for the 2018 Highland Lake survey.

Staff also provided assistance to lake associations to help plan future surveys for Branch Lake (Ellsworth), Lake Anasagunticook (Canton), Cross Lake (Aroostook County), Lake Penneesseewassee (Norway) and Square Pond (Acton). DEP partnered with the Lake Stewards of Maine (LSM) to conduct a watershed survey workshop, which was attended by 24 volunteers representing 18 different lakes. DEP also helped LSM review applications to their small grants program, which provides small grants to help fund watershed surveys.

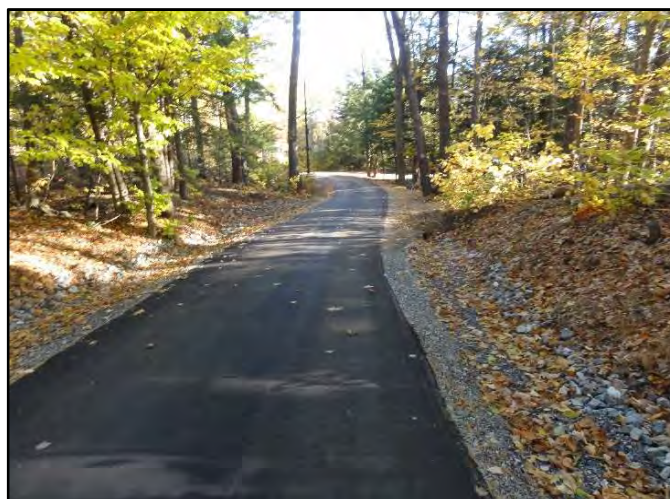
- **Stream Water Quality Monitoring** – DEP staff conducted water quality assessments on several streams to help with current or anticipated planning efforts or help assess progress meeting restoration goals. Data were collected on two Aroostook County Streams to provide some comparisons for the Amsden Brook Study data. Other streams with 2018 monitoring work included:

Capehart Brook (Bangor)  
 Concord Gully Brook (Freeport)  
 Dole Brook (Portland)

Kennebunk River (Kennebunk)  
 Norton Brook (Falmouth)  
 Pleasant River (Windham)

- **Youth Conservation Corps (YCC)** - The DEP provides some technical assistance to Maine's eight YCC programs. 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 and continued with local funding support. DEP staff hosted a YCC Roundtable in March 2018 to promote information sharing and collaboration between the YCCs.
- **Watershed Group Support** - DEP supports the work of watershed associations and communities through presentations at annual association meetings and technical assistance outside of 319 grant-funded projects. In 2018, DEP provided watershed maps upon request and assistance to many organizations and groups focused on the following watersheds:

Belgrade Lakes (Belgrade)	Meduxnekeag River (Houlton)
Collins Pond (Windham)	Trout Brook (Cape Elizabeth)
Highland Lake (Windham)	Watchic Lake (Standish)
Long Creek (South Portland)	
- **Watershed Roundtable** - Over 70 watershed managers from state agencies, municipalities, watershed organizations, and SWCDs attended the DEP's 16<sup>th</sup> annual Watershed Managers Roundtable held at the Viles Arboretum in Augusta in October. 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.
- **Lake Phosphorus Compensation Fee 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. Two projects were completed in 2018. York County SWCD partnered with the City of Sanford to install a FocalPoint bioretention system in coordination with the Goodall Brook Phase I project. Cumberland County SWCD partnered with Highland Lake Association, the Town of Windham, and the Highland Shores Road Association to install pavement, ditching, and ditch turnouts to stabilize and treat runoff along 400 feet of road adjacent to Highland Lake.



Highland Shores Road Stormwater Compensation Project

## B. Maine Nonpoint Source Training and Resource Center

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

### Accomplishments in 2018:

- Trained 406 participants in Basic and Advanced Erosion and Sediment Control practices.
- Provided two training programs in the Maintenance and Repair of Gravel Roads with 45 participants attending.
- Released an on-line course, 'Good Housekeeping/Dealing with Contaminated Soils/Spill Prevention and Clean-up' to provide an additional opportunity for continuing education for individuals certified in erosion control practices. Available at [https://stateofmaine.adobeconnect.com/\\_a827390218/p63vjfph8ldj/](https://stateofmaine.adobeconnect.com/_a827390218/p63vjfph8ldj/)
- Provided three continuing education workshops on 'Lakefront Property Values and Water Quality' for real estate professionals. The four-hour workshops were attended by a total of 252 participants.
- Provided one field-based continuing education workshop on Wetland Identification and Protection with a total of 11 participants.
- Provided continuing education training to 56 individuals previously certified in erosion and sediment control practices.
- Provided on-line continuing education training to 97 individuals.

### For More Information:

John Maclaine, DEP, (207) 615-3279, [john.maclaine@maine.gov](mailto:john.maclaine@maine.gov)  
NPS Training Center Website, <http://www.maine.gov/dep/land/training/index.html>



Realtor training sponsored by the NPS Training Center.

## C. Maine Volunteer River Monitoring Program

The purpose of the Volunteer River Monitoring Program (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 (QAPP) 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 also review the data entered by the volunteer groups, upload acceptable data to DEP's database, and produce an annual report.

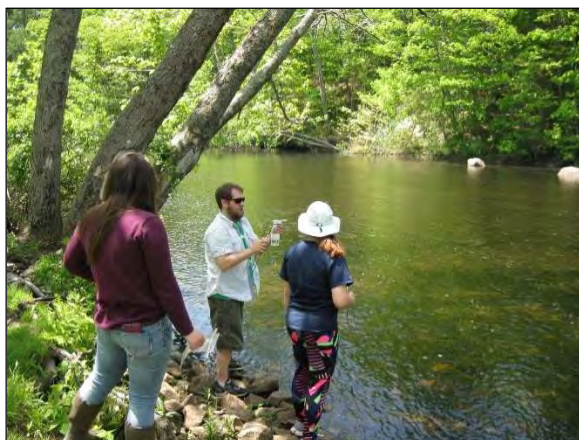
### **Accomplishments in 2018:**

- Completed the *Volunteer River Monitoring Report – 2017 Data Report* (April 2018).
- VRMP staff trained and certified/re-certified volunteers from five volunteer organizations to monitor 12 rivers, 14 streams and one harbor statewide.
- Water quality data were collected by 56 volunteers at 82 sites during 660 sampling events.
- Data collected included temperature, dissolved oxygen, conductivity, bacteria, chlorophyll, and nutrients.
- A total of 9 new sampling sites were added, including sites on two new rivers-Kennebec River (three sites) and Stroudwater River (four sites).

### **For More Information:**

Wendy Garland – (207) 615-2451, [wendy.garland@maine.gov](mailto:wendy.garland@maine.gov)

VRMP Website – [https://www.maine.gov/dep/water/monitoring/rivers\\_and\\_streams/vrmp/index.html](https://www.maine.gov/dep/water/monitoring/rivers_and_streams/vrmp/index.html)



Wells National Estuarine Research Reserve  
volunteer training, 2018.

## D. Clean Water State Revolving Fund

In Maine, the Clean Water State Revolving Fund (CWSRF) provides financing for NPS projects through several different direct loans, pass-through loans, and linked-deposit loans. These programs funded \$5.3 million in NPS projects in 2018.

### **Accomplishments in 2018:**

- The CWSRF linked-deposit Forestry program makes below market-rate financing available for forestry BMPs and the purchase of environmentally friendly logging equipment. Loan recipients must comply with forest industry harvesting standards and environmental inspections. In 2018, 20 loans were made under this program totaling \$4.8 million.
- The CWSRF and the Finance Authority of Maine established a pass-through loan program for the removal and/or replacement of commercial aboveground and underground oil storage facilities or tanks. FAME finalized rule making and program documents at the very end of 2017. In 2018, a total of \$0.5 million was provided in financing for the removal and replacement of two oil storage facilities.
- DEP staff delivered a presentation about Maine's CWSRF programs to address NPS at the 2018 EPA National NPS Training Workshop in Colorado Springs.



Brush covered logging road for forwarder to travel on to pick up logs.



A forwarder purchased with CWSRF-subsidized funding unloading logs.

### **For More Information:**

John True, CWSRF Program Manager – (207) 287-7808, [john.n.true@maine.gov](mailto:john.n.true@maine.gov)  
Clean Water SRF Webpage - <http://www.maine.gov/dep/water/grants/srfparag.html>

## E. Stream Culvert Projects – Maine Water Bond

In 2014, Maine voters approved the first referendum for a “Clean Water for Maine” bond. Since then, DEP has developed a grant program to disseminate these funds for stream crossing or culvert upgrades and for restoration of wetlands. Program funds are intended to improve public safety by reducing the risk of culvert failures; include provisions for climate change, flood protection, and resiliency; improve fish habitat by removing barriers to fish passage; and restore wetlands that improve wildlife habitat. In addition to the program goals listed above, projects also provide NPS and stream habitat benefits.

- In November 2017, voters approved \$5 million in bond funding for upgrading culverts at stream crossings in order to improve fish and wildlife habitats and increase safety. Two RFPs under this funding (\$5 million total) will be released in 2019.
- In November 2018, voters approved another \$5 million in bond funding for upgrading culverts at stream crossings in order to improve fish and wildlife habitat and increase safety. Two RFPs under this funding (\$5 million total) will be released in 2020.

### **For More Information:**

John Maclaine, DEP, (207) 615-3279, [john.maclaine@maine.gov](mailto:john.maclaine@maine.gov)  
Culvert Bond Website – [http://www.maine.gov/dep/land/water\\_bond\\_rfp.html](http://www.maine.gov/dep/land/water_bond_rfp.html)



The Fitts Mountain Road stream crossing in Dedham was replaced with combined funding from a Stream Crossing Grant (\$20,000) and CWA Section 319 (\$8,665) as part of Hancock County SWCD’s Phillips Lake Watershed Protection Phase II Project.

## F. Other Program News

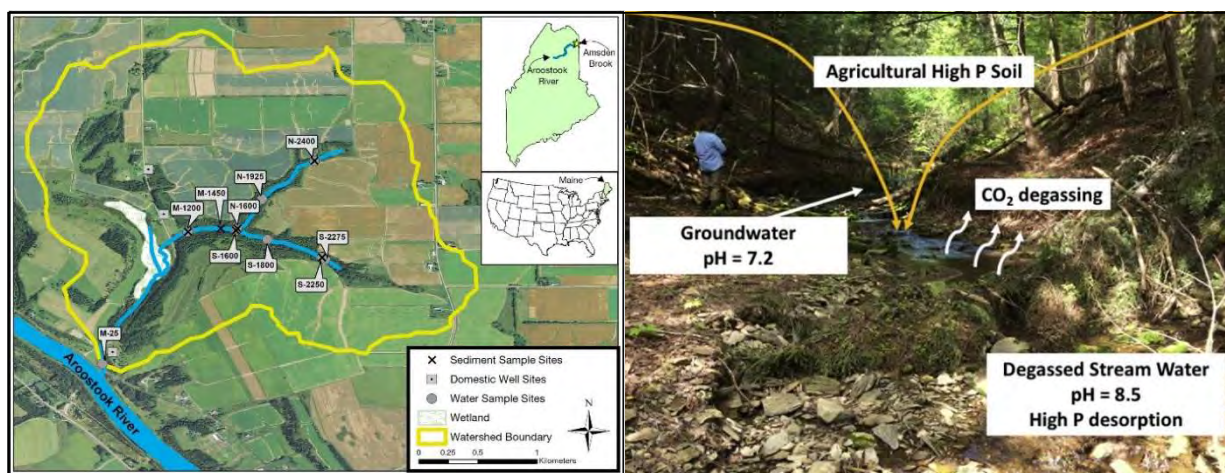
### Amsden Brook Phosphorus Study

Amsden Brook is a second order stream in Fort Fairfield that flows to the Aroostook River. Watershed land use is primarily row crop agriculture. Maine DEP has documented stream impairment and high levels of total phosphorus and soluble reactive phosphorus (SRP) under stream baseflow conditions. Maine DEP and University of Maine partnered on a two-year study to explore the sources and mechanism(s) of phosphorus mobilization in the watershed to assure more effective management strategies. Funding was provided by Maine DEP, Maine Department of Agriculture, Conservation and Forestry, U.S. Environmental Protection Agency, U.S. Department of Agriculture, Maine Potato Board, and several local potato industry processors.

Researchers analyzed stream sediment, surface and subsurface water, and soil samples to track the phosphorus concentrations in the watershed. The locations were also monitored monthly for temperature, pH, dissolved oxygen, conductivity, and other parameters. Results revealed discharges of neutral-pH (7.24), low-SRP groundwater ( $<3 \mu\text{g/L}^{-1}$ ) to the stream and significant increases in pH (8.5) downstream due to  $\text{CO}_2$  degassing. The pH increase results in the desorption of phosphorus from phosphorus-laden sediments resulting in SRP of  $40.6 \mu\text{g/L}^{-1}$ . Results suggest this pH increase leads to the precipitation of  $\text{CaCO}_3$ , which in turn, causes phosphorus to be mobilized due to pH-controlled desorption.

The article, “*Chemical controls on dissolved phosphorus mobilization in a calcareous agricultural stream during base flow*” was published in the journal *Science of the Total Environment* in January 2019.

<https://www.sciencedirect.com/science/article/pii/S0048969719300658?via%3Dihub>



Map of the study area and diagram of the phosphorus mobilization mechanism

Credits: Science of the Total Environment, January, 2019

### **Maggie Shannon Receives EPA Environmental Merit Award**

In September, Maggie Shannon was one of three Maine individuals recognized at the 2018 Environmental Merit Awards ceremony of EPA's New England regional office. She was one of 28 environmental leaders across New England honored for their work to protect New England's environment.

In 1999, Maggie Shannon moved to Maine to be near the lake where her family has vacationed for three generations. Soon thereafter, she took on roles as Belgrade Lake Association president, Invasive Plant Patroller, and founder of a seven-lake Courtesy Boat Inspection Program. In 2003, Shannon became executive director of the Maine Congress of Lake Associations, now the Maine Lake Society, representing over 120 lake associations. Maggie now serves as LakeSmart program director for the Maine Lake Society. Under Maggie's leadership, the Maine Lake Society took over the program from Maine DEP in 2012 and has increased the program's reach to over 50 lakes. She is a board member of the Belgrade Regional Conservation Alliance and chairs its Lake Trust. Maggie has worked to promote legislation and policies and effectively communicate the values of and threats to Maine's lakes.



Linda Bacon, Wendy Garland, and Don Witherill of Maine DEP present Maggie Shannon (2<sup>nd</sup> from right) with the EPA Environmental Merit Award.

### **East Pond Alum Treatment**

In June and October, a two-phase alum treatment was conducted on East Pond in Oakland to control the lake's internal recycling of phosphorus. East Pond has had ongoing summer algal blooms for over two decades due to the high amounts of internal phosphorus loading from the lake's bottom sediments. The non-toxic chemicals were distributed through the water column to the lake bottom using a barge delivery system designed to mix and distribute the alum.



Drone view of East Pond alum treatment.  
Photo credit: Colby College

The project was carried out by the 7 Lakes Alliance (7LA) in partnership with the East Pond Association, Colby College, and Maine DEP. Funding included a \$232,000 grant with EPA Section 319 funds, a \$200,000 grant from the Harold Alfond Foundation, and over \$600,000 in local contributions.

The alum treatment follows almost two decades of work to address phosphorus loading from the lake's surrounding watershed. From 2007-2017, three phases of watershed grant projects funded by the EPA under Section 319 addressed 64 priority erosion sites, and the summer Youth Conservation Corps completed another 83 projects in the watershed. The East Pond Association and 7LA will continue to address the few remaining NPS sites through their YCC and LakeSmart programs to help extend the longevity of the alum treatment.



## V. NPS Grants Program

### A. Overview

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. Through its pass-through grants program, DEP administers awards and monitors sub-grants of federal CWA Section 319 and 604(b) funds for watershed projects to help restore or protect lakes, streams, rivers or coastal waters affected by NPS pollution. 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 watershed-based management plans. A plan provides assessment and management information and describes actions needed over a 10-year period to restore NPS-impaired waters or to protect unimpaired waters considered threatened by NPS pollution. A thorough assessment of NPS problems (e.g., 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.



Cross Lake Watershed Survey planning meeting.

## B. Grant Awards Issued in 2018

DEP issued seven new grants (\$728,712) in 2018 using CWA Section 319 funds to help communities implement actions called for in their watershed management plans to restore impaired waters or protect waters threatened by NPS pollution. DEP also issued four grants using CWA Section 604(b) and 319 funds to develop watershed-based plans for Great Pond in Belgrade (\$18,622), Highland Lake in Windham (\$16,540 and \$5,460), and Kennebunk River in Kennebunk (\$41,600).

### NPS Grants Issued in 2018

Project Title	Grantee	Project #	Grant	Match
Cochnewagon Lake Restoration Project, Phase III: In-Lake Alum Treatment	Cobbossee Watershed District	20180001	175,000	187,400
Concord Gully Watershed Restoration Project, Phase II	Freeport, Town of	20180004	90,675	90,675
East Pond Watershed Restoration Project, Phase IV: In-Lake Alum Treatment	Belgrade Region Conservation Alliance	20180002	232,000	751,000
Great Pond Watershed-based Plan Development Project	7 Lakes Alliance	20180007	18,622	21,271
Highland Lake Watershed Management Plan Project	Cumberland County SWCD	20180008	16,540	22,543
Highland Lake Watershed Assessment Project	Cumberland County SWCD	2017PT16	5,460	3,754
Kennebunk River Watershed Plan Development Project	York County SWCD	20180006	41,600	28,832
North Pond NPS Watershed Protection Project, Phase I	7 Lakes Alliance	20180003	80,406	87,270
North Pond Watershed Protection Project	Oxford County SWCD	2016RR13	42,735	29,800
Spruce Creek Restoration Project, Phase V	Kittery, Town of	20180005	38,200	27,846
Wilson Lake Protection Project, Phase I	Wilton, Town of	2016RR11	69,696	144,446
Totals			\$810,934	\$1,394,837

### C. Conditional Grant Awards for 2019 Projects

In May 2018, DEP issued an RFP for projects to help communities implement their watershed-based plans and make progress restoring or protecting a waterbody. Fifteen proposals were received, requesting \$1,123,273. DEP issued conditional grant awards for 13 projects with a combined grant amount of \$1,105,676.

#### Conditional Grant Awards under 2019 Section 319 RFP

Project Title	Grantee	Project #	Grant	Match
Abrams Pond Protection Project Phase I	Hancock County SWCD	20190003	79,418	58,759
Adams-Knickerbocker Lake Protection Project, Phase II	Boothbay Water District	20190009	44,510	33,140
Caphart Brook Restoration Project, Phase III	Bangor, City of	20180010	125,000	85,000
Cobbossee Lake Protection Project, Phase II	Cobbossee Watershed District	20180011	90,410	60,634
Goosefare Brook Restoration Project Phase II	Old Orchard Beach, Town of	20190008	111,145	78,434
Hogan - Whitney Ponds Protection Project Phase I	Oxford County SWCD	20190005	50,100	34,856
Mousam Lake Protection Project Phase I	York County SWCD	20190010	94,981	76,597
Ogunquit River Restoration Project Phase III	Ogunquit, Town of	20180012	59,990	40,619
Parker Pond Protection Project Phase II	30 Mile River Watershed Association	20190006	98,132	74,151
Phillips Brook Restoration Project Phase I	Scarborough, Town of	20190007	115,623	81,330
Salmon Lake McGrath Pond Protection Project Phase I	7 Lakes Alliance	20190001	64,095	54,935
Trout Brook Restoration Project Phase III	Cumberland County SWCD	20190002	45,072	30,787
Thatcher Brook Restoration Project Phase II	Biddeford, City of	20190004	127,200	84,800
			\$1,105,676	\$794,042

## VI. Summaries of NPS Projects Completed in 2018

Thirteen watershed projects funded through the NPS grants program in previous years were successfully completed. DEP provided technical assistance and granted \$885,147 of Federal Clean Water Act funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at \$736,472.

- BMPs were installed to reduce polluted runoff in 12 watersheds, including eight lake and four river or stream watersheds. Over the course of these projects, NPS work reduced annual pollutant loading to these waters by 723 pounds of phosphorus, 645 pounds of nitrogen, and 1,011 tons of sediment per year - equivalent to about 38 dump truck loads.
- A watershed-based plan was completed for Kennedy Brook (Presque Isle). 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.

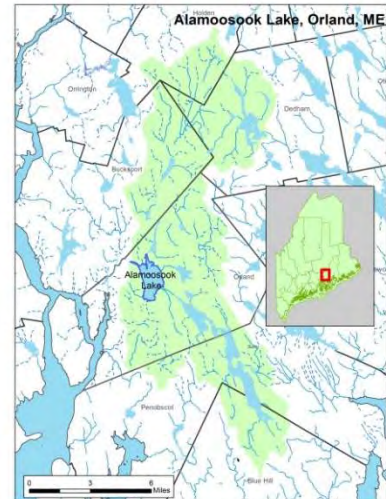
Two-page summaries of each project are included in the following pages. These summaries will be uploaded to the Gulf of Maine's Knowledgebase database located at:

<http://www.gulfofmaine.org/kb/2.0/search.html>.

Project Title	Page Number
Alamoosook Lake Watershed Protection Project	26
Cape Neddick River Watershed Restoration Project, Phase 1	28
Concord Gully Brook Watershed Restoration Project, Phase I	30
Cobbossee Lake Watershed Protection Project	32
Ellis Pond Watershed Protection Project, Phase I	34
Goodall Brook Watershed Restoration Project, Phase I	36
Great East Lake Watershed Protection, Phase 3: Maine	38
Great Pond Watershed Protection Project	40
Kennedy Brook / Mantle Lake Watershed Plan Development	42
Long Pond Watershed Restoration Project, Phase IV	44
Ogunquit River Watershed Restoration Project, Phase II	46
Panther Pond Watershed Protection Project, Phase III	48
Sebago Lake Watershed Protection Project, Phase III	50

## Alamoosook Lake Watershed Protection Project #2016RR01

Waterbody Name:	Alamoosook Lake
Location:	Orland – Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County SWCD
Project Duration:	April 2016 - December 2018
319 Grant Amount:	\$132,217
Local Match:	\$55,898

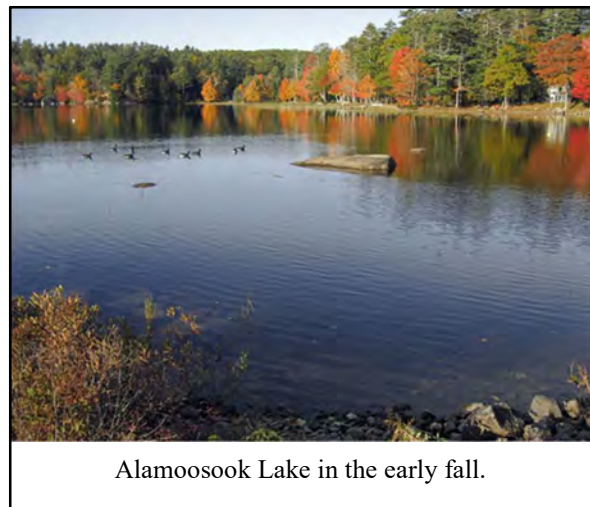


### PROBLEM:

Water quality data has been collected by the Maine DEP and the Lake Stewards of Maine since 1977. Alamoosook Lake water quality is considered 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-around 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 2014 NPS watershed survey documented 24 erosion problems. The Alamoosook Lake Watershed-based Protection Plan was developed in 2015.

### PROJECT DESCRIPTION:

The Alamoosook Lake Watershed Protection Project was coordinated by the Hancock County Soil and Water Conservation District (HCSWCD) and guided by a steering committee consisting of members of the Alamoosook Lake Association, Great Pond Mountain Conservation Trust, the Town of Orland, Craig Brook National Fish Hatchery, Maine DEP, and Alamoosook Lake watershed residents. The Steering Committee was the organizational force behind implementation of the project which implemented components of the watershed-based management plan by installing BMPs throughout the watershed. The project also created relationships between landowners, municipal officials, road commissioners, non-profit private conservation organizations, federal agencies, and natural resource professionals that encouraged cooperation in protecting the water quality of Alamoosook Lake.



Alamoosook Lake in the early fall.

**PROJECT OUTCOMES:**

- The project installed BMPs at 12 private road, five town, five residential and two federal sites in the watershed to reduce erosion and help protect water quality. Some of the installed BMPs included: shoreline stabilization, new culverts with armored outlets and inlets, plunge pools, road super-elevation, ditches, water bars, and turnouts.
- Technical assistance was provided to 54 landowners in the watershed.

Work completed through the project resulted in the reduction of estimated annual pollutant loads to the lake totaling 46.6 tons of sediment, 43.0 pounds of phosphorus, and 86.2 pounds of nitrogen (Region 5 Method). In addition, 120 feet of streambank and 80 feet of shoreline were protected.

**PROJECT PARTNERS:**

Alamoosook Lake Association

Craig Brook National Fish Hatchery

Great Pond Mountain Conservation Trust

Town of Orland

**CONTACT INFORMATION:**

Zach Steele, Hancock County SWCD – (207) 667-8663 [zsteele@hancockcountyswcd.org](mailto:zsteele@hancockcountyswcd.org)

Greg Beane, DEP – (207) 299-4703 [greg.e.beane@maine.gov](mailto:greg.e.beane@maine.gov)

## Cape Neddick River Watershed Restoration Project, Phase I

### #2017RT02

Waterbody Name: Cape Neddick River

Location: Town of York – York County

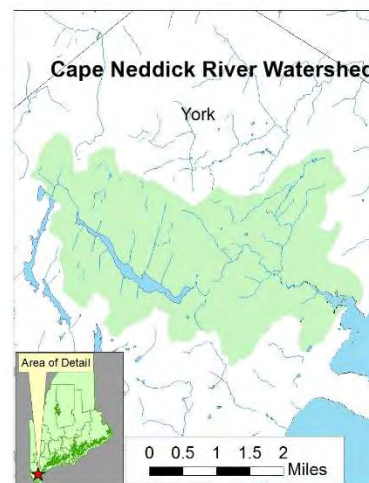
Waterbody Status: NPS Priority Watershed, Tidal Portion Impaired

Project Grantee: Town of York

Project Duration: April 2017 – December 2018

319 Grant Amount: \$20,340

Local Match: \$17,950



### PROBLEM:

The Cape Neddick River is a Class B stream and Class SB estuary, whose watershed is entirely in the Town of York. The watershed is approximately nine square miles, starting in the foothills of Mt. Agamenticus and including Chase’s Pond, the public water supply for the Town of York. The river flows under Interstate 95 and becomes tidal just east of Route 1. The Cape Neddick River is a significant estuarine resource and supports a diverse array of recreational water-based activities, including swimming at the popular Cape Neddick Beach.

The estuary portion of the river is listed as impaired (Category 4-A “Estuarine and Marine Waters with Impaired Use, TMDL Completed”) in the MDEP 2016 Integrated Report, and is included in the *Maine Statewide Bacteria TMDL (August 2009)*. The *Cape Neddick River Watershed Based Plan (June 2014)* identified that septic systems and stormwater runoff are the primary concerns for the watershed. Significant numbers of geese are known to congregate on large open lawns along the river.

### PROJECT DESCRIPTION:

The goal of this project was to reduce bacteria inputs, decrease the number of annual beach postings, and garner support for future bacteria reduction efforts in the watershed. The project focused on installing three plantings to deter geese at specific sites where geese are known to congregate; providing outreach regarding septic system maintenance; and proper pet waste disposal. The project was led by the Town, Wells Reserve and an active stakeholder committee. Letters were sent to Cape Neddick River Estuary abutters regarding the impact and preference of geese for open lawns, and the opportunity for grant funds. Nine landowners had site visits, five received a preliminary design and planting plan, and three had buffers installed through the grant. Direct mailings regarding proper septic system maintenance and dog waste disposal were conducted throughout the watershed. Pet waste and trash was collected during the 2018 Earth Day Clean-up Event. The Town hopes to continue supporting the installation of geese-deterrent buffers and community volunteer events.



Volunteers planting a buffer to deter geese from congregating on a residential property along the Cape Neddick River Estuary.

**PROJECT OUTCOMES:**

- Volunteers installed 250 native plants along 490 feet of riparian land on the Cape Neddick River, creating buffers and deterring geese at three hotspot locations.
- Project successes include landowners reporting a 60-100% decrease in Canada Geese after the barriers were planted and a reduction of pet waste found at the Mount Agamenticus Conservation area.
- Direct mailings were sent to watershed residents regarding deleterious effects of pet waste, wildlife waste, and failing septic systems. The project hosted an Earth Day Clean Up Event at three locations, information about proper pet waste disposal was distributed at each site.
- The project prevented an estimated 0.7 tons of sediment, 2.4 pounds of phosphorus, and 13.7 pounds of nitrogen from entering the river each year (Region 5 Method). This does not include the likely reduction of bacteria and nutrients from fewer geese on residential lawns.



Geese-deterrent buffer plantings on two residential properties along Cape Neddick River Estuary.

**PROJECT PARTNERS:**

Cape Neddick River Association  
 Wells National Estuarine Research Reserve  
 Maine Healthy Beaches

York Land Trust  
 York Water District

**CONTACT INFORMATION**

Leslie Hinz, Town of York – (207) 363-1002, [lhinz@yorkmaine.org](mailto:lhinz@yorkmaine.org)  
 Annie Cox, Wells NERR – (207) 646-1555, ext. 157, [acox@wellsnerr.org](mailto:acox@wellsnerr.org)  
 Kristin Feindel, DEP – (207) 215-3461, [kristin.b.feindel@maine.gov](mailto:kristin.b.feindel@maine.gov)



## Concord Gully Brook Watershed Restoration Project, Phase I #2016RT09

Waterbody Name:	Concord Gully Brook
Location:	Freeport – Cumberland County
Waterbody Status:	Urban Impaired Stream
Project Grantee:	Cumberland County SWCD
Project Duration:	January 2016 – December 2018
319 Grant Amount:	\$46,800
Local Match:	\$51,420



### PROBLEM:

Concord Gully Brook is an urban impaired stream located in Freeport. The main stem is approximately 1.5 miles long. There is one major tributary, Porter's Landing Brook, and several other minor tributaries. The watershed encompasses 561.8 acres (0.88 square miles) and has a mix of land uses that includes residential, commercial, public, and forested land. DEP calculated the total impervious area to be 22%.

This Class B stream has been on Maine's 303(d) list since 2004 because it does not meet standards for aquatic life, habitat, or bacteria. The threats to water quality identified during the plan development include: stream bank erosion, stream channel changes, degraded stream habitat, elevated chloride, and elevated nutrients and bacteria during stormflow conditions. The Concord Gully Brook Watershed Management Plan (2015) was developed by Cumberland County SWCD and the Town of Freeport (#2012RT18). The plan identified ten in-stream restoration projects to improve habitat and floodplain connectivity and nine stormwater retrofit projects.

### PROJECT DESCRIPTION:

The goal of the project was to address in-stream habitat sites in Concord Gully Brook and Tributary C to help restore stream water quality and to build momentum for continued restoration efforts in the Concord Gully Brook watershed.

The in-stream work aimed to reduce impacts associated with stormwater flows from impervious cover by improving stream stability and creating more natural in-stream habitat along a stream segment where the stream and public sewer line compete for space. The stream was stabilized at two major sites with stream-friendly techniques. The upper reach of Tributary C was stabilized by installing a series of ten constructed alternating pool and cascade structures. The lower reach was stabilized with combined pool and cascade structures (nine), riffles (70), and rock vanes (29). The extensive efforts of the Town added to the overall project generating over 66% in total project match.



Prior to work on one project site on the lower reach of Tributary C, there was significant stream channel incision and erosion adjacent to walking trail-sewer line.

**PROJECT OUTCOMES:**

- Over 800 feet of severely eroding stream channel was stabilized using pools and cascade structures, riffles, and rock vanes.
- The Town of Freeport, Freeport Sewer District, DEP, CCSWCD, US Army Corps of Engineers, L.L. Bean, and contractors successfully collaborated in designing, permitting, and installing the stream stabilization BMPs.
- The Town of Freeport's Engineer developed three future options for mitigating stream and channel erosion at the West Street culvert outlet.
- The project prevented an estimated 69 tons of sediment and 59 pounds of phosphorus loading into the stream each year (Region 5 Method).



**After** - Lower reach stabilized with pool and cascade structures, riffles, and rock veins.



**After** - Cascade and pool constructed at lower reach.

**PROJECT PARTNERS:**

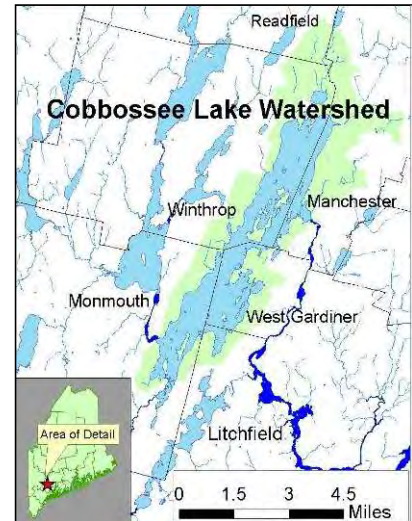
Town of Freeport  
Freeport Sewer District  
L.L. Bean

**CONTACT INFORMATION**

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## Cobbossee Lake Watershed Protection Project #2016RR02

Waterbody Name:	Cobbossee Lake
Location:	Winthrop, Manchester, West Gardiner, Readfield, Litchfield, Monmouth – Kennebec County
Waterbody Status:	NPS Priority Watershed, Threatened
Project Grantee:	Cobbossee Watershed District
Project Duration:	January 2016 – December 2018
319 Grant Amount:	\$76,096
Local Match:	\$54,924

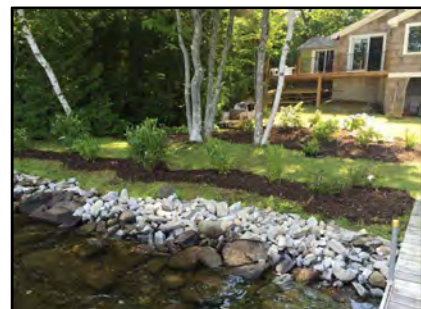


### PROBLEM:

Cobbossee (Cobbosseecontee) Lake is a large lake with a surface area of approximately 5,238 acres and a direct watershed of 27 square miles. The lake supports a large recreational fishery and recreational boating, and is a backup drinking water supply for the City of Augusta. The lake has been continuously monitored by the Cobbossee Watershed District (CWD) for over 40 years and the CWD has implemented several water quality improvement projects over the years. From 1996 to 2002, Cobbossee Lake experienced a gradual increase in water clarity and the minimum secchi disk reading did not fall below two meters. Due to this sustained improvement, Cobbossee Lake was removed from the impaired list in 2006. However, the lake had a severe bloom in 2009 and 2013 and therefore continued efforts are needed to maintain its de-listed status. The Kennebec County SWCD, with assistance from the CWD, completed the 2007–2008 Cobbossee Lake Protection Project, Phase I (#2007RR06). In 2015, the CWD completed the Cobbossee Lake Watershed Survey (#2013RR17) and prepared the Cobbossee Lake Watershed-Based Protection Plan (April 2015).

### PROJECT DESCRIPTION:

The intent of this project was to implement recommendations from the Cobbossee Lake Watershed-Based Protection Plan. BMPs were installed on many of the high and medium priority sites identified in the watershed survey with particular focus on private camp roads. Friends of the Cobbossee Watershed's (FOCW) Youth Conservation Corps (YCC) focused their efforts on shoreline stabilization and installation of BMPs on shorefront properties. Technical assistance was provided to property owners by CWD and FOCW through their Lake Smart-Start! program. CWD had planned to develop Gravel Road Design and Maintenance Recommendation Reports, but this task was revised to focus on a road association workshop. FOCW conducted project outreach through their school and TadPole Patrol programs and delivery of education materials with their OTTER II pontoon boat.



FOCW's YCC stabilized 40 feet of shoreline and planted two rows of vegetated buffers on this property.

**PROJECT OUTCOMES:**

- BMPs were installed at 21 NPS sites on seven camp roads and one residential right-of-way to reduce erosion and improve treatment of stormwater runoff.
- The Youth Conservation Corps stabilized over 550 linear feet of eroding shoreline.
- Pollutant loading to Cobbossee Lake was reduced by an estimated 8.4 tons of sediment and 6.3 pounds of phosphorus per year (WEPP Method).
- Technical assistance was provided on 18 gravel/camp roads, and LakeSmart-Start! consultations on lake friendly landscaping were provided to 20 property owners.
- At least two formal road associations were formed as a result of the road association workshop.
- More than 500 students were reached through the FOCW's watershed education program. FOCW provided lake and watershed education to numerous children and adults via the 17 Tadpole Patrol sessions held on the lake during the three project summers. Through the various public outreach efforts and technical assistance, the local watershed community gained a better understanding of lake and watershed linkages.



**Before** - Upper section of Ware Road showing surface erosion prior to improvements.



**After** - Same section of road with new surface gravel, crowning, and grader berms removed.

**PROJECT PARTNERS:**

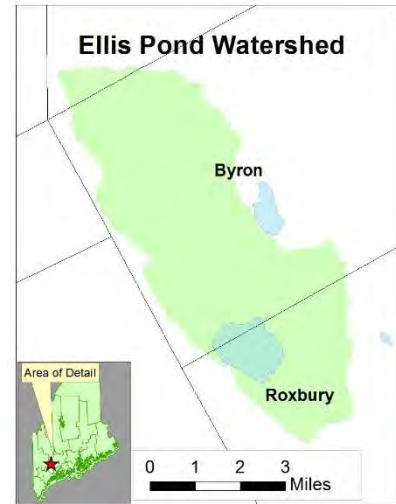
Friends of the Cobbossee Watershed  
Cobbosseecontee Yacht Club

**CONTACT INFORMATION:**

William Monagle, Cobbossee Watershed District – (207) 377-2234, [wmonagle@roadrunner.com](mailto:wmonagle@roadrunner.com)  
Mary Ellen Dennis, DEP – (207) 215-7946, [mary-ellen.c.dennis@maine.gov](mailto:mary-ellen.c.dennis@maine.gov)

## Ellis (Roxbury) Pond Conservation Project – Phase I #2016RR03

Waterbody Name:	Ellis (Roxbury) Pond
Location:	Roxbury, Byron – Oxford County
Waterbody Status:	NPS Priority Watershed, Threatened
Project Sponsor:	Oxford County SWCD
Project Duration:	April 2016 – December 2018
319 Grant Amount:	\$96,826
Local Match:	\$80,459



### PROBLEM:

Also known as Roxbury Pond and Silver Lake, Ellis Pond has a surface area of 919 acres, an average depth of 10 feet, and a direct drainage area of 26.4 square miles. Ellis Pond drains to the Ellis River which, in turn, flows to the Androscoggin River. Ellis Pond’s shoreline has 200 seasonal and year-round residences, one public boat launch and three public beaches.

Lake Stewards of Maine (LSM) and local volunteers have tested water quality in Ellis Pond since 1981. Historically, water quality has been characterized as average; however, in 2012 and 2013 Ellis Pond showed severe oxygen loss in comparison to previous years. In the fall of 2013, Ellis Pond experienced a brief but intense algal bloom. In 2014, it was placed on MDEP’s list of NPS Priority Watersheds as “threatened”. While the pond currently meets state water quality standards, it is on MDEP’s “watch list” for lakes with water quality close to the impairment threshold. Local partners identified 183 NPS sites in a 2014 watershed survey and developed the Ellis Pond Watershed-based Protection Plan in 2015.

### PROJECT DESCRIPTION:

The primary purpose of the Ellis Pond Watershed Protection Project- Phase I was to significantly reduce erosion and the export of sediment and phosphorus into Ellis Pond. BMPs were installed at 28 erosion sites, including many of the highest priority sites from the 2014 watershed survey in Roxbury as well as some town road sites in Byron. Technical assistance visits were also provided to 25 property owners.

The project increased public awareness through three workshops and one “road meeting”, presentations at the lake association’s annual meetings, and a final project brochure, which was distributed to project partners and the Roxbury Town Office.



Attendees at the gravel road maintenance workshop.

**PROJECT OUTCOMES:**

- BMPs were installed to address 20 NPS sites. Pollutant loading to Ellis Pond was reduced by an estimated 62.9 tons of sediment and 53.4 pounds of phosphorus each year (EPA Region 5 Method and WEPP Road Model).
- Eight Residential Matching Grants were awarded to property owners to address small residential erosion problems by installing BMPs such as runoff diverters and infiltration trenches.
- Project staff conducted 25 technical assistance visits and provided private property owners with recommendations for controlling erosion.
- Four workshops were carried out, including one focused on buffer plantings, two that covered gravel road maintenance and BMPs, and one on ATV Trail Maintenance.



**Before** - The culvert on Sunset Cove Rd was greatly undersized for the heavy spring runoff and stormwater flow it received. This resulted in the road being over-topped with water and gravel from the road being washed into Ellis Pond.



**After** - The culvert was replaced with a larger, bottomless box culvert which allows for more natural flows under the road. This project will prevent an estimated 13 tons of sediment from entering Ellis Pond annually.

**PROJECT PARTNERS:**

Androscoggin River Watershed Council  
 Silver Lake Camp Owners Association  
 Town of Byron  
 Town of Roxbury

**CONTACT INFORMATION:**

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 Michele Windsor, OCSWCD – (207) 744-3111, [oxfordcountyswcd@outlook.com](mailto:oxfordcountyswcd@outlook.com)  
 Jeff Stern, Androscoggin River Watershed Council – (207) 595-0317, [sternjm@hotmail.com](mailto:sternjm@hotmail.com)

## Goodall Brook Watershed Restoration Project, Phase I #2016RT08

Waterbody Name:	Goodall Brook
Location:	Sanford – York County
Waterbody Status:	Impaired, NPS Priority Watershed
Project Grantee:	City of Sanford
Project Duration:	January 2016 – December 2018
319 Grant:	\$84,526
Local Match:	\$69,685



### PROBLEM:

Goodall Brook is a small, 1.5 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. The Goodall Brook Watershed Management Plan (WBP) project (#2012RT17) was completed in 2014 with funding from EPA under Section 604(b). The WBP includes results of stream and watershed assessments, a description of stream stressors, and an action plan that will guide restoration efforts.

### PROJECT DESCRIPTION:

The purpose of the Phase I project was to significantly reduce pollutant loading to Goodall Brook and improve stream habitat with the ultimate goal of meeting Class B water quality standards. The project aimed to complete six of the 15 projects identified in the Goodall Brook WBP, conduct water quality monitoring to track project success, and develop local ordinances to better manage stormwater and erosion in the Goodall Brook watershed. Local outreach included stormdrain stenciling, development and installation of signage for the Robert St. project area, press releases, and web postings.



Volunteers from Sanford High School and Bauneg Beg Lake Association stenciled storm drains in the watershed.

**PROJECT OUTCOMES:**

- The project installed BMPs to address seven of the ten high and medium priority NPS sites in the Goodall Brook WBP. This included making significant adjustments to improve the function of three tree box filters previously installed with local funding, installation of a FocalPoint bioretention system at the Roberts Street parking lot, and retrofits to two stormwater outfalls to improve storage and treatment.
- The projects above reduced pollutant loading to Goodall Brook by an estimated five tons of sediment, 24 pounds of phosphorus and 74 pounds of nitrogen per year (STEPL method).
- Three hemlock tree root wads were installed into Goodall Brook streambanks with roots oriented upstream. The exposed root wads will capture organic material and sediment and narrow the over-widened channel, thereby helping to improve stream sinuosity and habitat diversity.
- Volunteers from Sanford High School and the Bauneg Beg Lake Association stenciled storm drains with the message, “Keep Water Clean, Drains to Stream”. High school students also removed invasive Japanese knotweed next to the stream and developed a sign that was installed in the highly visible Roberts Street parking lot.
- The City of Sanford developed a draft ordinance to improve its stormwater and erosion control standards. The initial goal was to develop the ordinance for just the Goodall Brook watershed, but the proposed ordinance is now planned to be adopted City-wide.



Goodall Brook project sign installed at the Roberts Street FocalPoint (left) and Sanford's Deputy Mayor, Lucas Lanigan, speaking to attendees of the press event on June 9, 2018.

**PROJECT PARTNERS:**

Bauneg Beg Lake Association  
 Sanford High School  
 Sanford Sewerage District  
 York County SWCD

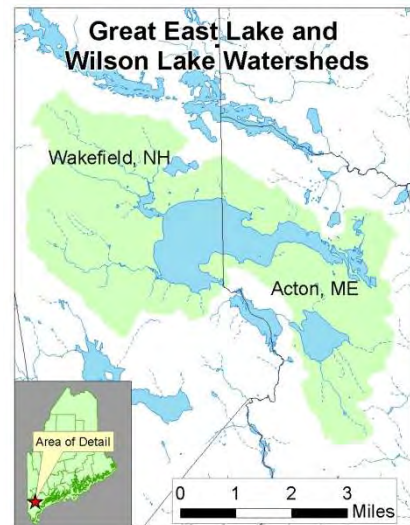
**CONTACT INFORMATION:**

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 Matthew Hill, City of Sanford – (207) 324-9135 [mehill@sanfordmaine.org](mailto:mehill@sanfordmaine.org)  
 Whitney Baker, YCSWCD – (207) 432-4543 [wbaker@yorkswcd.org](mailto:wbaker@yorkswcd.org)



## Great East Lake Watershed Protection Project, Phase III #2017RR07

Waterbody Name:	Great East Lake
Location:	Acton – York County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Acton Wakefield Watersheds Alliance
Project Duration:	October 2016 – October 2018
319 Grant Amount:	\$55,356
Local Match:	\$60,767



### PROBLEM:

Great East Lake, which lies on the Maine-New Hampshire state border, covers 1,707 acres and its watershed covers 15.3 square miles. Great East Lake is developed with over 700 homes, has a public boat launch, and is widely used for recreation with an average of 1500 visiting boats each season. The lake drains into Horn Pond and serves as the headwaters of the Salmon Falls River, which flows along the state border and serves as a drinking water supply for over 28,000 people.

Volunteers have monitored Great East Lake for many years, and water quality is considered outstanding. In 2006 the Acton Wakefield Watersheds Alliance (AWWA) and its summer Youth Conservation Corps (YCC) formed to protect the water quality of ten lakes in Acton and Wakefield. In 2008, AWWA received a NH 319 grant to complete a watershed-based plan for the upper Salmon Falls River watershed. The project included a watershed survey on Great East Lake, which identified 177 NPS sites. In 2009, DEP and the Wilson Lake Association carried out a watershed survey and identified 72 NPS sites. In 2010, NH DES funded a project to fix NPS problems on the NH side of Great East Lake's watershed. In 2012, a Maine DEP Phase I 319 project (#2012RR01) addressed NPS problems on seven road sites and installed conservation practices on 16 residential sites using its YCC, and a Phase II 319 project (#2015RR02) addressed another two high-priority NPS sites and installed BMPs at 11 YCC sites.

### PROJECT DESCRIPTION:

The purpose of the Phase III project was to reduce erosion and pollutant loading to Great East Lake. All work was done in Maine. Cost-sharing assistance was provided to road associations to fix severe erosion problems on four road sites, and AWWA's YCC provided labor to address eight residential NPS sites. Project information was shared with the community through lake association newsletters and annual meeting presentations, the AWWA website, and emails.



AWWA's YCC installed 58 BMPs on eight properties on Great East Lake.

**PROJECT OUTCOMES:**

- The project installed BMPs to address a high priority site on Lakeside Drive. Chronic erosion along 900 feet of road was mitigated by installing numerous BMPs, including road grading and paving and additional ditches and detention basins.
- Other projects included the installation of larger twin culverts and 40 feet of riprap-lined ditch to help prevent road washouts on Abbott Road; replacement of an undersized culvert and turnouts on Anderson Cove Road; and installation of a new ditch, driveway culverts, and three ditch turnouts on Jericho Way.
- AWWA's YCC program installed 58 BMPs on eight project sites. BMPs included rain gardens, infiltration steps, rubber razors, erosion control mulch, vegetated buffers, and roof dripline trenches.
- Work completed through the project reduced pollutant loading to Great East Lake by an estimated 19.2 tons of sediment and 16.4 pounds of phosphorus per year (Region 5 Method and WEPP Model).



Prior to the Phase II project, Lakeside Drive experienced chronic erosion with direct flow into the lake (above left). Numerous BMPs were installed to stabilize the road surface including 900' of road grading and paving, riprap ditches, turnouts, and a detention basin with level spreader (above right).

**PROJECT PARTNERS:**

Abbott Road Jericho Way Improvement Association  
Anderson Cove Road Association  
Great East Lake Improvement Association  
Lakeside Drive Road Association

**CONTACT INFORMATION:**

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

Linda Schier, AWWA – (603) 473-2500, [info@AWwatersheds.org](mailto:info@AWwatersheds.org), [www.AWwatersheds.org](http://www.AWwatersheds.org)

## Great Pond Watershed Protection Project #2017RR08

Waterbody Name: Great Pond  
 Location: Franklin – Hancock County  
 Waterbody Status: NPS Priority Watershed  
 Project Grantee: Hancock County SWCD  
 Project Duration: March 2017 – December 2018  
 319 Grant Amount: \$65,505  
 Local Match: \$32,491



### PROBLEM:

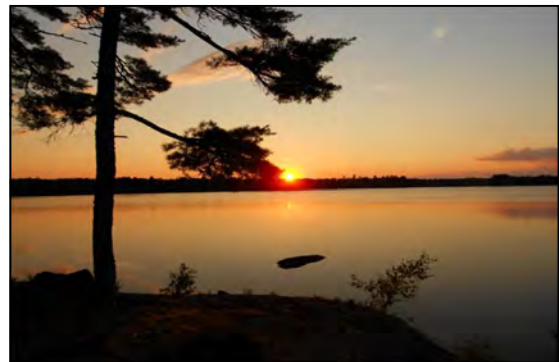
Water quality data on Great Pond have been collected by volunteers and Maine DEP since 1990. The pond's water quality is considered below average and the potential for nuisance algal blooms is low to moderate. Since 2009, water quality tests for Total Phosphorus (TP) conducted by the Franklin Great Pond Association (FGPA) have revealed TP ranging from 15-22 ppb, well above the historic average of 12 ppb.

The Great Pond watershed is experiencing significant development pressure, and a watershed survey conducted in 2014 identified 18 NPS sites. The Great Pond Watershed Survey Report reported that four sites were associated with private roads, 12 were classified as residential problems, and two sites were associated with public use areas.

### PROJECT DESCRIPTION:

The Great Pond Watershed Protection Project was managed by the Hancock County SWCD and guided by a Steering Committee consisting of District staff, members of the FGPA, Downeast Sunrise Trail Coalition, Maine DEP, and watershed residents.

Beginning in the spring of 2017 the project reduced sediment loading to the pond by installing BMPs to address five high and medium priority road sites, one public use site, and one residential site identified in the 2014 Watershed Survey. The project included using matching grants and technical assistance for 12 residential properties to install BMPs including vegetative buffers and driveways water diverters. In total, BMPs were implemented at 19 sites. HCSWCD kept the public informed of the grant project through press releases and the District's newsletter, website, and social media accounts. Project updates were presented at the FGPA Annual Meeting in 2017 and 2018.



**PROJECT OUTCOMES:**

- The project installed BMPs at five private road sites. Practices included, but were not limited to: ditching, road super-elevation, new HDPE culverts with armored inlets/outlets, plunge pools, a stream smart stream crossing, a level-lip spreader, turnouts, and waterbars.
- Water turnouts, rubber razors, and a vegetated swale were installed to address erosion at a public boat ramp.
- Brochures and other outreach materials were developed cooperatively by the HCSWCD and FGPA and mailed to lakeside residents. The outreach material educated readers on NPS pollution threats and available 319 grant assistance to address identified watershed pollution problems.
- An outreach and education plan was developed and provided to the FGPA to be disseminated to association members and watershed residents and users.
- The project resulted in an estimated annual pollutant reduction to Great Pond of 23.5 tons of sediment, 22.9 pounds of phosphorus, and 45.9 pounds of nitrogen (Region 5 Method). In addition, 50 feet of streambank and 23 feet of shoreline were stabilized.



Riprap-lined ditches and other road BMPs were installed through the project.

**PROJECT PARTNERS:**

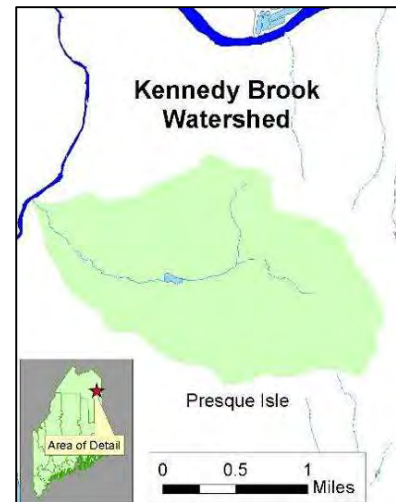
Franklin Great Pond Association  
Downeast Sunrise Trail Coalition

**CONTACT INFORMATION:**

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Greg Beane, DEP – (207) 299-4703, [greg.e.beane@maine.gov](mailto:greg.e.beane@maine.gov)

## Kennedy Brook/Mantle Lake Watershed Plan Development #2016PT10

Waterbody Name: Kennedy Brook and Mantle Lake  
 Location: Presque Isle – Aroostook County  
 Waterbody Status: Impaired, NPS Priority Watershed  
 Project Grantee: City of Presque Isle  
 Project Duration: October 2016 – December 2018  
 604(b) Grant Amount: \$41,600  
 Local Match: \$27,285

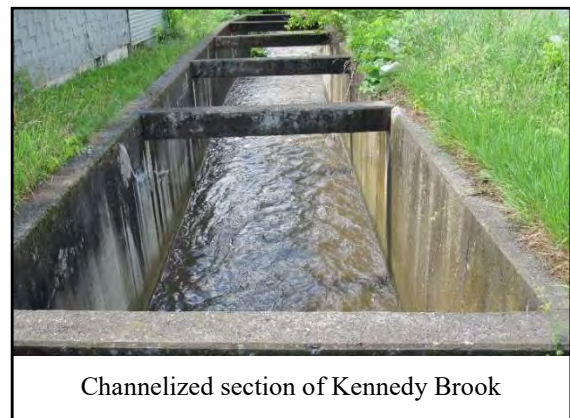


### PROBLEM:

Kennedy Brook has a 1,997 acre watershed within Presque Isle's urbanizing area. It is estimated that 25% of the watershed is developed; 58% is in agriculture and the remaining 17% is comprised of mixed land uses. Kennedy Brook is experiencing water quality degradation due to a combination of urban and agricultural issues. The urban stormwater sources are in the lower part of the watershed, and agricultural sources are located primarily in the upper portion of the watershed. Water quality data indicate the stream is at a tipping point where at times sampling shows that it meets Class B requirements, and at other times it does not. Ten years ago, Central Aroostook SWCD conducted a watershed survey and stream habitat walks. The biggest concerns noted were sediments entering the stream from storm drains, abundant algae growth, sedimentation originating from crop land, unstable recreational trail crossings, trash accumulation along the shore and in the stream, and inadequate buffers along the stream below US Route 1 (Main Street). Impervious cover is also noted as a contributor to the degradation of water quality.

### PROJECT DESCRIPTION:

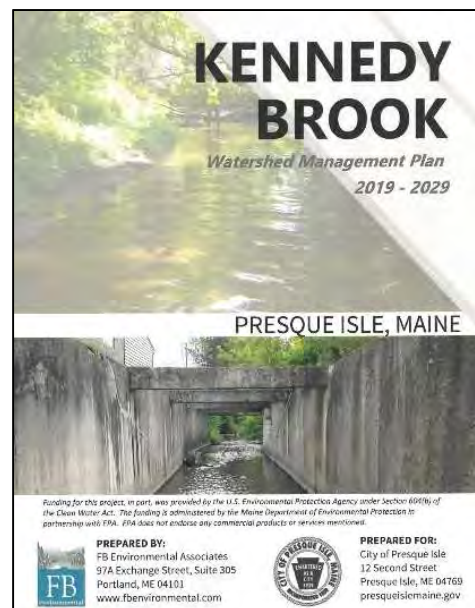
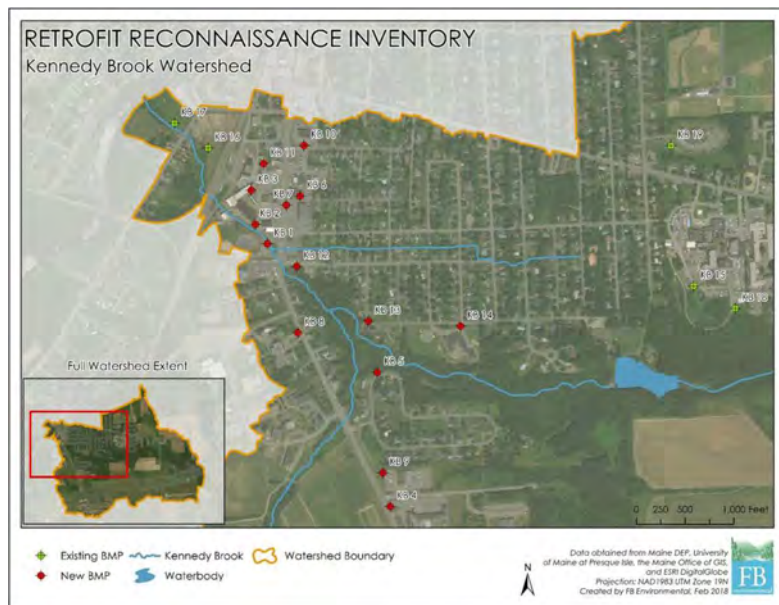
Through the project, the City worked with stakeholders, landowners, state and federal agencies and a consultant to develop a nine-element watershed based plan. The City and consultant organized a technical advisory committee, and conducted field investigations including a geomorphic assessment and watershed reconnaissance inventory, stream water quality monitoring and retrofit survey. To build local support, the City contacted all landowners in the watershed by mail and invited them to an informational meeting hosted at University of Maine at Presque Isle. At the conclusion of the project, project staff presented an overview of the plan to the City council and planning board, and the presentation was broadcast live on local access television. All work met applicable quality assurance procedures.



Channelized section of Kennedy Brook

## PROJECT OUTCOMES:

- Multiple field surveys were completed as part of the project including a Rapid Geomorphic Assessment Summary, Stream Corridor Assessment, and Stormwater Retrofit Reconnaissance Inventory.
- Project staff delivered a final presentation to the City Council and Planning Board. The meeting was well-attended and initiated a productive and robust conversation about the future of the stream. A recap of this presentation was covered in the local newspaper. (<https://thecounty.me/2018/11/30/news/presque-isle-seeking-to-address-pollution-in-kennedy-brook/>)
- The Kennedy Brook Watershed-Based Management Plan (December 2018) was completed. The plan establishes water quality goals, objectives, and actions needed to restore the stream's water quality.



## PROJECT PARTNERS:

University of Maine at Presque Isle

FB Environmental

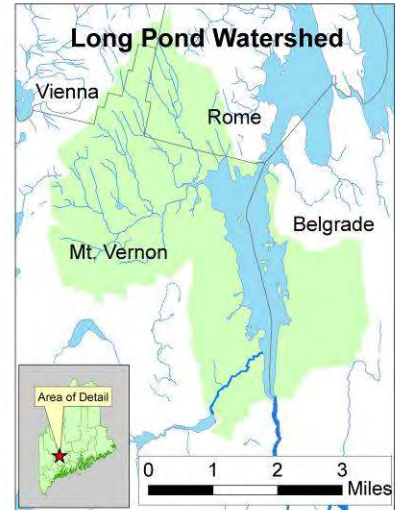
## CONTACT INFORMATION:

Kathy Hoppe, Maine DEP – (207) 540-3134, [kathy.m.hoppe@maine.gov](mailto:kathy.m.hoppe@maine.gov)

Ken Arndt, City of Presque Isle – (207) 760-2727, [karndt@presqueisleme.us](mailto:karndt@presqueisleme.us), <http://presqueislemaine.gov/>

## Long Pond NPS Watershed Restoration Project, Phase IV #2016RT05

Waterbody Name:	Long Pond
Location:	Belgrade, Mount Vernon, Rome, Vienna – Kennebec County
Waterbody Status:	Impaired, NPS Priority Watershed
Project Grantee:	Belgrade Regional Conservation Alliance (BRCA)
Project Duration:	March 2016 – December 2018
319 Grant Amount:	\$76,120
Local Match:	\$119,282



### PROBLEM:

Long Pond is the sixth lake in the Belgrade chain of lakes. It has a direct watershed of 22 square miles and an indirect watershed of 64 square miles including the watersheds of Great Pond, North Pond, East Pond, Salmon Lake, and McGrath Pond. Great Pond has a large influence on the water quality of Long Pond, as it empties into Long Pond, and Great Pond accounts for more than 70% of the total indirect watershed area, and nearly 50% of the entire watershed area. Water quality data have been collected since 1970. Over the past three decades the water clarity has declined by more than one meter. Due to declining water quality, DEP has listed Long Pond as an “impaired waterbody” on the State’s 303(d) list. In 2008 a TMDL was completed that identified NPS in the direct and indirect (particularly Great Pond) watersheds as primary sources of declining water quality.

A 2002 watershed survey completed by BRCA identified 211 NPS sites. Colby College completed a watershed survey in 2007-08 and identified over 400 sites, including sites where shoreline buffers could be enhanced. In 2009, BRCA and Kennebec County SWCD completed a watershed-based management plan. BRCA completed three 319-funded implementation projects (#2009RT07, #2011RT07, and #2014RT06). Phase I implemented BMPs at 19 sites and 21 Youth Conservation Corps (YCC) sites. Phase II implemented BMPs at 54 sites, 40 YCC projects were completed, and road management plans were developed. In Phase III, BMPs were implemented at 61 sites, 52 YCC projects were completed, five road management plans were developed, and seven road plans were updated.

### PROJECT DESCRIPTION:

The purpose of this project was to reduce phosphorus loading to the lake by continuing to implement actions listed in the Long Pond Watershed-Based Management Plan (December 2009). BMPs were installed at NPS sites, with a focus on high-priority camp and town roads. Technical assistance was provided to road associations and road management plans were developed. The BRCA (YCC) implemented BMPs at additional sites. Outreach was provided through road maintenance workshops.



Road workshop participants

**PROJECT OUTCOMES:**

- BMPs were installed at 60 NPS sites, exceeding the project goal of 20 sites. Sites included seven road association roads, three town roads (five+ miles), five driveways, and one town beach (16 locations).
- Two Road Management Plans (RMPs) were developed and two landowners with long driveways (3000 feet) were provided with technical assistance.
- Extensive technical assistance was provided to the Town of Rome for over five miles of paved and gravel roads. Technical assistance was also provided to five landowners and seven road associations (with RMPs) resulting in road and culvert projects.
- Youth Conservation Corps (YCC) projects were implemented at 144 NPS sites, exceeding the project goal of 30 NPS sites.
- Three road workshops were held, targeting road associations and private landowners. The three workshops were attended by 195 people.
- Work completed through the project reduced pollutant loading to Long Pond by an estimated 244.46 tons of sediment and 209.25 pounds of phosphorus per year (Region 5 Method and WEPP Model).



**Before:** Beaver Brook, four-foot culvert



**After:** Beaver Brook, ten-foot culvert

**PROJECT PARTNERS:**

Belgrade Lakes Association  
Kennebec County SWCD  
Maine Lakes Resource Center (merged with 7 Lakes Alliance)  
Towns of Belgrade, Mount Vernon, and Rome

**CONTACT INFORMATION:**

Charlie Baeder, BRCA – (207) 495-6039, [charlie.baeder@7lakesalliance.org](mailto:charlie.baeder@7lakesalliance.org)  
Mary Ellen Dennis, DEP – (207) 215-7946, [mary-ellen.c.dennis@maine.gov](mailto:mary-ellen.c.dennis@maine.gov)



## Ogunquit River Watershed Restoration Project, Phase II

### #2016RT06

Waterbody Name:	Ogunquit River
Location:	Ogunquit and Wells – York County
Waterbody Status:	NPS Priority Watersheds, Tidal Portion Impaired, Most at Risk
Project Grantee:	Town of Ogunquit
Project Duration:	April 2016 – May 2018
319 Grant Amount:	\$69,340
Local Match:	\$34,125



### PROBLEM:

The Ogunquit River watershed is an approximately 21 square mile coastal southern Maine watershed located in Ogunquit, South Berwick, York, and Wells. The river is tidally influenced downstream of the Route 1 crossing and flows through salt marshes before emptying into the Gulf of Maine behind Ogunquit's 3.5 mile barrier beach. The Ogunquit River is a high value area of heavy contact recreation (swimming, boating, and fishing) enjoyed by over a million residents and visitors each year.

The river is impacted by stormwater runoff and malfunctioning septic systems associated with residential, municipal, and commercial properties. The Ogunquit River estuary is impaired due to elevated bacteria (fecal pollutants) and is included in the Maine Statewide Bacteria Total Maximum Daily Load (August 2009). Advisories have been issued at the beach at the outlet of the Ogunquit River. Dry and wet weather sampling at multiple sites since 2012 show Enterococci ranges up to 2,481 cfu/100mL, with particularly high counts or "hotspots" (>4,884 cfu/100mL) along Leavitt Stream, a tributary to the Ogunquit River, and in runoff and seeps from the Main Beach parking lot. The Ogunquit River Watershed Based Plan (July 2013) focuses on ways to address sources of bacteria and nutrients in the watershed. The Ogunquit River Watershed Restoration Project, Phase I (#2014BB09) implemented BMPs for stormwater mitigation, evaluated areas of illicit sewage discharge, and administered a public outreach campaign.

### PROJECT DESCRIPTION:

The project purpose was to help reduce bacteria levels in the Ogunquit River and minimize the number of beach advisories near the outlet. The project addressed several key problems, including polluted stormwater runoff, septic system issues, and improper pet waste disposal. Implementing structural BMPs at the Main Beach parking lot helped reduce bacteria and other pollutant loading to the river and Riverside Beach. The project built on the public outreach program developed under Phase I, but with a targeted focus on raising awareness about proper septic system maintenance, particularly in residential neighborhoods around Leavitt Stream, and proper pet waste disposal throughout the watershed.



Pet waste disposal signs were installed at key hotspot locations.

**PROJECT OUTCOMES:**

- Installation of an enhanced drywell with a bacteria filter insert at two catch basins in the Main Beach parking lot.
- Door-to-door outreach regarding proper pet waste disposal and septic system maintenance in hotspot neighborhoods.
- Installation of pet waste signage and catch basin stencils at key locations.
- Improved awareness of local water quality issues within the Ogunquit River Watershed since 2014, as demonstrated from the results of intercept surveys done pre-Phase I and post-Phase II.
- Two years of water quality monitoring and reporting.
- Pollutant loading reduction to the Ogunquit River of an estimated 0.73 tons of sediment, 4.8 pounds of phosphorus, and 30.2 pounds of nitrogen per year (STEPL), along with reduced fecal contamination from humans, dogs, and birds.



Installation of enhanced drywell and catch basin inserts to treat the runoff from the Main Beach Parking Lot.



Stenciled catchbasin draining to the Leavitt Stream tributary to the Ogunquit River.

**PROJECT PARTNERS:**

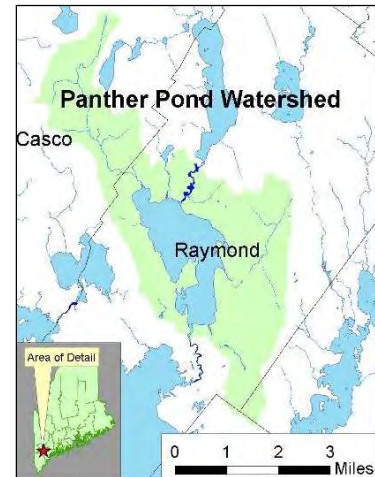
FB Environmental Associates  
Maine Healthy Beaches  
Ogunquit Conservation Commission  
Ogunquit Sewer Department

**CONTACT INFORMATION:**

Kristin Feindel, DEP – (207) 215-3461, [kristin.b.feindel@maine.gov](mailto:kristin.b.feindel@maine.gov)  
Patricia Finnigan, Town of Ogunquit – (207) 646-5139, [townmanager@townofogunquit.org](mailto:townmanager@townofogunquit.org)  
FB Environmental – (207) 221-6699, [info@fbenvironmental.com](mailto:info@fbenvironmental.com)

## Panther Pond Conservation Project – Phase III #2017RR10

Waterbody Name:	Panther Pond
Location:	Raymond, Casco – Cumberland County
Waterbody Status:	NPS Priority Watershed, Most at Risk
Project Sponsor:	Town of Raymond
Project Duration:	January 2017 – December 2018
319 Grant Amount:	\$64,827
Local Match:	\$50,247



### PROBLEM:

Panther Pond is a 1439-acre lake located in the Town of Raymond. Panther Pond's shoreline is developed with over 300 homes, four youth summer camps, and an extensive network of unpaved camp roads. The direct watershed covers 12.3 square miles, and the larger watershed includes Crescent Lake, Raymond Pond, and several smaller ponds. Panther Pond contributes about 18% of the flow into Sebago Lake, which serves as a drinking water supply for the Portland region.

The Raymond Waterways Protective Association (RWPA) and Maine DEP have monitored water quality on Panther Pond since 1974. Data indicate that the lake experiences moderate depletion of dissolved oxygen in late summer. In 2002 the Panther Pond Association (PPA) formed to promote conservation efforts in the watershed. In 2003, the PPA, RWPA, Cumberland County SWCD, and Maine DEP conducted an independently-funded watershed survey and identified 84 erosion sites contributing an estimated 61 tons of sediment per year to the lake. Phase I (#2005R-17) and Phase II (#2009RR02) grant projects installed conservation practices at 40 large-scale erosion sites and 42 smaller sites through small matching grants, reducing pollutant loading to Panther Pond by an estimated 64 tons of sediment per year.

### PROJECT DESCRIPTION:

The primary project purpose was to significantly reduce erosion and export of sediment and phosphorus into Panther Pond. With the assistance of strong local partners, this was accomplished by installing BMPs that reduce erosion and polluted runoff, raising awareness about watershed problems, and fostering long-term watershed stewardship. Technical assistance outreach was provided to over 20 residential properties and 18 potential large-scale NPS abatement sites, exceeding the project goals. BMPs were installed at eight residential sites and nine high-priority abatement sites. Project partners coordinated deliveries of erosion control mulch to ten watershed residents with free delivery from Raymond's Public Works Department. Project staff and project volunteers worked with Camp Hinds, RSU 14's Katahdin Program, and AmeriCorps members to develop and install student-led solutions at Camp Hinds.



Boy Scout Troop 73 installed roof dripline trenches at Camp Hinds lean-tos.

**PROJECT OUTCOMES:**

- Provided technical assistance and site recommendations to 38 properties.
- Installed conservation practices at 17 sites, including 9 high priority NPS sites.
- Promoted maintenance of conservation practices installed in Phase I and II through inspections and maintenance recommendations conducted by PPA volunteers.
- Delivered two place-based education lessons in combination with student-led hands-on solution workshops.
- Prevented an estimated 16.6 tons of sediment and 14 pounds of phosphorus from entering the pond each year (EPA Region 5 Method and WEPP Road Model).



Volunteers participated in a hands-on workshop installing conservation practices for a residential property.



RSU 14 Katahdin Program students, teachers, and volunteers at Katahdin's Volunteer Day installing BMPs near new cabins at Camp Hinds.

**PROJECT PARTNERS:**

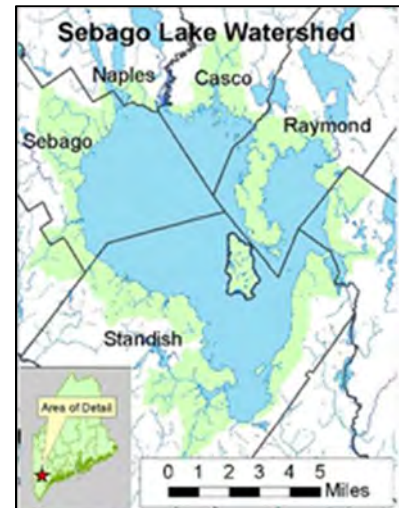
Boy Scout Troop 73  
 Cumberland County SWCD  
 Maine Conservation Corps, AmeriCorps  
 Panther Pond Association  
 Portland Water District  
 Raymond Waterways Protective Association  
 RSU 14's Katahdin Program  
 Camp Hinds (Boy Scouts of America Pine Tree Council)

**CONTACT INFORMATION:**

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 Heather Huntt, CCSWCD – (207) 892-4700, [hhuntt@cumberlandswcd.org](mailto:hhuntt@cumberlandswcd.org)  
 Kristin Feindel, DEP – (207) 215-3461, [kristin.b.feindel@maine.gov](mailto:kristin.b.feindel@maine.gov)

## Sebago Lake Watershed Protection Project, Phase III #2016RR07

Waterbody Name:	Sebago Lake
Location:	Standish, Sebago, Naples, Casco, Raymond, Windham, Frye Island – Cumberland County
Waterbody Status:	NPS Priority Watershed, Most At Risk
Project Grantee:	Portland Water District
Project Duration:	March 2016 – December 2018
319 Grant Amount:	\$55,593
Local Match:	\$81,943



### PROBLEM:

Sebago Lake, Maine's second 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 youth 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 and includes 29 subwatersheds. Since its inception in 1908, Portland Water District (PWD) has monitored water quality and worked to protect the lake. Sebago Lake has excellent water quality, with Secchi transparency averages over 31 feet deep.

Implementation work in the direct watershed has been conducted in phases due to the large size of the lake and watershed. Through two previous phases of work, CCSWCD and PWD installed conservation practices at 25 high- and medium- impact sites and provided technical assistance to 31 landowners. PWD staff inspected 373 properties in the lake shoreland zone. To ensure protection and implementation efforts are directed at locations with the highest potential to impact Sebago lake water quality, a watershed assessment and prioritization for the entire Sebago Lake watershed was conducted and resulted in the Sebago Lake and Crooked River Watershed-Based Protection Plan (2015).

### PROJECT DESCRIPTION:

The primary purpose of this project was to reduce export of sediment and phosphorus into Sebago Lake. CCSWCD and PWD provided technical assistance and BMP recommendations. BMPs that reduce erosion and polluted runoff were installed at high-priority NPS sites. Contact was made with selected commercial golf courses to discuss onsite treatment of stormwater. PWD staff continued NRPA Permit by Rule and shoreland zone inspections and provided their Lakescaping Program to Sebago Lake property owners offering free BMP installation recommendations and matching grants for residential properties and private roads. Partnerships were revitalized with Camp O-AT-KA and Sebago Lake State Park, with the hope of continuing water quality protection work in future years.



**PROJECT OUTCOMES:**

- Technical assistance was provided to towns, private road associations, and property owners at 28 sites.
- BMPs were installed at 14 sites, including town and state roads, Sebago Lake State Park sites, and private campground sites. Road BMPs included check dams, ditch stabilization, sediment basins, and turnouts. Work at campgrounds included installation of GeoWeb confinement cells, infiltration steps, and erosion control mulch.
- Total project match exceeded pledged amount by over \$33,000.
- The project prevented an estimated 28.2 tons of sediment and 24 pounds of phosphorus from entering the lake each year (WEPP Method and Region 5 Model).

**PROJECT PARTNERS:**

Cumberland County SWCD  
 Town of Naples  
 Town of Sebago  
 Town of Standish

Sebago Lake State Park  
 Maine DOT  
 Camp O-AT-KA

**CONTACT INFORMATION:**

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 Kirsten Ness, PWD – (207) 774-5961, [kness@pwd.org](mailto:kness@pwd.org)  
 Heather Hunt, CCSWCD – (207) 892-4700, [hhuntt@cumberlandswcd.org](mailto:hhuntt@cumberlandswcd.org)  
 Kristin Feindel, DEP – (207) 215-3461, [kristin.b.feindel@maine.gov](mailto:kristin.b.feindel@maine.gov)

## Appendix A. NPS Grant Projects Closed in 2018

Project Title	Project ID#	Grantee	Grant Amount	Non-Federal Match	Completion Date
Alamoosook Lake Watershed Protection Project	2016RR01	Hancock County SWCD	132,217	55,898	Dec. 2018
Cape Neddick River Watershed Restoration	2017RT02	Town of York	20,341	17,946	Dec. 2018
Concord Gully Brook Watershed Restoration	2016RT09	Cumberland County SWCD	46,800	51,420	Dec. 2018
Cobbossee Lake Watershed Protection Project	2016RR02	Cobbossee Watershed District	76,096	54,924	Dec. 2018
Ellis Pond Watershed Protection Project, Phase I	2016RR03	Oxford County SWCD	96,826	80,459	Dec. 2018
Goodall Brook Watershed Restoration Project, Phase I	2016RT08	City of Sanford	84,526	69,685	Dec. 2018
Great East Lake Watershed Protection, Phase 3: Maine	2017RR08	Acton Wakefield Watersheds Alliance	55,356	60,767	Dec. 2018
Great Pond Watershed Protection Project	2017RR08	Hancock County SWCD	65,505	32,491	Dec. 2018
Kennedy Brook / Mantle Lake Watershed Plan	2016PT10	City of Presque Isle	41,600	27,285	Dec. 2018
Long Pond Watershed Restoration Project, Phase IV	2016RT05	Belgrade Region Conservation Alliance	76,120	119,282	Dec. 2018
Ogunquit River Watershed Restoration Project, Phase II	2016RT06	Town of Ogunquit	69,340	34,125	May 2018
Panther Pond Watershed Protection Project, Phase III	2017RR10	Town of Raymond	64,827	50,247	Dec. 2018
Sebago Lake Watershed Protection Project, Phase III	2016RR07	Portland Water District	55,593	81,943	Dec. 2018

**Appendix B. Active NPS Grant Projects**

<b>Project Title</b>	<b>Project ID#</b>	<b>Grantee</b>	<b>Grant Amount</b>	<b>Non-Federal Match</b>	<b>Planned Completion Date</b>
Adams Pond, Knickerbocker Lake Watershed Protection Project, Phase I	2017RR01	Boothbay Region Water District	43,300	37,447	Dec. 2019
Updating the Annabessacook Lake Watershed Based Plan	2017PT14	Cobboossee Watershed District	13,075	11,779	Sept. 2019
Cochnewagon Lake NPS Watershed Restoration - Phase II	2017RT03	Cobboossee Watershed District	95,117	77,823	Dec. 2019
Cochnewagon Lake Restoration Project, Phase III: In-Lake Alum Treatment	20180001	Cobboossee Watershed District	175,000	187,400	Dec. 2019
Cold Stream Pond Watershed Protection Project, Phase I	2017RR04	Penobscot County SWCD	47,345	47,950	Dec. 2019
Concord Gully Watershed Restoration Project, Phase II	20180004	Freeport, Town of	90,675	90,675	Dec. 2019
Damariscotta Lake Watershed Protection Project, Phase I	2017RR05	Midcoast Conservancy	127,478	101,250	Dec. 2019
East Pond Watershed Restoration Project, Phase IV: In-Lake Alum Treatment	20180002	7 Lakes Alliance	232,000	751,000	Dec. 2019
Goosefare Brook Restoration Project, Phase 1	2017RT06	City of Saco	142,594	102,090	Dec. 2019
Great Pond Watershed-based Plan Development Project	20180007	7 Lakes Alliance	18,622	21,271	Dec. 2020
Highland Lake Watershed Management Plan Project	20180008	Cumberland County SWCD	16,540	22,543	Dec. 2019
Highland Lake Watershed Assessment Project	2017PT16	Cumberland County SWCD	5,460	3,754	Dec. 2019
Kennebunk River Watershed Plan Development Project	20180006	York County SWCD	41,600	28,832	Oct. 2020
Lower Pemaquid River Watershed Assessment	2017PT15	Town of Bristol	6,525	9,810	March 2019
Medomak River Watershed-based Plan Development	2017PT13	Town of Waldoboro	22,000	15,080	April 2019



<b>Project Title</b>	<b>Project ID#</b>	<b>Grantee</b>	<b>Grant Amount</b>	<b>Non-Federal Match</b>	<b>Planned Completion Date</b>
Meduxnekeag River Watershed Project, Phase I	2017RT09	Southern Aroostook SWCD	29,650	37,836	Dec. 2019
North Pond NPS Watershed Protection Project, Phase I	20180003	7 Lakes Alliance	80,406	87,270	Nov. 2019
North Pond Watershed Protection Project	2016RR13	Oxford County SWCD	42,735	29,800	Dec. 2019
Spruce Creek Restoration Project, Phase V	20180005	Kittery, Town of	38,200	27,846	Dec. 2019
Wilson Lake Watershed Protection Project, Phase I	2016RR11	Wilton, Town of	69,696	147,337	Dec. 2019
Thatcher Brook Watershed Restoration Project, Phase I	2017RT11	City of Biddeford	139,790	99,521	Dec. 2019
Topsham Fair Mall Stream Restoration Project, Phase II	2017RT12	Town of Topsham	102,000	87,413	Dec. 2019

## Appendix C. Maine NPS Program Five-year Objectives, Actions, Annual Milestones and 2018 Accomplishments or Outputs (from *Maine NPS Management Program Plan 2015-2019*)

This section provides the five-year objectives, actions, milestones, schedule and annual outputs to date for Maine's NPS program. Table 9 focuses on DEP's watershed approach to improve and protect water quality. Tables 10 to 15 list objectives for Maine's statewide approach to address six major NPS pollution categories: developed areas, agriculture, transportation, forestry, subsurface wastewater disposal, and hydrologic modification. Table 16 lists objectives for partnerships, funding, and NPS program administration.

Table 9. Watershed Approach    Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
<p><b>1. Prioritization:</b> Complete revisions to the evaluation criteria and the methodology used for prioritizing lakes, streams and marine waters (NPS Priority Watersheds list)</p> <p>Partners: DACF, DMR</p>	<ul style="list-style-type: none"> <li>For lakes, evaluate use of aluminum sediment core data in the lake vulnerability index when data is available. Update priority watersheds list incorporating results, if appropriate.</li> <li>For streams, evaluate use of Recovery Potential Screening tool (EPA) to assist with prioritization of impaired and threatened streams. Update priority watersheds list incorporating model results, if appropriate.</li> <li>For marine waters, work with DMR, Healthy Beaches Program and other partners to investigate ways to improve the prioritization as new data or methods becomes available.</li> <li>Improve methodology to assign priority among NPS priority watersheds to progressively address protecting or restoring NPS priority watersheds.</li> </ul>	1. Revised NPS priority watersheds list evaluation criteria and methodology			X	X		Jeff Dennis	Completed extensive revisions in 2017. No changes to criteria or methodology in 2018.
<p><b>2. Prioritization:</b> Evaluate NPS priority lists annually as new information becomes available.</p>	<ul style="list-style-type: none"> <li>Annually evaluate NPS priority watersheds lists. Announce public opportunity to submit requests and support for waterbodies to be added to the priority lists.</li> </ul>	2. Updated NPS priority watershed list	X ✓	X ✓	X ✓	X ✓	X	Kristin Feindel	Provided opportunity to request waters be evaluated for inclusion on priority lists. Updated list finalized and posted in February 2019.

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
	<ul style="list-style-type: none"> <li>Update priority lists as needed; add or remove individual waterbodies as new information becomes available.</li> </ul>								
3. <u>Planning</u> : Approve 5 nine-element watershed based plans (WBP) for restoration of impaired waters.	<ul style="list-style-type: none"> <li>Provide to decision makers the information needed to develop sound WBPs including data necessary to determine the dominant stressors contributing to the impairment and sufficient watershed and stream corridor information to identify and prioritize specific implementation activities needed to restore the waterbody.</li> <li>Provide technical support, guidance and when available funding for development of effective WBPs.</li> </ul>	3. Nine element WBPs	2 ✓ 3	1 ✓ 2	1 ✓ 2	1 ✓ 1	1	Wendy Garland	DEP approved the Kennedy Brook Watershed-based Plan.
4. <u>Planning</u> : Approve 10 alternative WBPs for protection of unimpaired waters.	Working with partners, provide technical assistance and funding for watershed surveys to support the development of lake watershed-based protection plans. Coordinate to secure EPA approval of alternative WBPs.	4. Alternative WBPs	2 ✓ 7	2 ✓ 3	2 ✓ 4	2 ✓ 8	2	Wendy Garland	DEP & EPA approved WBPs for 8 lakes: Forest Lake, Georges Pond, Hogan/Whitney Ponds, McGrath/Salmon Lake, Mousam Lake, Parker Pond, Varnum Pond and Whetstone Pond.
5. <u>Planning</u> : Approve updates of 3 existing nine-element WBPs.	Working with partners, provide technical assistance to support updates of nine-element WBPs.	5. Updated nine-element WBPs			1	1	1	Wendy Garland	On track. 3 plans (Birch Stream, Hart Brook and Annabessacook Lake) in process of being updated with DEP support.
6. <u>Planning</u> : Develop guidance document to identify stream stressors.	Develop a guidance document to help partners identify stream stressors and develop WBPs for urban impaired streams.	6. Stream stressors guidance document		X		✓		Kathy Hoppe	Document completed in 2018 and undergoing internal review prior to distribution.

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
7. <u>Planning</u> : Develop guidance document to update WBPs.	Develop guidance for updating WBPs that will be more than ten years old between 2015 and 2019 and share with groups associated with these plans.	7. Guidance document for updating WBPs		X ✓				Wendy Garland	Completed.
8. <u>Restoration</u> : Fully or partially restore 2 NPS impaired waterbodies; Prepare NPS Success Stories that document the restorations.	<ul style="list-style-type: none"> <li>• Provide technical support and funding through NPS Section 319 grant program to support implementation of WBPs for waters with high potential to be restored.</li> <li>• Work with local municipalities and interest groups to resolve pathogen contamination problems on bacteria-impaired waterbodies (includes marine and freshwaters).</li> <li>• Collect targeted water quality and biological health information to determine the effectiveness of implementation efforts and guide modifications to the WBP.</li> <li>• Evaluate available data to determine if water classification standards have been met or if there has been substantial incremental improvement in water quality and/or ecological condition.</li> </ul>	8. NPS success stories about partially or fully restored waterbodies (WQ-10)				2 2	Wendy Garland	Two NPS Success Stories submitted to EPA and approved in 2018. West Branch Sheepscot River and Webster Brook stories posted on EPA website.	
9. <u>Restoration</u> : Collaborate with EPA and NRCS in the NWQI program to make progress restoring impaired waters.	<ul style="list-style-type: none"> <li>• Coordinate with EPA and NRCS to select watersheds for the National Water Quality Initiative program (NWQI).</li> <li>• Conduct ambient water quality monitoring of Oliver Brook, within the Nickerson Lake - Meduxnekeag River subwatershed selected under the NRCS NWQI</li> </ul>	9. Water quality monitoring results for Oliver Brook.		X	X	X	X	Kathy Hoppe	No monitoring conducted in 2018 because not enough BMP installation to date for water quality response. Monitoring planned for summer 2019. Two meetings held with DEP and NRCS to review current projects and prepare for two Readiness Phase watershed projects.

Table 9. Watershed Approach    Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
10. Target efforts to maintain open shellfish harvesting areas or restore closed shellfish harvesting areas.	<ul style="list-style-type: none"> <li>MCP, DMR and DEP will identify priority target watersheds. MCP, DMR and DEP will help municipal and watershed groups adopt regulatory or non-regulatory measures, complete targeted projects, or implement recognized BMPs to reduce impacts to coastal water quality in target watersheds of priority shellfish growing areas.</li> <li>This work will be conducted to make progress opening closed shellfish growing areas.</li> </ul>	10. Number of municipalities that adopt: new plans and policies; regulatory or non-regulatory measures; complete targeted projects; or implement BMPs	X 1	X 2	X 3	X 3	X	Wendy Garland	Ongoing. Focused work in Medomak River (Waldoboro), Lower Pemaquid River (Bristol) and Spruce Creek (Kittery). DMR reports that the Medomak River is close to being fully opened to shellfish harvesting.
11. <u>Substantial Improvement</u> : Demonstrate substantial improvement in water quality and/or ecological condition in 3 NPS-impaired waterbodies.	<ul style="list-style-type: none"> <li>Provide technical support and funding through NPS Section 319 grant program to support implementation of WBPs for waters with high potential to be restored.</li> <li>Work with local municipalities and interest groups to resolve pathogen contamination problems on bacteria-impaired waterbodies (includes marine and freshwaters).</li> <li>Collect targeted water quality and biological health information to determine the effectiveness of implementation efforts &amp; guide modifications to the WBP.</li> <li>Evaluate data to determine if water classification standards have been met or if there has been substantial incremental improvement in water quality and/or ecological condition.</li> </ul>	11. NPS success stories that show progress toward achieving water quality goals or about ecological restoration		1 ✓		1	1	Wendy Garland	Ongoing. No partial success stories submitted in 2018.
12. <u>Protection</u> : Develop 2 guidance documents to estimate effectiveness of watershed protection efforts.	Develop metrics and methods to evaluate effectiveness of efforts to protect unimpaired threatened waters. <ul style="list-style-type: none"> <li>2015 For lake watersheds</li> <li>2016 for stream and marine watersheds</li> </ul>	12. Demonstrating protection guidance documents	X	X				Jeff Dennis	Participated in EPA-led discussions about protection metrics. Working with the Town of Falmouth on a Maine Coastal Program grant project that will lead to

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
									development of stream protection plan(s).
13. <u>Protection</u> : Demonstrate effective protection of 8 unimpaired threatened waters.	<ul style="list-style-type: none"> <li>Provide technical support and funding through NPS Section 319 grant program to support implementation of WBPs.</li> <li>Evaluate the effectiveness of the protection projects.</li> </ul>	13. Watershed protection success stories		2	2	2	2	Jeff Dennis	No activity in 2018.
14. Provide technical support to help watershed groups conduct NPS watershed surveys.	Provide training and technical assistance for NPS watershed surveys to help protect or restore NPS priority watersheds.	14. Completed NPS watershed surveys	3 ✓ 3	3 ✓ 5	3 ✓ 5	3 ✓ 5	3	Kristin Feindel	Watershed surveys completed for 5 lakes: Bauneg Beg Lake (Sanford), Great Pond (Belgrade), Highland Lake (Windham), Walker Pond (Brooksville) and West Harbor Pond (Boothbay)>

Table 10. Statewide Approach - Developed Areas    Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Incorporate additional low impact development (LID) design practices into Maine's stormwater statutes and rules.	<ul style="list-style-type: none"> <li>Review Chapter 500 Stormwater Management Rules and proposed changes to Chapter 500 for opportunities to encourage or incentivize use of LID strategies and design practices.</li> </ul>	1. By 2015, issue proposed revised Chapter 500 rules	X ✓					Mark Bergeron	Completed.
2. Regularly update the Maine Stormwater Best Management Practices (BMP) manual to reflect the current best management practices.	<ul style="list-style-type: none"> <li>Solicit input annually from consulting community and other interested parties.</li> <li>Evaluate proposals for new or modified BMPs (including proprietary systems) for approval for use under Chapter 500 Stormwater Rules.</li> <li>When reviewing the effectiveness of current BMP practice standards and specifications, consider the impacts of more frequent extreme wet-weather events.</li> <li>Propose updates to manual as warranted, solicit input through public comment.</li> </ul>	2. Update manual as new or modified BMPs are approved	X ✓	X ✓	X ✓	X ✓	X	Jeff Dennis	Reviewed and approved R-Tank proprietary BMP for use in Subsurface Sand Filters to meet Chapter 500 Standards.
3. Maintain the number of Contractors Certified in Erosion & Sediment Control BMPs.	DEP NPS Training and Resource Center will continue to administer the Erosion and Sediment Control Contractor Certification Program and track the number of certified contractors (increased from 1,630 in 2012 to 2,700 in 2014).	3. Number of Contractors Certified in Erosion & Sediment Control BMPs	X ✓ 2,862	X ✓ 2,917	X ✓ 2,419	X ✓ 2,374	X	John Maclaine	Number of certified Individuals totaled 2,374.
4. Provide municipalities with NPS training and resources to prompt and improve local	DEP NPS Training and Resource Center will use Adobe Connect to produce 20-minute educational programs and on-line resources for NPS training for municipal officials on topics such as NPS pollution prevention and low-impact development.	4. Adobe Connect educational programs completed		2 1		2 1		John Maclaine	An on-line continuing education program was released on Good Housekeeping and Dealing with Contaminated

Table 10. Statewide Approach - Developed Areas    Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
water resource protection.									Soils/Spill Prevention and Clean-up.
5. Document chloride salt impacts on streams.	Prepare a report summarizing DEP findings about how excessive chloride salt use in developed areas has adversely impacted aquatic life of some streams in Maine. Chloride salts degrade water quality, soil quality, and ecosystems. Specific effects vary by location.	5. Chloride salt impact on streams (document)			X	✓		Kristin Feindel	Report completed in December 2018 and undergoing internal review.
6. Provide municipalities with technical assistance on protection and restoration of local waterbodies.	Provide information to municipalities working on Comprehensive Plans and review plans for consistency and completeness.	6. Comprehensive Plan reviews completed	4 6	4 4	4 10	4 8	4	Jeff Dennis	Completed reviews of 8 plans: Benton, Eastport, Kingsbury Plantation, Islesboro, Newcastle, Somerville, Whiting and Veazie.
7. Prevent and mitigate NPS impacts from unpaved camp roads.	The NPSTRC will provide training workshops and/or online resources.	7. Number of participants receiving training	X 13	X 7	X 32	X 32	X	John Maclaine	Two workshops on maintenance and repair of unpaved camp roads: June 1 in Bridgton (21 participants) and June 22 in Dover Foxcroft (24 participants).



Table 11. Statewide Approach – Agriculture Lead Agency: Maine DAC			Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
1. Monitor agricultural operations to ensure compliance with the requirement to implement approved nutrient management plans (NMP).	<ul style="list-style-type: none"> <li>Evaluate agricultural operations (AOs) to determine if they need to develop and implement an approved NMP.</li> <li>Track existing AOs with an approved NMP to ensure that their NMP is up-to-date.</li> <li>Provide guidance for initial development of a NMP or for facilitating updates as needed.</li> <li>Continue to identify AOs that need an NMP and help AOs comply with the obligation to operate according to a NMP.</li> </ul>	1. Each year report: <ol style="list-style-type: none"> <li>The number of AOs that maintain and implement an approved NMP;</li> <li>An estimate of the number of AOs that need a NMP.</li> </ol>	X	X	X	X	X	Mark Hedrich	a. 276 NMPs b. Estimate 25 NMPs to be updated. 30 letters sent to holders of NMPs pending expiration. Approximately 45 site visits conducted related to NMP initiation or renewal, and more in progress.
2. Monitor agricultural operations to ensure compliance with requirement to operate according to a Livestock Operations Permit (LOP).	<ul style="list-style-type: none"> <li>Evaluate new or expanded agricultural operations (AOs) to determine their requirement for obtaining a LOP.</li> <li>Continue to identify AOs that need a LOP and help AOs comply with the obligation to operate according to a LOP.</li> <li>Evaluate farms to determine if they are considered a CAFO as defined by state or federal regulations.</li> <li>Initiate steps for appropriate permitting of these entities as needed.</li> <li>Conduct annual inspections of CAFOs to determine compliance with terms of the LOP.</li> </ul>	2. Each year report: <ol style="list-style-type: none"> <li>The number of AOs that operate according to a LOP; and</li> <li>An estimate of the number of AOs that need an LOP.</li> </ol>	X	X	X	X	X	Mark Hedrich	a. 19 active LOPs, 3 of which are Provisional. Estimate 4 LOPs required to be completed or developed. 8 LOP initiation/renewal letters sent out. 8 related site visits conducted. 3 new PLOPs issued 2018. Five limited CAFO inspections conducted.
3. Update the Nutrient Management Program Rules	<ul style="list-style-type: none"> <li>Evaluate soil test timeframe validity, evaluate NMP variance operational timeline;</li> <li>Incorporate Maine Phosphorous Index criteria if feasible;</li> <li>Address carcass disposal issues; Incorporate Compost Management Plan criteria;</li> <li>Update certification requirements for planners;</li> </ul>	3. By 2015, complete draft of rules; by 2016 hold public hearing; and by 2017 adopt the revised rules.	X	X	X	✓		Mark Hedrich	Updated Rule adopted July 3, 2018. Summary of Rule changes sent to NM planners. Three classes taught related to the Rule changes.

Table 11. Statewide Approach – Agriculture      Lead Agency: Maine DAC			Schedule Planned (X #) Actual (✓ #)						
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019	Lead Contact	Accomplishments or Outputs in Year 2018
	<ul style="list-style-type: none"> <li>Address livestock access to waterbodies</li> </ul>								
4. Continue to implement the Agricultural Compliance Program to resolve water-quality related complaints.	<ul style="list-style-type: none"> <li>Investigate complaints concerning farm operations that involve threats to human or animal health and safety, and to the environment.</li> <li>Prescribe new or modified site-specific best management practices where needed to resolve the issue, particularly water-quality-related matters.</li> <li>Develop and maintain a database or spreadsheet to track and categorize agriculture complaints received and resolutions</li> <li>Prepare a concise annual summary of water-quality related complaints received, investigated, and resolved.</li> </ul>	4. Annual summary of water quality related complaints received, investigated, and resolved	X	X	X	X	X	Matt Randall	19 various water quality complaints were investigated and resolved. Complaint reports provided to DEP and summary report created by DEP and shared with Nutrient Management Board and partners.
5. Develop a brochure for farmers outlining NPS pollution BMPs for farming operations.	<ul style="list-style-type: none"> <li>Consider Maine agricultural BMP guidelines, select ten or more of the most significant BMPs and develop an informative quick-read brochure for farmers.</li> <li>Promote adoption of the BMPs by distributing the brochure at trade shows, meetings, educational events, and direct contact with farmers.</li> </ul>	6. NPS BMPs brochure for farmers			X			Mark Hedrich	BMP brochure draft completed. More input from interested individuals obtained fall 2018.

Table 12. Statewide Approach - Transportation Lead Agency: MaineDOT			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Continue using Erosion and Sedimentation Control BMPs on applicable MaineDOT projects.	<ul style="list-style-type: none"> <li>Continue to implement and enforce MaineDOT Standard Specification 656.</li> <li>Continue ongoing ESC training for MaineDOT staff and contractors.</li> <li>Report on summary of MaineDOT activities as required by the Stormwater MOA between DEP and MaineDOT</li> </ul>	1. Annual Stormwater MOA report to MDEP	X	X	X	X	X	Taylor LaBreque	All transportation-related projects contracted out by MaineDOT must comply with MaineDOT’s Standard Specification 656: Erosion and Sedimentation Control. ESC training for MaineDOT employees and consultants was held at three separate workshops in February, March, and June, 2018 (training 101 MaineDOT employees and 22 consultants and contractors); MaineDOT assisted DEP NPSTC in training contractors at 10 workshops across the state from January to May. MaineDOT submitted the annual stormwater MOA report to Maine DEP in January 2019.
2. Regularly update the MaineDOT Erosion and Sedimentation Control BMPs manual to reflect the current BMPs.	<ul style="list-style-type: none"> <li>Receive input annually from vendors, contractors, and professionals as appropriate.</li> <li>Evaluate proposals for new or modified BMPs (including proprietary systems) for approval for use.</li> <li>When reviewing the effectiveness of current BMP practice standards and specifications, consider the</li> </ul>	2. Update BMPs manual as new or modified BMPs are approved by MaineDOT	X	X	X	X	X	Taylor LaBreque	There are no new ESC BMPs, or other reasons, to update the MaineDOT Best Management Practices for Erosion and Sedimentation Control manual.

Table 12. Statewide Approach - Transportation Lead Agency: MaineDOT			Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
	<p>impacts of more frequent extreme wet weather events.</p> <ul style="list-style-type: none"> <li>Propose updates to manual as warranted.</li> </ul>								
3. Promote chloride salt reduction BMPs to protect water quality while maintaining safe roads for travelling public.	<ul style="list-style-type: none"> <li>Continue Maine Local Roads Center (MLRC) training and BMP Task Force to promote snow and ice control BMPs to municipal PWs.</li> <li>MaineDOT will continue to investigate new products, technologies, or efficiencies to reduce the use of chlorides.</li> </ul>	3. MLRC will track number of towns that received training. MaineDOT will document its research or use of new products or technologies for winter maintenance on its Winter Maintenance Research Reports webpage.	X ✓ 105	X ✓ 79	X ✓ 9	X ✓	X	Taylor LaBreque	Due to staffing issues and retirements, for the first time, the MLRC did not hold any workshops this winter. They did conduct two ½ day in-the-garage workshops for a few towns. MaineDOT continues to investigate new products and technologies to reduce the use of chlorides; no new products or technologies were adopted to date in 2018.
4. Promote reduction in the number of outdoor sand/salt piles.	<ul style="list-style-type: none"> <li>MaineDOT will reduce the number of outdoor sand/salt piles.</li> <li>MLRC will continue technical assistance to towns regarding town salt storage facilities, and will continue its funding for improvement of salt storage facilities until 2016.</li> </ul>	4. MaineDOT will reduce the number of outdoor sand/salt piles from 30 to 22 (25%).	✓ 8		✓ 2	✓ 4	X	Taylor LaBreque	MaineDOT has exceeded the goal of reducing the number of outdoor sand/salt piles by 25%: As of the end of 2018, MaineDOT had 16 outdoor piles remaining; one additional pile is scheduled to be addressed during the upcoming construction season. In 2018, MaineDOT converted four outdoor salt storage piles to indoor piles.

Table 12. Statewide Approach - Transportation    Lead Agency: MaineDOT			Schedule Planned (X #) Actual (✓ #)						
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019	Lead Contact	Accomplishments or Outputs in Year 2018
									The funding for the Municipal Sand/Salt Facility Program ended in 2017, but the MLRC continues to provide ongoing planning and technical assistance to towns on salt storage options.

Table 13. Statewide Approach - Forestry			Lead Agency: Maine Forest Service					Schedule		Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)								
			2015	2016	2017	2018	2019				
1. Increase overall effective BMP application on harvests from 83% to 90% or greater. Effective BMPs include all appropriately applied BMP practices, effective planning, and avoiding waterbody crossings.	<ul style="list-style-type: none"> <li>Offer BMP training programs, with partners including the Maine Sustainable Forestry Initiative, Certified Logging Professional, Qualified Logging professional program and Northeast Master logger.</li> <li>Deliver existing or develop new and topic specific trainings as needed to address problem areas when identified by monitoring, compliance inspections and industry consultation.</li> <li>Work with DEP and Maine Municipal Bond Bank and EPA to maintain CWSRF funding and promote the Maine Forestry Direct Link Loan Program financing to reduce NPS risk at timber harvest sites.</li> <li>Apply northeast regional forestry BMP monitoring protocol on a biennial basis to assess use &amp; effectiveness of forestry BMPs.</li> </ul>	1. Maine Forestry BMPs Use and Effectiveness report that documents the achievement of the objective by 2018 (and interim progress by 2016)		X	✓ 85%	X	✓ 73%		Tom Gilbert	The biennial Maine Forestry BMP Use and Effectiveness report for the 2016-17 BMP monitoring seasons was released in the spring of 2018. Key findings show 73% of sites had BMPs applied appropriately on crossings and approaches, or crossings were avoided and 83% of sites evaluated for sediment input found no sediment entered a waterbody.	
2. Maintain the Forest Ranger-approved water quality inspections of timber harvest sites at over 90%.	<ul style="list-style-type: none"> <li>Forest rangers will continue routine inspections of timber harvests for environmental compliance.</li> <li>MFS field foresters will continue to provide technical assistance to prevent problems from occurring and quickly fix problems encountered during inspections.</li> </ul>	2. Percentage of approved water quality inspections & number of inspections referred for enforcement action	X	X	X	X	X	Tom Gilbert	Rangers inspected 3337 instances of water quality-related matters. Of these, 32 resulted in a warning, on site mitigation measures or were forwarded to another agency.		
3. By 2018, improve consistency for the regulated community by increasing the number of critical mass municipalities that have adopted	<ul style="list-style-type: none"> <li>Work with DEP to make significant progress toward adoption of statewide standards for timber harvesting in shoreland areas. Focus on the list of municipalities with the highest average timber harvest acreage. When critical mass is met, statewide standards will take effect in the unorganized areas.</li> </ul>	3. By January 2016, 35 new municipalities adopt statewide timber harvesting standards, or DEP adopts ordinances for them.		X	7	7	8	Tom Gilbert	8 new critical mass towns adopted SWS in 2018, bringing the total number of critical mass towns to 224.		

Table 13. Statewide Approach - Forestry			Lead Agency: Maine Forest Service					Schedule			
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018		
			2015	2016	2017	2018	2019				
statewide standards for timber harvesting in shoreland areas from 182 to 252.	<ul style="list-style-type: none"> <li>• Provide outreach to municipalities that have not yet adopted statewide standards for timber harvesting in shoreland areas.</li> <li>• Encourage DEP to adopt ordinances for towns that do not act by 2017.</li> </ul>	By January 2017, an additional 35 new municipalities adopt statewide timber harvesting standards or DEP adopts ordinances for them.			X						

Table 14. Statewide Approach - Subsurface Wastewater Disposal Lead Agency: Maine DHHS, Environmental Health			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Ensure municipalities properly implement Subsurface Wastewater Disposal (SSWD) rules.	<ul style="list-style-type: none"> <li>Conduct at least one municipal review of subsurface wastewater disposal activities for each municipality over the 5-year period ending 2019. There are 490 municipalities in Maine. About 100 reviews per year will be completed.</li> <li>Respond to requests for assistance from municipalities.</li> <li>Assist in the training and licensing of Local Plumbing Inspectors.</li> </ul>	1. Number of municipal reviews completed in the year and number of municipal reviews found satisfactory	X	X	X	X	X	Brent Lawson	Conducted 70 municipal reviews. Seven had minor issues and three failed. Conducted 11 training sessions for LPIs, site evaluators and contractors. Conducted training for Maine Rural Water and DMR shoreline sanitary survey staff and went on actual inspections.
2. Improve the State's Voluntary Onsite Sewage Disposal System (OSDS) Inspection Program.	<ul style="list-style-type: none"> <li>Evaluate the current voluntary OSDS inspection program and certification process. Propose ways to strengthen the voluntary OSDS inspection program. These could take the form of statutory changes to make certification mandatory or through rule changes to clarify what must be included as part of an inspection.</li> <li>Update Inspection Form to reflect changes implemented.</li> <li>Modify training program to incorporate results of review and changes</li> </ul>	2a. Feasibility report completed by 12/31/2016  2b. Proposed Statutory/Regulatory changes by 12/31/2017  2c. Revise Inspection Criteria by 6/30/2019		X		X		Brent Lawson	Department will adopt rules in 2019 regarding septic system inspections which will include minimum standards and provisions to improve the inspector certification process. Statutory changes have extended septic system inspection requirement to all shoreland zones.



Table 15. Statewide Approach - Hydrologic Modification Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Adopt new standards for stream crossings (new, repair, replacement) designed to improve fish passage, hydraulic capacity, and resiliency to larger storm events.	<ul style="list-style-type: none"> <li>DEP will continue to participate, along with DOT, other state natural resource agencies, and private sector groups, in the development of an Aquatic Resource Management Strategy (ARMS) to reestablish the connectivity of stream systems. DEP will propose new standards for stream crossings under the Natural Resources Protection Act.</li> <li>Identify funding mechanisms, develop training programs and to assess/prioritize watersheds where removing passage impediments will result in the greatest connectivity of fisheries habitats.</li> </ul>	1a. By 2016, draft standards for public comment.  1b. By 2017, complete aquatic resource management strategy.  1c. By 2017, adopt new standards for stream crossings.		X		X		Mark Stebbins	Draft rules have been developed. Given the recent administration change and that they are major substantive rules, a timeline has not yet been established for rulemaking.

Table 16. DEP Programs, Partnerships and Funding Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
1. <u>Partnerships</u> : Build and strengthen partnerships of the lead state agencies to coordinate efforts and effectively implement the Maine NPS Management Plan implementation.	Establish a NPS Lead Agency workgroup that will meet twice a year to report on progress with implementation of the Maine NPS Management Plan and seize opportunities for further collaboration.	1. NPS lead agency workgroup established	X					Wendy Garland	Not convened.  Concluded more efficient to maintain regular contact and meet with each NPS Lead Agency as needed.
2. <u>Partnerships</u> : Build and strengthen partnerships at the program and project level to maximize effectiveness and efficiency of NPS mitigation efforts.	<ul style="list-style-type: none"> <li>Conduct the annual Watershed Roundtable to bring together watershed professionals to share information, network and collaboration.</li> <li>Coordinate and improve the watershed managers' listserv to efficiently distribute and promote sharing of information and resources between partners.</li> </ul>	2. Annual NPS Watershed Roundtable	X ✓	X ✓	X ✓	X	X	Marianne Senechal	72 watershed managers from municipalities, NGOs, and SWCDs attended DEP's 16th annual roundtable on 10/31/18. 195 people are subscribed to watershed listserv.
3. <u>Funding</u> : Facilitate CWSRF funding for NPS projects by exploring new funding avenues and publicizing funding opportunities.	<ul style="list-style-type: none"> <li>Look for opportunities to expand the eligibility of NPS controls that can be funded through the Clean Water State Revolving Fund (CWSRF) and mechanisms that can deliver that funding.</li> <li>Determine if there are barriers to prioritization of NPS projects, and if so, develop recommendations and coordinate with the CWSRF program to encourage approval of NPS projects.</li> <li>Track CWSRF projects and funding awarded to NPS projects and produce an annual summary report.</li> <li>Publicize funding opportunities on the watershed managers' listserv.</li> </ul>	3. Provide a summary of CWSRF funding on NPS projects in the annual NPS Program Report.	X	X ✓	X ✓	X	X	Wendy Garland	CWSRF projects and funding for NPS projects in 2018 totaled \$5.3 million. Projects described in Section II. D. of Annual Report.

Table 16. DEP Programs, Partnerships and Funding Lead Agency: Maine DEP					Schedule					Lead Contact	Accomplishments or Outputs in Year 2018
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)								
			2015	2016	2017	2018	2019				
<p>4. <u>NPS Management Program Administration:</u> Continue to manage and implement the NPS program to meet program goals and work towards addressing the state’s water quality problems as effectively and expeditiously as possible.</p>	<ul style="list-style-type: none"> <li>DEP employs appropriate programmatic and financial systems that ensure section 319 dollars are used efficiently and consistent with fiscal and legal obligations (Section 319 grant program guidelines, EPA-DEP Performance Partnership Agreement).</li> <li>In keeping with Clean Water Act Section 319 (h)(8) and (11), provide EPA with sufficient information, reports and data about Maine’s 319 program to determine whether the state’s progress for the previous fiscal year was satisfactory.</li> </ul>	<p>4. Maine’s NPS Program continues to achieve satisfactory progress</p>	X	X	X	X	X	Wendy Garland	<p>Ongoing – TBD.</p> <p>Completed satisfactory progress interview / review w/EPA for FY 2017</p> <p>EPA issued a favorable determination July 9, 2018. The determination for FFY18 reporting period to be issued by summer 2019.</p>		
<p>5. <u>NPS Program Administration:</u> Update the Maine NPS management program plan by 2019.</p>	<p>Consult lead agencies and gather public input to update the Maine NPS management program for the next cycle (including milestones for 2020-2024).</p>	<p>5. EPA approved Maine NPS Management Program Plan by 10/1/19.</p>					X	Wendy Garland	<p>Not started yet, due 2019</p>		



Great Pond Watershed Survey



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