

**#2014RR03 Crescent Lake NPS Watershed Protection Project Phase II**  
Grantee: Town of Raymond

**Watershed Information**

The Crescent Lake watershed is located in the Towns of Raymond (74%), Casco (23%) and Poland (3%) in central Cumberland County, Maine. Crescent Lake is 703 acres with a total volume of 12996 acre-feet, maximum depth of 54 feet, mean depth of 17 feet, and a flushing rate of 1.2 flushes/year. The Maine Department of Environmental Protection (MDEP) has listed all of Raymond and Casco's lakes and ponds on their list of "Lakes Most at Risk from Development" under the Maine Stormwater Law as well as the State's "Nonpoint Source Priority Watersheds" list. Crescent Lake's immediate watershed is 6.1 square miles. The Lake flows into Panther Pond, which, in turn, empties into Sebago Lake. This larger watershed covers 25 square miles and contributes about 18% of the flow to Sebago Lake, which is listed as one of the top 41 watersheds on the Priority List due to its importance as a regional drinking water source for over 200,000 households in Southern Maine.

Crescent Lake has 8.9 miles of shoreline, most of which is privately owned. The Lake's shoreline is developed with over 290 seasonal and year-round homes, a large commercial campground, several private youth camps, two small public beaches, one formal boat access and an extensive network of unpaved camp roads. Crescent Lake water quality is threatened by rising development pressures and year-round home conversions. The Towns of Raymond and Casco are both experiencing rapid growth (29.8% and 14.9%, respectively, since 1990) and there continues to be new development throughout the watershed. Both towns have comprehensive plans approved by the State Planning Office.

The Maine Department of Inland Fisheries and Wildlife manages Crescent Lake for both cold and warm water fisheries. The Lake is known for its excellent bass fishing and several fishing tournaments are held on the lake each year. Crescent Lake is home to nesting loons –11 adults and 1 chick were documented in 2008. Since 2002, Raymond Waterways Protective Association (RWPA) has completed a Level III Plant Survey (entire shoreline area and littoral zones) on Crescent Lake each summer. There are no known invasive plant infestations. In addition, RWPA employs courtesy boat inspectors to inspect boats entering and leaving the lake to educate boaters and prevent the introduction of invasive plants.

The watershed community has demonstrated a strong commitment to watershed protection. The Raymond Conservation Commission organized the Crescent Lake Watershed Survey (2000) in which volunteers identified 139 erosion sites. The 2001-2004 Raymond Pond and Crescent Lake Demonstration Project, sponsored by the Cumberland County SWCD, stabilized 13 identified sites and provided technical assistance to 12 landowners in the Crescent Lake Watershed (additional sites were fixed on Raymond Pond). In the fall of 2009 RWPA staff and Crescent Lake residents field surveyed sites identified in 2000 survey report to determine which sites continue to impact the lake. In addition, a shoreline survey was completed to evaluate shorefront buffers and paths. Awarded in 2011, the Crescent Lake NPS Watershed Protection Project completed 13 residential sites, 7 road sites and provided technical assistance to more than 40 landowners. The Town of Raymond has provided over \$43,000 in-kind match to support conservation projects that reduced erosion on Panther and Raymond Pond by improving four town roads, assisting with improvements at 13 private roads sites, delivering materials to all residential sites and providing tools/equipment for workshops.

The Crescent Lake Watershed Association (CLWA) has effectively partnered with RWPA to protect and improve the quality of Crescent Lake. In their first year of existence the CLWA worked with RWPA to update the 2000 Watershed Survey, complete a shoreline survey and successfully ran the Maine DEP LakeSmart program. Through LakeSmart, eighteen properties were evaluated and eleven LakeSmart Awards presented. In addition, CLWA has developed an effective communication network with landowners and the six road associations on the lake; established a website and newsletter; and ~100 people attended their first annual meeting in 2009.

**Problem/Need:**

The RWPA and MDEP have monitored water quality on Crescent Lake since 1974. Their data indicates that the Lake is considered to be above average water quality, however, the Lake experiences high depletion of dissolved oxygen in the hypolimnion in late summer and the potential for nuisance algal blooms is moderate. Crescent Lake's water quality problems can be attributed to polluted runoff – namely eroded soil –that washes into the lake from its surrounding watershed. Recent trend analysis indicates that water quality appears stable over all, although, the loss of dissolved oxygen levels in the bottom waters is a concern and indicates the moderately high potential for phosphorus to be released from the bottom sediments. This oxygen depletion also limits habitat for sensitive cold water fish species.

The 2000 Crescent Lake Watershed Survey report identified 139 erosion sites (11 high, 43 medium, and 85 low impact sites). Residential shorefront sites accounted for 46%, driveways 14%, private roads 16%, state and town roads 10%, commercial camps 8% and public beach and access 5%. The 2001-2004 Raymond Pond and Crescent Lake Demonstration Project, addressed 13 Crescent Lake sites (4 high, 8 medium, and 1 low impact sites). The 2009 field survey and shoreline survey showed there are still many active erosion sites. In 2011 volunteers and staff field surveyed all the sites from the 2009 survey and confirmed 78 sites to update the site list. This project will address a minimum of 24 sites (4 high, 20 medium impact sites) including one town road site, nine private road sites, three Youth Camp sites and 11 residential sites (driveways and shorefront).

The watershed community has demonstrated a strong commitment to take the next step in addressing these problems.

- The CLWA has committed \$5000 in cash match to support the proposed Phase II conservation project. They will continue to run a successful LakeSmart program and have met with numerous landowners around the lake to increase lake-wide participation in protecting Crescent Lake.
- The Raymond Public Works (RPW) will continue their generous support of conservation projects through construction and equipment support for private road sites, delivery of project materials to residential sites, storage of project materials, and donation of tools/equipment for workshops.

The *Crescent Lake Conservation Project Phase II* will continue to build on the momentum generated by the Phase I project, the energized CLWA with the technical guidance of the RWPA and Town of Raymond staff. The project partners will work together to install conservation practices that reduce erosion and protect the lake. The Crescent Lake Watershed Based Management Plan was developed and outlines future steps including this Phase II proposal and does not indicate a need for further Phases.

**Purpose:**

The primary purpose of this project is to significantly reduce the pollutant load to Crescent Lake through implementation of conservation practices that reduce erosion and export of sediment and phosphorus into the Lake. To reduce erosion and polluted runoff, conservation practices (water diverters, infiltration steps, vegetative buffers, roofline drip trenches, sediment basins) will be installed at 24 sites to include 4 high, 20 medium impact erosion sites identified in the 2011 watershed survey. Through personal contact, brochures, workshops and additional outreach efforts the project will raise awareness about watershed problems. In addition, the Watershed Based Management Plan has outlined future steps for reducing pollution that has set the stage for RWPA and CLWA to work with watershed residents to address additional sites as part of their continued education and outreach efforts following Phase II project completion.

**Project Duration:**

Project start: March 1, 2014     Project completion: March 1, 2016

**General Project Plan:**

The *Crescent Lake Watershed Protection Project Phase II* will be sponsored by the Town of Raymond with coordination by the Raymond Waterways Protective Association (RWPA) and Cumberland County Soil & Water Conservation District (CCSWCD) guided by a project steering committee. Local project partners include RWPA, Town of Raymond, Town of Casco, Crescent Lake Watershed Association (CLWA) and Portland Water District (PWD).

Through this project, the project staff and local volunteers will coordinate and install conservation practices at 27 sites identified as high (4) and medium (23) impact in the 2000 Crescent Lake Watershed Survey and the 2009 and 2011 follow-up field visits. Through a small matching grants program, technical assistance and grants will be available to carry out 12 buffer plantings or conservation practice installations (water diverters, drywells, roofline drip trenches). In addition, six sites will be addressed at the Youth Camps. Two hands-on conservation practice workshops will be held to increase project awareness and highlight the value of vegetated buffers and conservation practices. The hands-on workshops will also provide education to campers and camp directors, grounds maintenance crews on the use and installation of dry wells, water diverters, and other conservation practices. The NPS Site Tracker tool will be used to guide the action plan in order to set the stage for RWPA and CLWA to work with watershed residents to address the remaining survey sites.

Project activities will be showcased in presentations at the RWPA, CLWA and road association annual meetings which will include before and after photos of project sites. The Project Coordinator(s) will develop a project fact sheet and press releases to advertise the availability of technical assistance and other project events. Information and updates will be posted on the RWPA and CLWA websites; public access channels; the association newsletters and local papers. A final project brochure will be produced that will include before and after pictures of the installed conservation practices. The RWPA and CLWA will distribute this brochure to continue to educate watershed residents and local leaders about how to protect Crescent Lake’s water quality and encourage application of demonstrated measures.

NPS Program grant funds will not be used to undertake, complete or maintain erosion or storm water control work required under a MS4 permit or plans required by existing permits, consent decrees or orders. When selecting sites for priority repair using NPS grant funds cost/benefit will be considered. Grantee will ensure that permits required for construction are secured by the landowner prior to construction and BMPs are constructed in an acceptable manner, before reimbursing landowners according to applicable Cost Sharing Agreements.

All press releases, outreach materials, project signs, and plans will acknowledge that the project is funded in part by the United States Environmental Protection Agency under Section 319 of the Clean Water Act. EPA’s logo will not be included on materials unless the Grantee receives prior instruction and approval from EPA. Refer to the Grant Agreement, Rider A. Section III. F. Acknowledgement.

**Tasks, Schedules and Estimated Costs:**

**Task 1 – Project Management**

The Town of Raymond and MDEP will sign a grant agreement outlining project roles, responsibilities and funding arrangements. Any sub-agreements will first be provided for DEP review. Consulting services paid for with grant funds will be arranged and carried out using procurement procedures as described under Section 4 of DEP’s Nonpoint Source Grant Administrative Guidelines. The Town and project contractor will track project progress, expenses and local match and complete semi-annual progress reports (PRs) and one final project report (FPR). The CCSWCD will be responsible for implementing Task 4 and associated reporting requirements; two presentations; Steering Committee participation and

engineering assistance. Project Coordinator/Contractor will use and also train CLWA representatives to use the NPS Site Tracker to track the status of NPS sites in the watershed, including work done through this project and discovery of new sites. In addition, the Town will provide the Pollutants Control Report (PCR) to MDEP by December 31<sup>st</sup> each year for all BMP sites completed that year. (3/14 to 3/16)

1<sup>st</sup> Yr. Output Goals: 1 Progress Report, 1 PCR

**Cost:** 319 Funds - \$5,400                      Local Match - \$1,800                      Total - \$7,200

#### **Task 2 – Steering Committee**

A steering committee will guide project activities and meet at least six times during the grant period. This committee will include representatives from the Town of Raymond and Casco, RWPA, CLWA, PWD, MDEP and interested Crescent Lake residents. (3/14 to 3/16)

1<sup>st</sup> Yr. Output Goals: 3 SC meetings.

**Cost:** 319 Grant - \$2,787                      Local Match - \$2,899                      Total - \$5,686

#### **Task 3 – NPS Abatement Projects**

The project will provide the towns, private road associations and landowners with technical assistance and 50% cost sharing to address 9 erosion and runoff problems for 4 high (4 private roads) and 5 medium (1 town road, 1 private road, 3 driveways) priority sites identified in the 2011 watershed survey. The town, road association members and watershed landowners will receive technical assistance at no charge and up to 50% cost sharing for construction costs. Cost share recipients must provide a 50% match through cash, material or labor contributions and agree to maintain the project as directed. The grantee and the cost share recipient will complete a Town of Raymond cost share agreement prior to construction. The DEP NPS Site Report form, including before and after photographs, will be prepared for each completed site.

Sites were selected based on the following criteria: identified high and medium impact sites in the 2011 ground-truthed watershed survey, public visibility and the probability of landowner cooperation. Final site selection is subject to change, pending satisfactory completion of landowner agreements, estimated pollutant load calculations, engineering design and permit approval. The candidate sites are outlined, in detail, in Attachment A. MDEP guidelines “Using Project Funds for Construction of BMPs at Road-related Sites” will be used to evaluate road-related NPS sites and determine if NPS project funds can be used to help a landowner pay for construction of road-related BMPs. (3/14 to 3/16)

1<sup>st</sup> Yr. Output Goals: 5 cost-share grants w/ landowners, w/ corresponding NPS Site Reports

**Cost:** Grant-\$38,481                      Match-\$42,560                      Total-\$81,041

#### **Task 4 – Residential Conservation Practice Installations**

Residential shorefronts and driveways accounted for 60% of the documented survey sites; therefore a residential matching grants program will be established to address these relatively lower impact sites with inexpensive fixes. A total of 12 conservation grants will be awarded up to \$350 toward the purchase of native plants and/or materials or labor for the installation of conservation practices such as runoff diverters, infiltration steps and trenches, drywells and buffers. Free technical assistance and a brief report summarizing site conditions, recommendations and design will be provided with each of these grants. The project contractor, RWPA and MDEP staff, and possibly other project partners, will respond to additional landowner requests for free technical assistance. A preference for all 12 matching grants will be based on priority ranking and on landowner participation in a workshop. Each grant recipient will sign a cost share agreement prior to construction outlining the 50% match requirement and that verification of proper installation will occur to complete the agreement. One report will list descriptive information for all sites receiving the Conservation Practice Matching Grants. (4/14 to 3/16)

1<sup>st</sup> Yr. Output Goals: Written tech assistance plan, cost-share agreement and fieldwork for 6 sites.

**Cost:** Grant-\$13,030                      Match-\$5,278                      Total-\$18,308

### **Task 5 – Education and Outreach**

**Workshops:** Two workshops will be held to demonstrate conservation landscaping. The project contractor will facilitate the workshops, which will cover the sizing and placement of roof dripline trenches, drywells, and water diverters; preferred materials (i.e., stone size, etc.); determining when to use which water diverter (i.e., open top culverts, rubber razor blades, waterbars) as well as DEP Permit By Rule Process, and shoreland zoning. Workshop participation will be recommended for landowners taking advantage of the matching grants program and the watershed community will be encouraged to attend.

**Publicity:** Project staff will develop a fact sheet to introduce grant activities and provide tips for lake-friendly living. Press releases and informational flyers will be developed to advertise workshops and project work parties. Yearly project updates will be placed in the annual RWPA and annual CLWA newsletter and on the associations' websites; local newspapers and cable access channel; and the CLWA e-mail list. In addition, a final project brochure will be produced that will include before and after pictures of project sites to be distributed to watershed residents and town selectmen. The final brochure will be used for future outreach efforts, highlighting to Crescent Lake residents what their neighbors have accomplished to protect their lake and what they can do on their own properties. Four presentations will be provided by project staff at the annual meetings (2014 and 2015) of the RWPA and CLWA. The CLWA board will provide updates for the road association meetings. The presentations will emphasize the impact of declining water quality on property values, benefits of buffers and erosion control measures, and technical assistance. (3/14 to 3/16)

1<sup>st</sup> Yr. Output Goals: one workshop; two presentations; 50% of the planned project updates

**Cost:** Grant-\$5,572 Match-\$9,481 Total-\$15,053

### **Task 6 – Summer Youth Camp Conservation Practices**

Eleven erosion sites were identified at the lake's four Youth Summer Camps. Of these, four sites were rated as having a high impact; four were medium impact and three low impacts. The project will provide the camp owners, program directors and/or grounds keeping crews with free technical assistance and 50% cost sharing to address 3 high and 3 medium impact sites. Cost share recipients must provide a 50% match through cash, material or labor contributions and agree to maintain the project as directed. The grantee and the cost share recipient will complete a Town of Raymond cost share agreement prior to construction. A DEP NPS Site Report form, including before and after photos, will be prepared for each completed site.

Sites were selected based on the following criteria: identified high and medium impact sites in the watershed survey report, 2009 and the 2011 "ground truth" of 2000 survey, public visibility and the probability of landowner cooperation. Final site selection is subject to change, pending satisfactory completion of landowner agreements, estimated pollutant load calculations, engineering design and permit approval. (4/14 to 3/16)

**1<sup>st</sup> Yr. Output Goals:** Written tech assistance plan, cost-share agreement and fieldwork for 3 sites

**Cost:** Grant - \$14,981 Local Match - \$14,501 Total - \$29,482

### **Task 7 – Pollutant Reduction Estimates**

The project contractor will prepare a report documenting the estimated nonpoint source pollutant load reduction (sediment and phosphorus) that is achieved due to the implementation of the conservation practices at NPS sites in the watershed. Pollutant load reduction estimates will be developed and reported as follows: During design or installation of BMPs at NPS sites, appropriate field measurements will be recorded to prepare written estimates of pollutant load reduction. Estimates will be prepared for all NPS sites, including the NPS Abatement Projects and Summer Youth Camp Practices. If no estimation method fits for a site, an explanation will be provided on the form. The methods to be used are the EPA Region 5 Load Estimation Model (see website <http://it.tetrattechffx.com/-step1/>) and/or the U.S. Forest Service WEPP Road Model (<http://forest.moscowfsl.wsu.edu/fswepp/>). Estimates will be checked for proper application of the method(s) and the results will be summarized on a standard form provided by DEP titled "Pollutants Controlled Report" (PCR). The PCR, including calculations, will be submitted to the DEP Agreement Administrator, by December 31 of each year, until project completion. Documentation of the estimation procedures of each NPS site will be kept in the Grantee project file and will be available for DEP/EPA review. (4/14 to 3/16)

1<sup>st</sup> Yr. Output Goal: 1 PCR Report

**Cost:** Grant - \$1,798

Match - \$0

Total - \$1,798

### **Deliverables:**

Three (3) copies of each Deliverable will be provided to the DEP Agreement Administrator. The DEP AA will forward a copy of all deliverables to EPA. Grantee will label each deliverable according to procedures described in the DEP document "Nonpoint Source Grant Administrative Guidelines" (<http://www.maine.gov/dep/water/grants/319.html>).

1. SubAgreements, Progress Reports and Final Project Report and NPS Site Tracker Summary (Task 1).
2. NPS Site Reports for each NPS Abatement site and Summer Youth Camp conservation practices, including pre and post construction photos. (Task 3 and 6).
3. Summary outcome of residential conservation matching grants by NPS site, landowner name, brief description of problem, BMPs recommended, and BMPs implemented (Task 4).
4. Copies of key education/outreach materials - initial project fact sheet, press releases, newsletter articles, final project brochure (Task 5).
5. Pollutants Controlled Report (PCR) for each year until project completion (Task 7).

### **Interagency Coordination, Roles and Responsibilities:**

**Towns:** The **Town of Raymond** will serve as the project grantee and be responsible for the coordination and implementation of all project activities. The town will advertise project activities through their website, newsletters, and local cable access channel. Raymond will provide over \$15,000 in-kind match. The **Town of Casco** will provide meeting space, and advertise project activities on their website.

**Watershed Associations:** The **Crescent Lake Watershed Association** will participate on the steering committee; coordinate volunteer contacts for NPS sites; advertise project activities; assist with outreach and organization of the buffer and residential conservation practices workshops and provide \$5,000 cash match. The **Raymond Waterways Protective Association** will be responsible for participating on the steering committee, advertising project activities in their newsletter and providing \$2,900 in in-kind match.

The **Portland Water District** will provide up to \$5,000 in cash match in addition to serving on the project steering committee and carrying out education programs in the schools.

**State & Federal:** The **Maine Department of Environmental Protection** will administer project funding, serve as the project advisor, participate on the steering committee and provide project support. The **US Environmental Protection Agency** will provide project funding and guidance.

**Environmental Outcome:**

This project will help protect Crescent Lake by reducing watershed phosphorus export to help maintain Class GPA water quality standards. This project will reduce sediment and phosphorus loading. Amounts will be estimated during implementation of this phase. The Final Project Report will include a summary of the current status of water quality (water clarity and/or phosphorus; positive, negative or stable trend) in Crescent Lake.

**Project Coordinator:**

Don Willard, Town Manager  
 Town of Raymond  
 401 Webbs Mills Road  
 Raymond, ME 04071  
 (207) 655-4742 x 131  
[don.willard@raymondmaine.org](mailto:don.willard@raymondmaine.org)

**Estimated Total Cost, Federal & Non-Federal Sources:**

Federal (EPA)	\$82,049
Nonfederal match	<u>\$76,518</u>
Total	\$158,567

**BUDGET**

Town of Raymond	\$17,500
Town of Casco	\$435
CLWA (cash match)	\$5,000
CLWA	\$11,298
Youth Camps	\$4,513
Landowners/citizens	\$4,682

RWPA	\$2,910
Construction-landowners & road associations & Youth Camps	\$25,180
Portland Water District (cash match)	\$5,000
<b>Total</b>	<b>\$76,518</b>

**Budget Information**

**Part 1 Estimated Personnel Expenses**

Name/Title	Hourly Rate (salary + fringe)	Total Hours	Salary Costs
Finance/bookkeeping	\$30	60	\$1,800
<b>Total:</b>			<b>\$1,800</b>

**Part 2 Budget Estimates**

Category	Federal	Match	Total Cost
Salary & Fringe		\$1,800	\$1,800
Donated Services - Labor		\$28,538 <sup>1</sup>	\$28,538
Subgrantee	\$19,800 <sup>2</sup>		\$19,800
Contractual	\$21,280 <sup>3</sup>		\$21,280
Supplies/Materials	\$1,776 <sup>4</sup>	\$2,000 <sup>5</sup>	\$3,776
Travel	\$818 <sup>6</sup>	\$0	\$818
Construction	\$38,375	\$44,180 <sup>7</sup>	\$82,555
<b>Totals</b>	<b>\$82,049</b>	<b>\$76,518</b>	<b>\$158,567</b>

1 Donated services: Committee meeting prep & attendance RWPA (\$25/hr), PWD (\$30/hr), Town (\$75/hr) & CLWA (\$16.84/hr) 147 hours for **(\$2,899)**; Town delivery/materials/labor, CLWA landowner outreach, citizens planning/materials **\$9,555**; Town delivery/materials, citizens, planning purchase materials installation **\$2,278**; Citizens, town, road assoc., newsletter prep and PWD education/classroom **\$7,481**; Planning mtgs –camp directors **\$674**; CLWA workshop participation **\$1,212**; workshop labor/campers/ground crews **\$3,233**; plans, designs, gather materials **\$606**; town material deliver **\$600**.

2 Subgrantee: CCSWCD Engineer 76 hrs/\$90/hr **(\$6,840)**; CCSWCD 236.5hrs/\$50/hr **(\$11,825)** and \$0.44/1409 miles **(\$620)**

3 Contractual: Project Coordinator Contractor 532 hrs/\$40/hr **(\$21,280)**

4 Supplies: Federal grant-Printing final brochure \$1000; postage \$75, ink \$200, photos \$250, paper \$250

5 Match Supplies: CLWA tours-minivan/fuel \$1000, Town interim project update \$500 & newsletter postage & printing \$500

6 Travel miles: 1,859 miles @.44/mile

7 \$44,180 road association/landowner match for construction projects.

