

# *Crescent Lake*

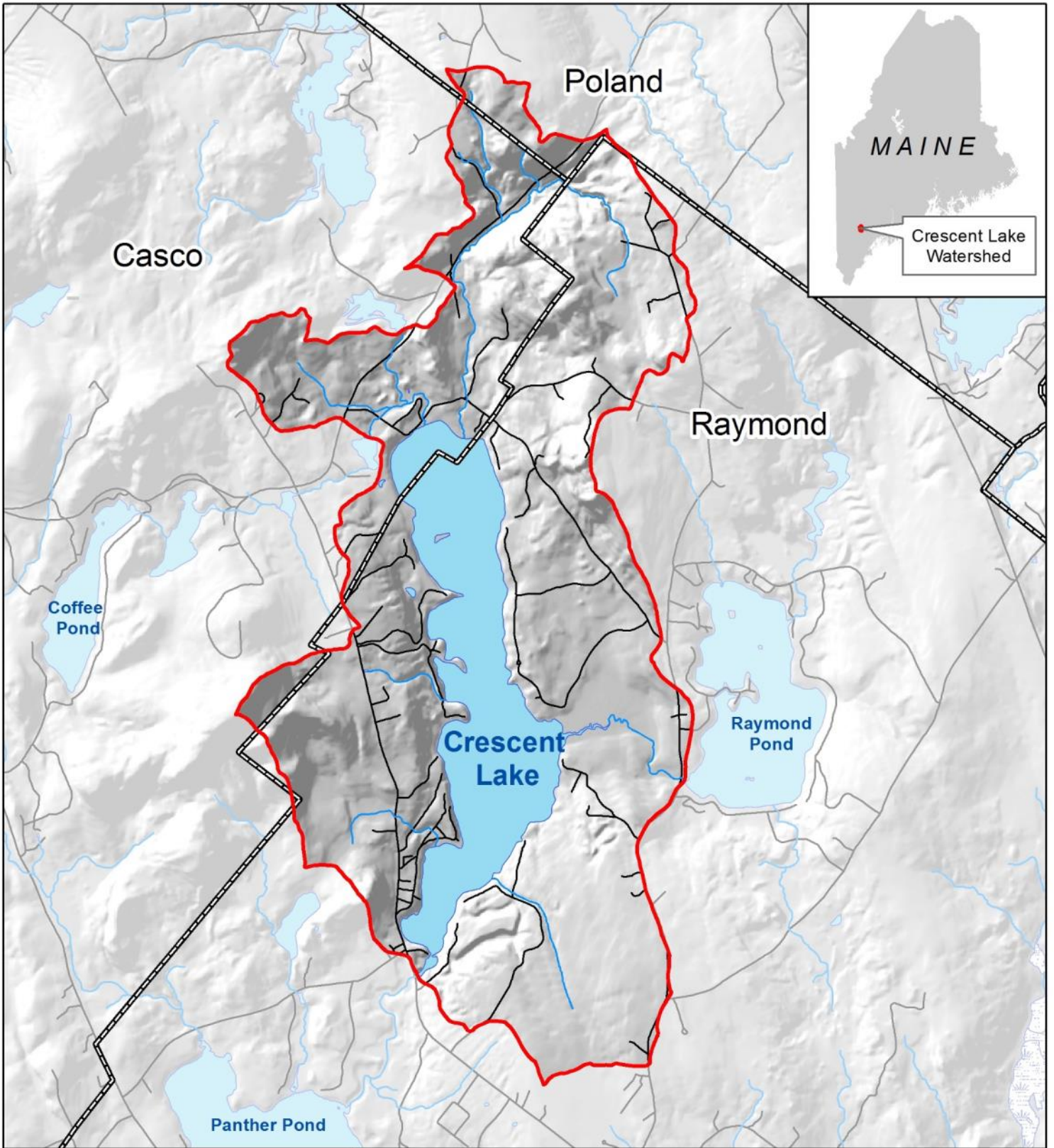
## *NPS Watershed Protection Project*

### *2011 - 2013*



*Working to protect and improve the  
water quality of Crescent Lake*

*Funding for this project, in part, was provided by the U.S. Environmental Protection Agency under Section 319 of the Clean Water Act. Section 319 grants are administered by the Maine Department of Environmental Protection in partnership with the Environmental Protection Agency.*



# Crescent Lake Watershed

- Legend**
- Crescent Lake Watershed
  - Lakes and Ponds
  - Rivers and Streams
  - Wetlands
  - Roads
  - Town Boundaries



Data: MEGIS, FBE  
 Coordinates: NAD83, UTM, 19N  
 Map: Patrick Marass, 2013

## ACKNOWLEDGEMENTS

The following people and organizations were instrumental in the Crescent Lake NPS Watershed Protection Project and deserve special recognition for their efforts.

### ***Project Partners:***

Town of Raymond  
Crescent Lake Watershed Association (CLWA)  
Raymond Waterways Protective Association (RWPA)  
FB Environmental Associates  
Maine Department of Environmental Protection (Maine DEP)  
Citizen Volunteers & Landowners

### ***Project Staff:***

Noralee Raymond, RWPA, Project Manager  
Patrick Marass, FB Environmental Associates, Project Scientist II  
Wendy Garland, Maine DEP, Grant Administrator  
Susan Pienta, AmeriCorps Volunteer, Maine DEP

### ***Crescent Lake NPS Watershed Protection Project Steering Committee:***

Beverly White	Ron Hall
Nathan Kimble	Elden Lingwood
Wendy Garland, Maine DEP	Diehl Estes
Hugh Savage	Walter Hebold
Steve McCormick	Diane Hebold

Report Prepared by Patrick Marass, FB Environmental Associates



*Looking south across Crescent Lake from the eastern shore - Patrick Marass*

## PROJECT PURPOSE

The primary purpose of this project was to significantly reduce the erosion and export of sediment and phosphorus to Crescent Lake. In 2009, the RWPA and CLWA field surveyed the high and medium impact sites from a 2000 Crescent Lake watershed survey to determine what sites were still contributing sediment and phosphorus to Crescent Lake. This follow up survey identified more than 70 sites around the lake that still needed to be addressed. Through this project, a total of 32 sites were addressed (21 NPS Abatement Sites and 11 Residential Matching Grants). Addressing these sites has reduced the lake's pollutant load by an estimated 25 tons of soil and 22 pound of phosphorous per year. In addition, the project raised awareness about watershed problems and worked to foster long-term watershed stewardship in the communities of Raymond and Casco.

## LAKE AND WATERSHED INFORMATION

Crescent Lake is a 703-acre lake with a total volume of 12,996 acre-feet. The lake is located in the Towns of Raymond and Casco in central Cumberland County, Maine. It has a maximum depth of 54 feet, a mean depth of 17 feet, and a flushing rate of 1.2 flushes / year.

Crescent Lake has nearly nine miles of shoreline, most of which is privately owned. The shoreline is developed with over 290 seasonal and year-round homes, a large commercial campground, youth summer camps, two public beaches, one formal boat launch, and an extensive network of unpaved camp roads.

The Crescent Lake's immediate watershed covers 6.1 square miles in Raymond, Casco, and Poland. The greater Crescent Lake watershed covers 15.2 square miles and includes Raymond Pond, Coffee Pond, and several other smaller ponds. Crescent Lake empties into Panther Pond which then empties into Sebago Lake. Crescent Lake is part of the Casco Bay Watershed.

Crescent Lake is highly valued by seasonal and year-round residents for its clear waters and sense of wilderness, while still providing the convenience of nearby Portland. Crescent Lake has one private boat launch that is often used by the public. Popular winter and summer activities include snowmobiling, ice fishing, boating, fishing, kayaking, and canoeing.



*Aerial Photo of Crescent Lake – Walter Hebold*



*Photo - www.crescentlakemaine.com*

## PROJECT GOAL

To protect and improve the water quality of Crescent Lake.

## HOW DID WE REACH OUR GOAL?

- Education

Conservation Workshops, Annual Meetings

- NPS Abatement Projects

21 high and medium priority sites fixed

- Residential Matching Grants

11 matching grants awarded to landowners with low to medium priority sites



# EDUCATION

Watershed residents were informed of the Protection Project and lake friendly living at three CLWA annual meetings. Volunteers and local residents also learned about shoreland zoning and how to construct best management practices (BMPs) to reduce erosion at conservation practice workshops. Interested watershed residents were also taken on a watershed tour to showcase several of the successful projects around Crescent Lake. The meetings, workshops, and tour provided an opportunity for local residents and volunteers to learn more about Crescent Lake, the land use practices that threaten water quality, and BMPs that can help protect and improve water quality.

## CLWA ANNUAL MEETINGS

In July 2011, 2012, and 2013, project staff attended and presented at the CLWA annual meeting. At these meetings, watershed residents were informed of the Protection Project, how they could receive Technical Assistance free of charge, and why reducing erosion and sediment transport to Crescent Lake was important for the Lake's water quality.



CLWA 2013 Annual Meeting

## CONSERVATION PRACTICE WORKSHOPS

These workshops provided an opportunity for local residents and volunteers to learn where and how to install BMPs, such as infiltration trenches, vegetative buffers, drywells, and water diverters. Over the course of the project, three workshops were organized and completed.



Infiltration Trenches, Infiltration Steps, Water Diverters

Vegetative Buffers

# NPS ABATEMENT PROJECTS

These projects addressed large-scale erosion and runoff problems on public and private roads and lakefront properties, and along Crescent Lake's shoreline and tributary streams. Town road crews and private landowners received technical assistance at no charge and a 50% cost sharing opportunity. As a result of the project, 21 sites were addressed, reducing erosion and sediment transport to Crescent Lake. The following pages present before and after photos for several of the NPS Abatement Projects completed during the NPS

## COMPLETED PROJECTS

1. **Bartlett** (*Big Pine Rd.*)
2. **Batcheldar** (*Big Pine Rd.*)
3. **Berry Cove Road**
4. **Cobb** (*Haskell Ave.*)
5. **Dryad Woods Road Site 1**
6. **Dryad Woods Road Site 2**
7. **Edwards Road Culvert**
8. **Fay** (*Hancock Rd.*)
9. **Gatchell** (*Cobb Rd.*)
10. **Hall** (*Myron Hall Rd.*)
11. **Haskell Avenue**
12. **Haskell Avenue ROW**
13. **Camp Laurel South Site 1**
14. **Camp Laurel South Site 2**
15. **Mason** (*Haskell Ave.*)
16. **Place** (*Kingsley Rd.*)
17. **Plains Road Curbing**
18. **Rodrigue** (*Dryad Woods Rd.*)
19. **Route 85 Ditching**
20. **Savage** (*Berry Cove Rd.*)
21. **Trickett** (*Haskell Ave.*)



Before

### Haskell Ave - Photos

Before photo (above) show a section of Haskell Avenue that had severe erosion issues. The road used too wash out and the sediment laden stormwater would travel down a right of way and into Crescent Lake. The photos below show the road after construction. The road was re-graded, new surface material was brought in and turnouts were installed to encourage the stormwater to run into existing vegetation, which greatly reduced the sediment and phosphorus transport into Crescent Lake from the site.



After

# NPS ABATEMENT PROJECTS



## Laurel - 1 & 2 - Photos

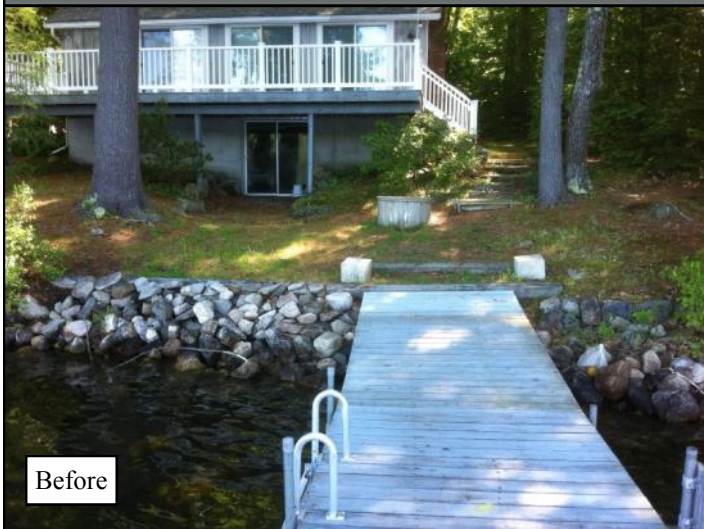
Before photos (above) shows the eroding swimming beach area at Camp Laurel South. Water would flow from the hill behind the beach, across bare soil, and erode the beach area carrying sediment and phosphorus directly into Crescent Lake. Construction and after photos (below) display the work that was completed to address the erosion at these sites. A large drainage swale was constructed at the bottom of the hill to carry water away from the beach area and into existing vegetation and large boulders were placed in gullies on the beach area. Erosion control mulch (ECM) was spread over the bare soil areas. Finally, plantings were installed along the top of the beach area and a large rain garden was constructed to reduce erosion and infiltrate the stormwater runoff from the site.





## RESIDENTIAL MATCHING GRANTS

These projects addressed erosion and runoff problems at low to medium priority sites on residential properties around Crescent Lake. Landowners received technical assistance at no cost and typically a matching grant up to \$300. Landowners were expected to match at least 50% of the project cost through material, cash, or labor contributions. These projects were typically completed with the help of several volunteers in a day or two. Residential matching grants provided a unique opportunity for project staff to educate landowners on lake healthy practices while protecting and enhancing the landowner's property. With considerable support from lakefront landowners and volunteers, 11 project sites were completed as part of the Protection Project, surpassing the initial goal of eight sites. The following pages present before and after photos of several Residential Matching Grant project sites completed.



Before

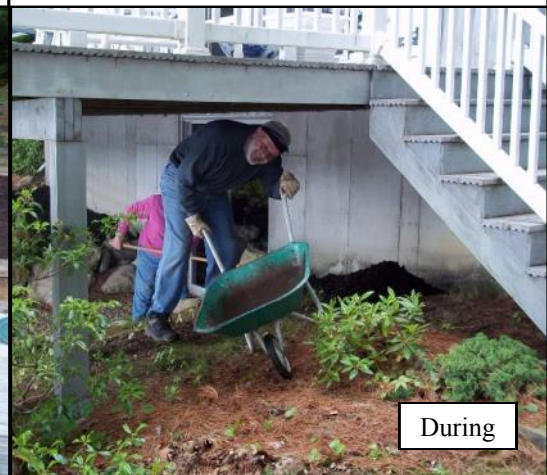
This property on Hancock Road was lacking a buffer (above) and had erosion issues at the shoreline and underneath the deck. The landowner and volunteers planted over 20 shrubs along the shoreline (below left), installed several water diverters, and spread ECM underneath the deck (below right). Following this work and other landowner improvements, the property was recommended for a LakeSmart certification!

### PROJECT COMPONENTS

- Planting vegetative buffers
- Slope stabilization with plantings
- Shoreline stabilization with rip rap and plantings
- Rubber razors
- Waterbars
- Path stabilization
- Infiltration steps
- Infiltration trenches
- Dry wells
- Covering bare soil with ECM



After



During

## RESIDENTIAL MATCHING GRANTS



This property off Edwards Road in Casco had a large lawn leading to a bare shoreline (above left). The lack of vegetation along the shoreline was leading to some shoreline erosion over time. The landowner, along with volunteers, installed over 30 blueberry bushes and spread ECM along the shoreline to enhance the buffer and protect the shoreline and the landowner's property (above right).



This property off Haskell Avenue had stormwater from the road flowing across their parking area, down their steps, and across their property to Crescent Lake (above left). The landowners, along with several volunteers retrofit the existing steps into infiltration steps, installed a dripline trench, spread crushed stone in the parking area and installed a water diverter to send the road runoff into existing vegetation.



Photos of the landowners and volunteers installing the conservation practices at various residential properties

## CONTINUING EFFORTS AROUND CRESCENT LAKE

Crescent Lake has a fairly young, but very motivated lake association. The Crescent Lake Watershed Association (CLWA) was organized in 2009 and has shown an incredible commitment to the protection and stewardship of Crescent Lake. In their first year of existence, CLWA volunteers along with the RWPA worked to update the 2000 Crescent Lake watershed survey, completed a full shoreline survey, and successfully ran the Maine DEP LakeSmart program. Working with RWPA, the CLWA was able to successfully apply for a federal 319 grant that provided funding for the Crescent Lake NPS Watershed Protection Project.

However, their work has not stopped there. In 2012, the CLWA formalized the Crescent Lake Invasive Plant Patrol (CLIPPERS). This group of CLWA volunteers underwent formal training in plant identification and actively inspects the entire shoreline of Crescent Lake, during the spring, summer, and fall months. The goal of the Clippers is to help keep Crescent Lake invasive-plant free. The CLWA also runs a water quality monitoring program for Crescent Lake. During the summer months, CLWA volunteers test for water clarity, dissolved oxygen, and pH levels.



In the fall of 2013, the CLWA worked with RWPA and the Town of Raymond to apply for a second federal 319 grant to build upon the success of the Crescent Lake NPS Watershed Protection Project. This "Phase II" project will begin in the spring of 2014 and run until the spring of 2016. This grant will allow the CLWA and project partners to address even more erosion and pollution sites throughout the watershed that will further protect Crescent Lake.



## THE FUTURE

*Lake protection never reaches an endpoint. It requires a continual process of local support, education and routine maintenance.*

**The Crescent Lake Watershed Association will continue to lead efforts to protect the lake by:**

- Monitoring the water quality of Crescent Lake
- Partnering with the Town of Raymond and RWPA for the implementation of the Phase II 319 grant project which will begin in 2014.
- Spearheading educational efforts to promote the value of vegetation buffers, routine road maintenance, and septic system inspection.



*Looking east over Crescent Lake from Rattlesnake Mountain - Patrick Marass*

**THANK YOU TO EVERYONE WHO GAVE TIME  
AND ENERGY TO THIS PROJECT!**

*For more information please visit the Crescent Lake Watershed Association  
website:*

**[www.crescentlakemaine.com](http://www.crescentlakemaine.com)**