Hancock and Sand Ponds
Watershed Survey Report

Cumberland County Soil and Water Conservation District
Hancock and Sand Ponds Association
Lakes Environmental Association
Maine Department of Environmental Protection

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Sponsors

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Cover Photo Credit: Dick Johnson

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Exposed tree roots, like the ones at the state owned property pictured here, are a sign that soil erosion is occurring.

Introduction

WATERSHED

All the land that surrounds a lake that drains or sheds its water into the lake through streams, ditches, directly over the ground surface or through ground water.

This report is specifically designed for citizens living in the Hancock and Sand Ponds Watershed. It provides the results and analysis of a watershed survey conducted throughout the entire watershed. The survey was conducted in response to evidence compiled over many years that the ponds are under stress.

The Hancock and Sand Ponds Association and Lakes Environmental Association began testing the water quality of the ponds in 1975. Their data indicate that the ponds are showing signs of stress. In particular, the data show dissolved oxygen depletion in the bottom waters to levels that have the potential of depleting cold-water fish habitat. Based on observations at other Maine lakes, these trends forecast a future decline in water quality. For these reasons, plus their regional significance, Hancock and Sand Ponds appear on the list of Priority Watersheds that are threatened or impaired by polluted runoff.

Why is the Water Quality at Risk?

The biggest pollution culprit in Hancock and Sand Ponds and most other Maine lakes is **polluted runoff.** During and after storms and snowmelt, soil (and hitch-hiking nutrients like phosphorus and nitrogen through stormwater) washes into lakes from the surrounding landscape through streams, ditches and overland flow.

POLLUTED RUNOFF

Also called:

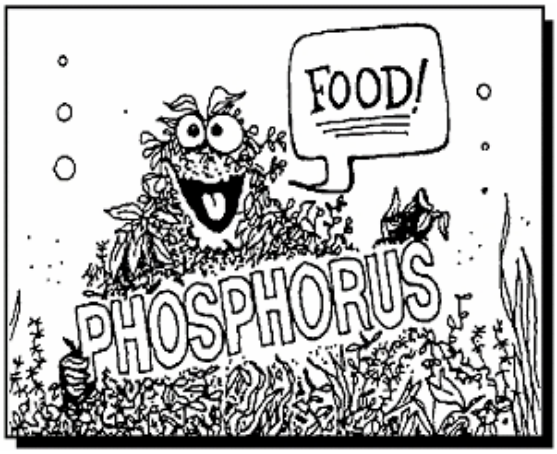
- Surface Runoff
- Stormwater Runoff
- Overland Flow
- Nonpoint Source (NPS) Pollution

In an undeveloped, forested watershed, runoff is slowed and filtered by tree and shrub roots, grasses, leaves, and other natural debris on the forest floor. It then soaks into the uneven forest floor and filters through the soil. In a developed watershed, however, stormwater does not always receive the treatment the forest once provided. It gathers with other runoff shed from impervious surfaces like rooftops, compacted soil, gravel camp roads, and pavement, speeds up, and becomes a destructive, erosive force. If the phosphorus supply to the lake is great enough, the resulting cycle of increased algae growth, death, and decomposition can lead to oxygen depletion in the bottom portion of the lake. When lake-bottom oxygen is gone, a chemical change occurs that allows phosphorus previously locked in the bottom sediments to be re-released into the lake waters. This "internal recycling" of phosphorus continues the downward spiral in lake quality.

The fallen pine needles help slow some runoff at this residential site. However, native shrubs and ground covers should also be planted to better stabilize the soil.

There are many ways residents of the Hancock and Sand Ponds Watershed can reduce the impacts of polluted runoff on their properties and help maintain and improve the water quality of the ponds. This report outlines several of these options.

Why is Runoff a Problem?



The problem is not necessarily the water itself, it's the sediment and nutrients in the surface runoff that can be bad news. Large volumes of sediment can settle out in the lake, creating an ideal substrate for nuisance and invasive aquatic plants such as variable-leaved water milfoil. **Phosphorus**, a nutrient that is common in soils and dissolved in polluted runoff, is a primary food for all plants, including **algae**. In natural conditions, the scarcity of phosphorus in a lake limits algae growth. However, when a lake receives extra phosphorus from the watershed, algae growth increases dramatically. Sometimes this growth causes choking blooms, but more often it results in small, insidious changes in water quality that, over time, damage the ecology, aesthetics, and economy of lakes.

Photo credit: Maine VLMP

Excess **phosphorus** can "fertilize" a lake and lead to nuisance **algae blooms** like this one that occurred in 2002 on Pease Pond in Wilton, Maine.

Why should we protect the ponds from polluted runoff?

- The ponds contain valuable habitat for fish, birds and other wildlife.
- Hancock and Sand Ponds provide recreational opportunities to watershed residents and to visitors. It is an important contributor to the local economy.
- Sedimentation of a lake creates the perfect silty habitat for invasive aquatic plants, such as variable milfoil, which has become a threat to all Maine lakes.
- A 1996 University of Maine study demonstrated that lake water quality affects property values. For every meter (3 ft) decline in water clarity, shorefront property values can decline as much as 10 to 20 percent! Declining property values affect individual landowners as well as the economics of the entire community.
- Once a lake has declined, it can be difficult or impossible to restore.

What is being done to protect the ponds from polluted runoff?

The Hancock and Sand Ponds Association (HSPA) is dedicated to addressing the polluted runoff issues facing the lake. Its board and members work with agencies and watershed residents to promote conservation efforts within the watershed. HSPA and Lakes Environmental Association (LEA) started monitoring the water quality in Hancock and Sand Ponds in 1975. In more recent years, the Association began promoting compliance with Shoreland Zoning due to the growing trend to convert camp lots to year-round homes.

Volunteer watershed surveys have been found to be one of the most effective ways to protect lake water quality by getting citizens involved in identifying existing and potential sources of polluted runoff. During the spring and summer of 2005, HSPA worked with the Cumberland County Soil & Water Conservation District (SWCD), LEA, and Maine DEP to conduct this watershed survey throughout the entire Hancock and Sand Ponds Watershed. Nineteen volunteers turned out to help with the survey. This says a lot for the watershed residents' commitment to keeping the ponds clean.

The Purpose of the Watershed Survey

The primary purpose of the watershed survey was to:

- Identify and prioritize existing sources of polluted runoff, particularly soil erosion sites, in the Hancock and Sand Ponds Watershed.
- Raise public awareness of the connection between land use and water quality and the impact of polluted runoff.
- Inspire people to become active stewards of the watershed.
- Use the information gathered as one component of a long term lake protection strategy.
- Make general recommendations to landowners for fixing erosion problems on their properties.

The purpose of the survey was NOT to point fingers at landowners with problem spots, nor was it to seek enforcement action against landowners not in compliance with ordinances. It is our hope that through future projects we can work together with landowners to solve erosion problems on their properties, or help them learn how to find solutions on their own.

Local citizen participation was essential in completing the watershed survey and will be even more important in upcoming years. Through the leadership of the Hancock and Sand Ponds Association, and with assistance from groups and agencies concerned with lake water quality, the opportunities for stewardship are limitless!

The Survey Method

The survey was conducted by 20 volunteers with the help of experienced technical staff. Volunteers were trained on survey techniques and erosion identification during a two hour classroom workshop in May 2005. Following the classroom training, the volunteers and technical staff spent the remainder of the day in the field documenting erosion on the roads, shoreline, stream crossings, and foot trails in their assigned sectors by using cameras, GPS, and standardized forms. The teams worked together throughout the remainder of the summer to complete their sectors. In the summer and fall of 2005, technical staff conducted follow-up examinations of sites to verify data accuracy and to take measurements in order to estimate of the pollutant loading from each site, where possible.

The data collected were entered into a database, and the documented erosion sites were plotted on maps. The sites were broken out into categories (driveways, roads, private residences, etc.) and rated based on their impact on the lake and the estimated cost of fixing the problem. Maps and a description of sites and associated ratings are discussed in the next section of this report. A copy of the spreadsheet that contains all collected data is located in Appendix B.

Summary of Watershed Survey Findings

Volunteers and technical staff identified 79 erosions sites in the Hancock and Sand Ponds Watershed that are currently impacting or have the potential to impact water quality.

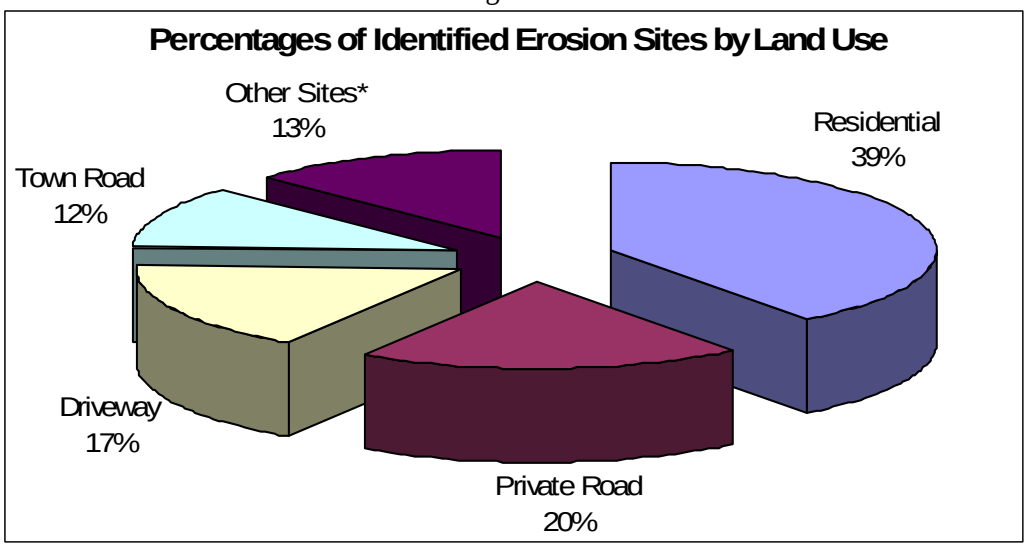
Table 1 represents the tally of sites in each category as well as their impact rating. Most sites (38 total) were determined to have a low impact on the ponds, but it is important to remember that the cumulative impact of all sites is what can cause water quality to decline. The different levels of impact are defined in the following pages.

The pie chart in Figure 2 below depicts the percentage of erosion sites documented in each land use category. The majority of sites were associated with private properties (residential areas and driveways). These areas accounted for 56% of all identified sites in the survey.

Table 1. Summary of site categories and impacts

Land Use	High Impact	Medium Impact	Low Impact	Total
Residential	3	8	20	31
Private Road	9	5	2	16
Driveway	1	5	7	13
Town Road	2	3	4	9
Boat Access	1	0	3	4
Beach	0	1	2	3
Construction Site	0	1	0	1
Right of Way	1	0	0	1
Trail	1	0	0	1
Total	18	23	38	79

Figure 1.



* Other sites include Boat Access (5%), Beach (4%), Construction Sites (1%), Right of Ways (1%), and Trails (1%)

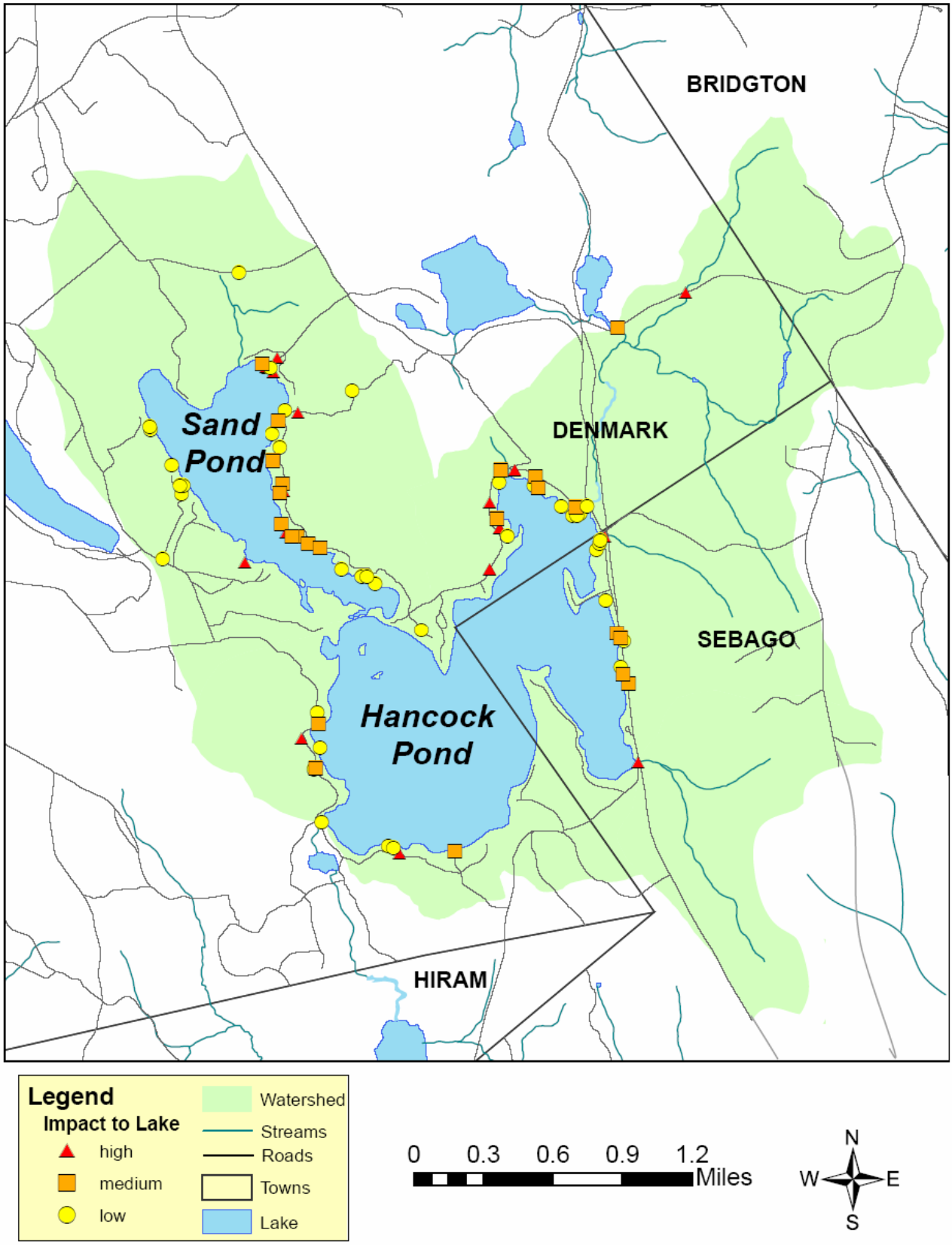
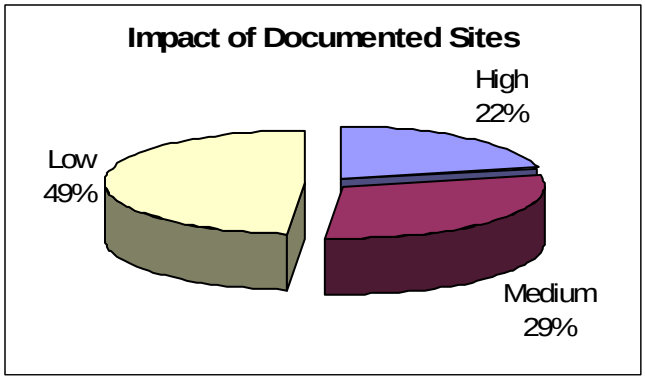


Figure 2. The Hancock and Sand Ponds Watershed (5.65 square miles) with points representing the documented sites.

All of the documented sites were rated for their relative impact to water quality and the cost of materials and labor for the recommended fixes. Figures 4 and 5 depict these ratings.

Figure 3.

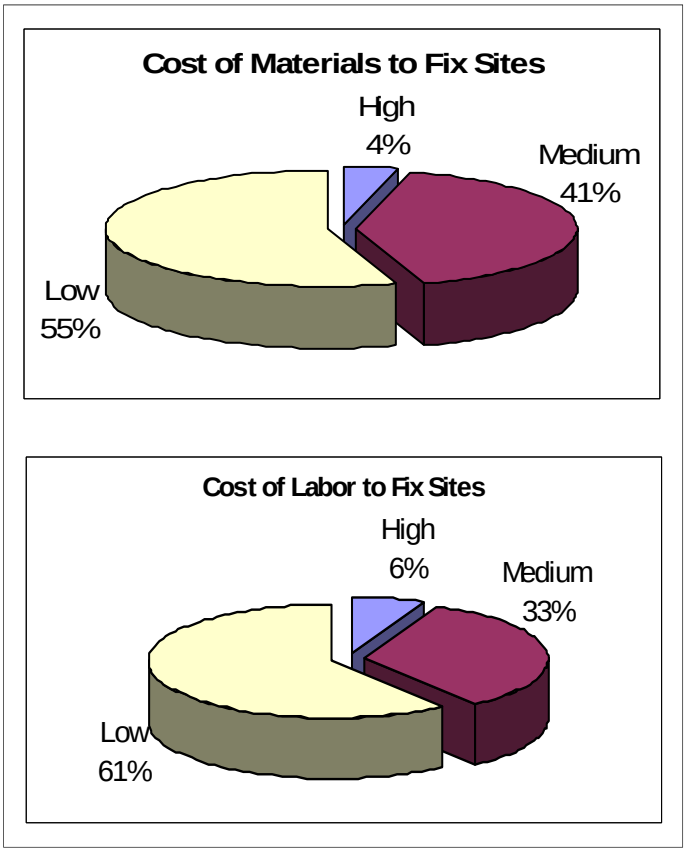


Impact was based on slope, soil type, amount of soil eroding, proximity to water or buffer.

- "Low" impact eroding sites are those with limited soil transport off-site.
- At "medium" impact sites, sediment is transported off-site, but the erosion doesn't reach a high magnitude.
- "High" impact sites are large sites where there is significant erosion that flows directly into a stream, pond or ditch.

Nearly half of all documented sites were ranked low impact. It is important to keep in mind that, when combined with many other similar sites throughout a watershed, even erosion from small sources can have a significant impact on lake water quality.

Figure 4.



Cost is an important factor in planning for restoration. It is useful to consider costs for materials and labor individually, so as to not miss any "hidden" costs.

- "Low" cost sites were estimated to cost less than $500 to fix.
- An estimate of $500 to $2,500 was rated "medium".
- If the estimated cost to fix a site exceeded $2,500, a "high" rating was assigned.

With the majority of sites ranked low in cost, we are hopeful that watershed residents will take the initiative to address erosion problems on their properties. Fixing erosion problems are good for landowners and good for the ponds!

Residential Areas

(Shoreline, footpaths, structures, recreation areas, etc.)

Of the 31 sites associated with residential areas documented through the survey, 20 were low impact, 8 were medium impact, and 3 were high impact. The majority of the sites can be fixed with little technical expertise and low cost.

Common Problems Identified:

- Slight or moderate surface erosion
- Bare or sparsely vegetated areas
- Lack of shoreline vegetation
- Direct flow of surface runoff to ponds
- Roof runoff causing erosion

Typical Solutions to these Problems:

- Vegetate and mulch bare soil
- Establish or enhance shoreline vegetation
- Limit foot traffic in eroding areas
- Install dripline trench to catch roof runoff
- Install waterbar, open-top culvert, rubber bar, or other runoff diverter
- Stabilize footpaths

The erosion problems associated with the camp pictured below were common on many other properties within the watershed.

Problems:

- Shoreline erosion.
- Bare soil with severe surface erosion.
- Exposed tree roots.
- Direct flow of sediment to pond.

Solutions:

- Define stable foot path.
- Install infiltration steps.
- Stop raking.
- Plant native plants.
- Mulch bare areas.
- Seek proper permits from MDEP and Town.

Residential areas were identified most often as impacting or have the potential to impact Hancock and Sand Ponds (39%). These problems pose a significant threat to lake water quality. Fortunately, most of these sites can be corrected with easy, low cost fixes.

Driveways

Of the 13 driveways documented in the survey, 7 were low impact, 5 were medium impact, and 1 was high impact. Most of the sites could be fixed at low cost.

Common Problems Identified:

- Slight to moderate surface erosion
- Direct flow of surface runoff to ponds
- Poor shaping
- Poor (too sandy) surface material
- Slight ditch erosion

Recommended Solutions:

- Crown driveways so that water flows to either side
- Build up driveway with cohesive surface material
- Install diverters such as waterbars, open top culverts, or rubber bars to get water off driveway
- Install turnouts to direct water into wooded depressions

The erosion problems associated with the driveway pictured below were common on many other properties within the watershed.

Problems

- Moderate surface erosion.
- Direct flow of sediment to pond.
- Poor driveway shaping and ruts cause water to concentrate and erode the surface.

Solutions

- Add new surface material.
- Reshape and crown driveway so water moves quickly off of the surface.
- Install diverters such as waterbars, open top culverts, or rubber bars to get water off driveway.

Preserve water quality and save time, money, and wear and tear on your vehicle by having a well crowned driveway. Use adequate surface material and add diverters to direct runoff into stable, vegetated areas.

It's great for your driveway and it's great for the pond!

Private Roads

Of the 16 private road sites documented through the survey, 2 were low impact, 5 were medium impact, and 9 were high impact. These problems are more expensive to fix and most require technical assistance.

Common Problems Identified:

- Slight to moderate surface erosion
- Direct flow to ponds or stream
- Moderate to severe ditch erosion
- Poor (too sandy) surface material
- Unstable culvert inlet and outlet
- Clogged ditches and culverts
- Slight to moderate shoulder erosion
- Plow or grader berms
- Hillside failure

Recommended Solutions:

- Crown and reshape road to get water off road
- Install diverters such as waterbars, open top culverts, or rubber bars to get water off road
- Build up road with cohesive surface material
- Clean, reshape, and armor ditches with stone or vegetate with grass
- Remove grader berms and winter sand to allow proper drainage
- Clean out culverts, stabilize culvert inlets, and outlets with stone. and install plunge pool

The erosion problems associated with the private road pictured below were common on many other roads within the watershed.

Problems:

- Poor road shaping.
- Poor surface material.
- Severe road surface erosion.
- Direct flow of road material to stream.

Solutions:

- Reshape and crown road.
- Add new surface material.
- Install runoff diverters to direct water to areas where it will infiltrate.

Gravel roads are one of the biggest sources of pollution to Maine lakes.

While a one time fix may cost more up front, it will reduce lake pollution and reduce maintenance costs on your road and vehicle.

Town Roads

Of the 9 town road sites documented through the survey, 4 were low impact, 3 were medium impact, and 2 were high impact. These problems are more expensive to fix and most require technical assistance.

Common Problems Identified:

- Slight to severe shoulder erosion
- Slight to severe ditch erosion
- Unstable culvert inlets and outlets
- Buildup of winter sand
- Lack of vegetation
- Direct flow of sediment to ponds or stream

Recommended Solutions:

- Vegetate or stabilize road shoulders
- Clean, reshape, and armor ditches with stone or vegetate with grass
- Clean out culverts, stabilize culvert inlets and outlets with stone, and install plunge pool
- Remove winter sand
- Install ditch turnouts

The erosion problems associated with the town road pictured below were common on many other roads throughout the watershed.

Problems:

- Unstable culvert inlet and outlet.
- Clogged culvert.
- Slight ditch erosion.
- Severe road shoulder erosion.
- Winter sand buildup.

Solutions:

- Armor culvert inlet and outlet with stone.
- Remove debris to unclog culvert.
- Install stone plunge pool at culvert outlet.
- Reshape ditch.
- Remove winter sand.

Remember, it's the cumulative impact of all the sites that causes water quality to decline.

Sites in Other Categories

Boat Access Sites

Four boat access sites were documented; one with high impact and three with low impact. Problems identified at these locations included slumping or eroding banks on either side of the ramps and moderate surface erosion where the ramps meet the ponds. These problems can be fixed by adding better surface material; establishing a crown on the ramp; adding speed bumps, waterbars, or infiltration trenches to divert the water; and armoring the banks with vegetation or rock. In addition, unnecessary launches can be revegetated since public access points are available. The cost and technical level needed to fix these sites are generally low.

Beach Sites

Of the three beach sites documented in this survey, one was a high impact site and two were low impact. While only one site had documented problems with the beach itself eroding, all three sites had erosion problems associated with accessing the beach. Recommended improvements included defining a stable path to the ponds and enhancing the area with native plantings.

Trails

One high impact trail site with severe surface erosion was documented. Bare soil and a direct flow of sediment to the ponds were also noted. Recommendations for this site included adding new surface material, reshaping and crowning the trail, installing runoff diverters, and mulching the surface. The cost estimate to improve this site was high.

Right-of-Ways

One high impact right-of-way site with severe surface erosion was documented. Problems at the site included bare soil and direct flow of sediment to the pond. Recommendations for this site included adding new surface material and installing runoff diverters to direct water to stable areas for infiltration. The cost to fix this site was estimated to be moderate.

Construction Sites

One construction site was noted as having a medium impact on the ponds. Bare soil on construction sites is inevitable, however, proper use of silt fences, erosion control berms, and hay mulch limits the impact of construction activity. Maintenance of sediment barriers and code enforcement officer inspections of job sites helps to ensure that sediment will not leave the construction area.

Examples of Good Watershed Protection Techniques

Survey teams identified many sites that showed good watershed protection techniques. These conservation practices included good vegetated buffers and well maintained driveways, roads, and ditches. The photo on the right depicts a creative way to slow the flow of water and allow it to spread out and infiltrate. The Maine DEP and Cumberland County SWCD have created numerous demonstration projects that showcase good watershed protection practices. Contact the Cumberland County SWCD, LEA or Maine DEP for more details.

Restore the Shore

What is a buffer?

Shoreland buffers are areas of trees, shrubs, groundcovers, and leaf litter that help prevent sediment and nutrients from reaching the ponds. It is important to maintain vegetation on all parts of properties to trap sediments, excess nutrients and other pollutants; prevent erosion; and help stabilize sloped areas and the shoreline. Vegetation can also add beauty, enhance privacy, and provide wildlife habitat.

Under local Shoreland Zoning laws, there are limits to removing vegetation within 250-feet of the water, and there are restrictions to development within the first 100-feet from the water. The Hancock and Sand Ponds Association promotes restoring shoreland buffers and enhancing existing ones.

Planting native trees, shrubs, and groundcovers will help stabilize the soil, reduce erosion, while enhancing this property.

How do buffers work?

⇒ The tree and shrub canopy intercepts raindrops and reduces their impact on the soil.

⇒ Leaf surfaces collect rain and allow for evaporation.

⇒ Shorter plants, groundcover, and the "duff" in the forest floor filter sediment and pollutants from runoff.

⇒ Root systems hold soil in place, maintain soil porosity, and take up water and nutrients.

⇒ An uneven soil surface allows rain and snowmelt to puddle and infiltrate.

Often folks feel that once a buffer is in place, they will lose control of their access to the water - both physically and visually. Not so! Traffic can be directed by the use of appropriately placed shrubs and trees, which can be pruned so that views of the water are preserved. In fact, buffers can be designed to protect against noise and enhance privacy for lakefront residents. The photo at left shows an excellent example of a path to access the lake. The path winds through this buffer, minimizing the direct route for runoff to reach the lake.

Phosphorus Free Fertilizer Dealers

Before fertilizing, consider getting a soil test to measure nutrient levels on your property. Tests are inexpensive, and kits can be obtained through Cumberland County SWCD or the University of Maine Cooperative Extension.

Most soils in Maine have enough phosphorus to keep plants healthy. Phosphorus free fertilizer is available at the following retailers:

Paris Farmers' Union	5 Portland Street	Bridgton	647-2383
Hayes True Value	204 Portland Road	Bridgton	647-3342
True Value	P.O. Box 577	Raymond	655-7320
Hansen's Farm Market	74 County Road	Gorham	839-9060
O'Donal's Nurseries	6 County Road	Gorham	839-4262
Ossipee Trail Garden Center	333 Ossipee Trail	Gorham	839-2885

Buffers aren't just areas of vegetation between your cottage and the water. Native vegetation should be maintained on all areas of your property to lessen the impacts of surface runoff coming off of all developed areas (cottages, roads, driveways, etc.).

Common Native Plants Found Around the Ponds

The following is a sampling of common plants found around Hancock and Sand Ponds. Native plants require less maintenance and chemical pesticides and fertilizers than non-natives, and they provide valuable wildlife habitat. Protect your waterfront investment and enhance your property by incorporating native plants into your landscape. Many of these species are available at local nurseries, or stop raking and mowing to allow these plants to become established naturally. You could also try transplanting many of these from other locations.

Shoreline Woody & Herbaceous Plants

- Sweet Gale
- Maleberry
- Leatherleaf
- Highbush Blueberry
- Sheep Laurel
- Blue Flag Iris


Buttonbush


New England Aster

Blue Flag Iris

Sheep Laurel

- Buttonbush
- Swamp Rose
- Lowbush Blueberry
- Huckleberry
- Marsh St. Johns Wart
- New England Aster

Upland Woody & Herbaceous Plants

- Witch-hazel
- Hobblebush
- Arrowhead Viburnum
- Maple Leaf Viburnum
- Mountain Holly
- Sweet Fern
- Jewelweed
- Trillium


Trillium


Milkweed

Wintergreen

Jewelweed

- Wood Lily
- Ground Pea
- Fireweed
- Milkweed
- Whorled Loosestrife
- Wintergreen
- Yarrow
- False Solomon's Seal

Trees

- American Beech
- Red Maple
- White Oak
- Red Oak


Red Oak


White Oak

Eastern Hemlock

Red Maple

- White Birch
- Eastern Hemlock
- White Pine
- Red Pine

Ferns

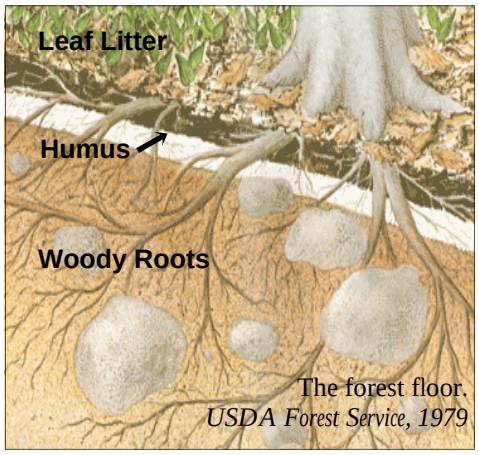
- Sensitive Fern
- Hay Scented Fern


Sensitive Fern


Interrupted Fern

- Lady Fern
- Interrupted Fern

The Function of Forests



The forest floor.
USDA Forest Service, 1979

Naturally forested areas play a key role in protecting the quality of the ponds. Little runoff flows off of forested areas. The forest canopy intercepts rainfall before it can hit the ground, and the uneven forest floor allows water to pool and infiltrate. The forest floor performs several other important functions. The leaf litter protects the soil from the impact of rain drops and decomposes to replenish the humus layer. Humus increases infiltration and plays a major role in phosphorous storage. Woody roots keep the soil porous.

Effects of Logging on Water Quality

Careless logging can have adverse effects on water quality. According to the Maine Forest Service's *Best Management Practices for Forestry* manual, the construction of roads, trails, landings, and drainage systems can reduce soil absorbency, increase soil erosion, and concentrate water flows. Harvesting near streams can also reduce shade, which impacts stream biology. Use of proper forestry conservation practices can minimize these effects.


The impact of a raindrop on bare soil.

Considerations for Woodlot Owners

Woodlot owners who conduct commercial harvests within the watershed should do so in accordance with the recommendations of a forest management plan and under the provisions of a written agreement of contract with the logger. Landowners should also consider the following:

- Assure the logger is knowledgeable about forestry conservation measures and Shoreland Zoning Rules.
- Specify logging methods and when to harvest based on site conditions.
- Specify forestry conservation practices to be used during and after the harvest.
- Discourage vehicle use after the harvest.
- Close and revegetate or properly maintain the roads following logging.

Foresters should utilize the recommended conservation measures described in the Maine Forest Service's *Best Management Practices for Forestry: Protecting Maine's Water Quality*. The manual is available online at www.state.me.us/doc/mfs.pubs.htm. Additional technical help is available through the Maine Forest Service by calling 1-800-367-0223 or visiting www.maine.gov/doc/mfs.

A study conducted by the Maine Department of Environmental Protection found that there is 5 to 10 times more phosphorus in runoff coming off of developed areas compared to runoff from forested areas.

Next Steps ~ Where Do We Go From Here?

Fixing the sites identified in this survey will require efforts by individuals, the Hancock and Sand Ponds Association, road associations, and municipal officials.

Individual Citizens

- Prevent polluted runoff from washing sediment into the ponds. Detain runoff in depressions or divert flow to vegetated areas for infiltration. Call the Cumberland County SWCD, LEA, or Maine DEP for free advice.
- Minimize the amount of cleared land and road surfaces on your property.
- Stop mowing and raking, and let lawns and raked areas revert back to natural plants.
- Avoid exposing bare soil. Vegetate and mulch bare areas.
- Don't rebuild beaches without permits and technical assistance, and don't add sand to shorelines.
- Call the Code Enforcement Officer before cutting vegetation within 250 feet of the shore.
- Maintain septic systems properly. Pump septic tanks (every 2-3 years for year round residences; 4-5 years if seasonal), and upgrade marginal systems.
- Join the Hancock and Sand Ponds Association and LEA.

Hancock and Sand Ponds Association

- Continue to increase and empower the association's membership, and provide educational materials and guidance to members of the Hancock and Sand Ponds Watershed community.
- Continue to partner with agencies, municipalities, Districts, and others to jointly seek funding and implement projects to protect the lake water quality.
- Organize workshops and volunteer "work parties" to start fixing identified erosion problems and teach citizens how to fix similar problems on their own properties.
- Work with municipal officials to identify lake issues and find solutions.

Road Associations (or private roads without associations)

- Minimize road runoff by doing regular, comprehensive maintenance. Form a road association if one does not already exist. (Free copies of *A Guide to Forming Road Associations* are available through the Maine DEP by calling 822-6300).
- Get a copy of *Camp Road Maintenance Manual – A Guide for Landowners* and share it with contractors working on and/or plowing the road. This reference is a "must-have" for anyone managing a gravel road. (Call the Maine DEP at 822-6300 to order a free copy.)
- Contact the Cumberland County SWCD, LEA or Maine DEP to get help for extensive problems.

Municipal Officials

- Continue strong enforcement of Shoreland Zoning ordinances and the Erosion and Sediment Control Law to ensure protection of Hancock and Sand Ponds.
- Conduct regular maintenance on town roads in the watershed, and fix town road problems identified in this survey.
- Participate in and support long term watershed management projects.
- Promote training for road crews, boards, commissions, and other decision-makers.

Permitting ABC's

Protection of the Hancock and Sand Ponds Watershed is ensured through the good will of residents around the lakes and through laws and ordinances created and enforced by the State and Towns.

How do you know when you need a permit?

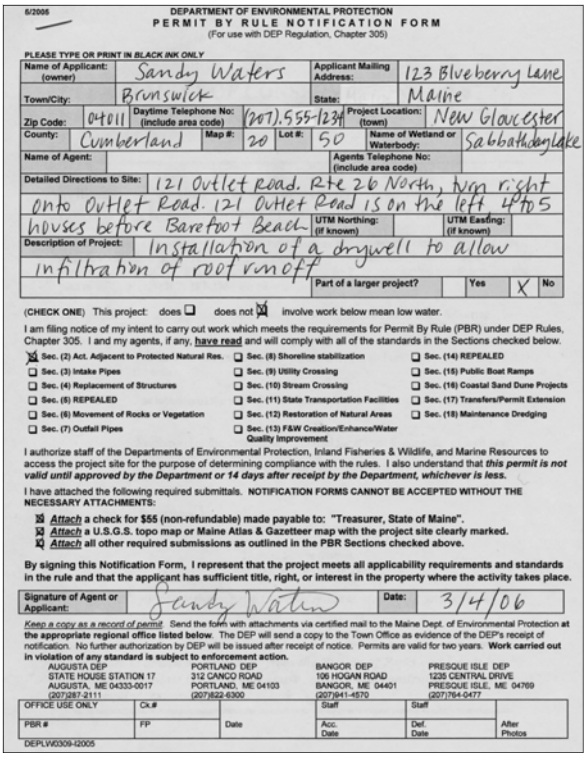
- Construction, clearing of vegetation, and soil movement within 250 feet of the lake shore falls under the Shoreland Zoning Act, which is administered by the Towns through the Code Enforcement Officer and the Planning Board.
- Soil disturbance and other activities within 75 feet of the lakeshore or stream also falls under the Natural Resources Protection Act, which is administered by the Maine DEP.

To ensure that permits for projects that will not result in significant disturbance are processed swiftly, the Maine DEP has established a streamlined permit process called **Permit by Rule**. These one page forms (shown below) are simple to fill out and allow the DEP to quickly review the project.

The Natural Resources Protection Act seeks to establish reasonable regulation in order to assure responsible development that does not harm Maine's precious natural systems.

~from Protecting Maine's Natural Resources ~ Volume 1, MDEP 1996

Contact the Maine DEP and Town Code Enforcement Officer if you have any plans to construct or relocate a structure, clear vegetation, create a new path or driveway, stabilize a shoreline, or otherwise disturb the soil on your property. Even if projects are planned with the intent of enhancing the environment - such as installing some of the practices mentioned in this report – contact the Maine DEP and Town to be sure. See the last page of this report for contact information.



5/2005

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT BY RULE NOTIFICATION FORM
(For use with DEP Regulation, Chapter 305)

PLEASE TYPE OR PRINT IN BLACK INK ONLY

Name of Applicant: (owner)	Sandy Waters	Applicant Mailing Address:	123 Blueberry Lane
Town/City:	Brunswick	State:	Maine
Zip Code: 04011	Daytime Telephone No: (include area code) (207).555-1234	Project Location: (town)	New Gloucester
County: Cumberland	Map #: 20 Lot #: 50	Name of Wetland or Waterbody:	Sabbathday Lake
Name of Agent:		Agents Telephone No: (include area code)	
Detailed Directions to Site:	121 Outlet Road. Rte 26 North, turn right onto Outlet Road. 121 Outlet Road is on the left 4th 5 houses before Barefoot Beach		
Description of Project:	Installation of a drywell to allow infiltration of roof runoff	UTM Northing: (if known)	UTM Easting: (if known)
		Part of a larger project?	Yes X No

(CHECK ONE) This project: does ☐ does not ☒ involve work below mean low water.

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Rules, Chapter 305. I and my agents, if any, have read and will comply with all of the standards in the Sections checked below.

☒ Sec. (2) Act. Adjacent to Protected Natural Res.	☐ Sec. (8) Shoreline stabilization	☐ Sec. (14) REPEALED
☐ Sec. (3) Intake Pipes	☐ Sec. (9) Utility Crossing	☐ Sec. (15) Public Boat Ramps
☐ Sec. (4) Replacement of Structures	☐ Sec. (10) Stream Crossing	☐ Sec. (16) Coastal Sand Dune Projects
☐ Sec. (5) REPEALED	☐ Sec. (11) State Transportation Facilities	☐ Sec. (17) Transfers/Permit Extension
☐ Sec. (6) Movement of Rocks or Vegetation	☐ Sec. (12) Restoration of Natural Areas	☐ Sec. (18) Maintenance Dredging
☐ Sec. (7) Outfall Pipes	☐ Sec. (13) F&W Creation/Enhance/Water Quality Improvement	

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that *this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.*

I have attached the following required submittals. NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:

☒ *Attach* a check for $55 (non-refundable) made payable to: "Treasurer, State of Maine".
☒ *Attach* a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.
☒ *Attach* all other required submissions as outlined in the PBR Sections checked above.

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in the rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

Signature of Agent or Applicant:	Sandy Waters	Date:	3/4/06

Keep a copy as a record of permit. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection at **the appropriate regional office listed below**. The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. **Work carried out in violation of any standard is subject to enforcement action.**

AUGUSTA DEP	PORTLAND DEP	BANGOR DEP	PRESQUE ISLE DEP
STATE HOUSE STATION 17	312 CANCO ROAD	106 HOGAN ROAD	1235 CENTRAL DRIVE
AUGUSTA, ME 04333-0017	PORTLAND, ME 04103	BANGOR, ME 04401	PRESQUE ISLE, ME 04769
(207)287-2111	(207)822-6300	(207)941-4570	(207)764-0477

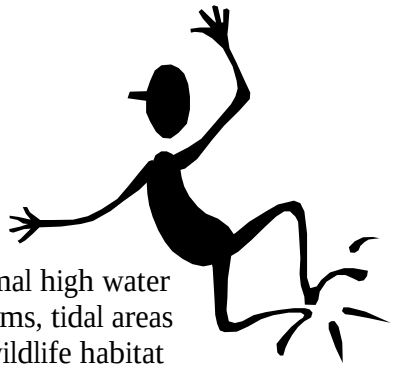
OFFICE USE ONLY	Ck.#		Staff	Staff	
PBR #	FP	Date	Acc. Date	Def. Date	After Photos

DEPLW0309-I2005

How to apply for Permit by Rule with MDEP:

1. Fill out a notification form before completing any work on the ground. Forms are available from your Town Code Enforcement Officer or the Maine DEP office in Portland, or by visiting www.maine.gov/dep/blwq/docstand/nrpa/pbrform.doc.
2. The permit will be reviewed by MDEP within 14 days. If you do not hear from MDEP within 14 days, you can assume your permit is approved and you can proceed with work on the project.
3. Follow the proper standards for keeping soil erosion to a minimum during construction. It is important that you obtain a copy of the standards so you will be familiar with the law's requirements.

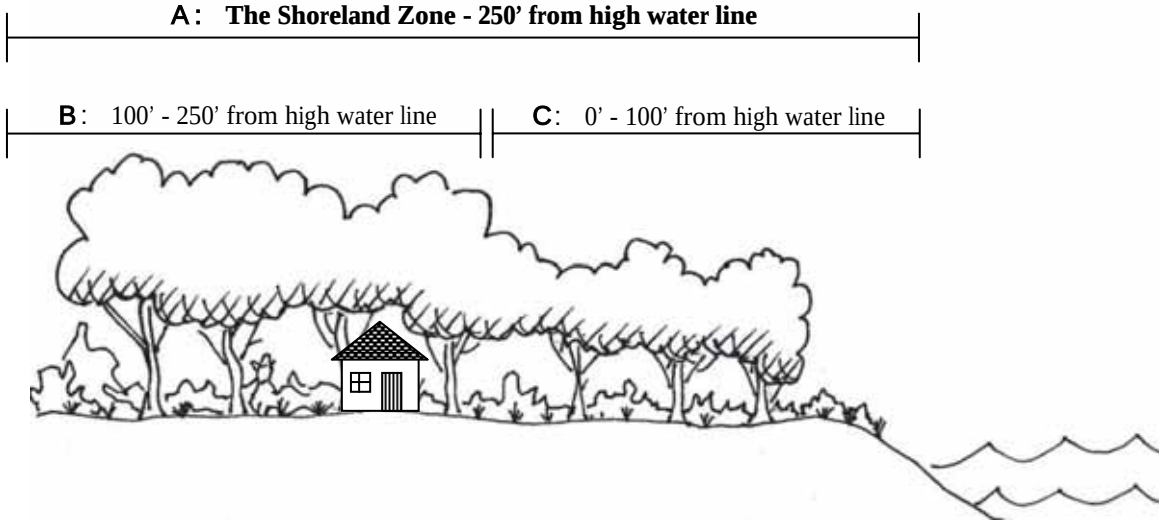
Shoreland Zoning Rules!



What is the Shoreland Zone?

The Shoreland Zone is the area of land extending back 250 feet from the normal high water line of lakes and ponds and 75 feet from the normal high water of rivers, streams, tidal areas and wetlands. This land is important for the protection of water quality and wildlife habitat and to preserve the natural beauty of Maine's water resources.

The **Shoreland Zoning Act** is a state law that is designed to protect the shoreland zone from development. The law restricts development along the shoreline and emphasizes the preservation of trees and low vegetation to promote infiltration of surface runoff from stormwater. The **Shoreland Zoning Act** requires a setback of 100 feet on lakes and 75 feet on all other waters, including wetlands, for development, such as houses, decks, and driveways.



What are the Rules for Lakes?

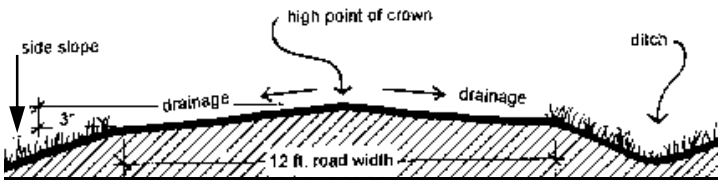
A: Throughout the entire 250-foot Shoreland Zone:
- No more than 40% of the volume of trees may be removed in any ten-year period
- Cut trees must be replaced with natural regrowth or plantings in order to prevent soil from eroding and washing into the water

B: Between 100 and 250 feet of the high water line:
- No more than 25% of the lot or 10,000 square feet can be cleared of trees

C: Generally, within 100 feet of the high water line:
- Vegetation less than 3 feet high cannot be cut
- A well distributed stand of trees must be maintained
- No canopy opening greater than 250 square feet can be created
- Native vegetation must be used when plantings occur
- New structures are not allowed, and existing structures require permits when altered

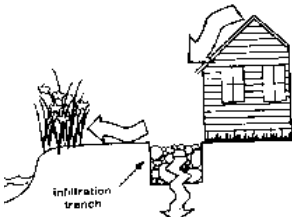
Consult your local code enforcement officer before removing any vegetation from the shoreland zone.

Glossary of Common Conservation Measures



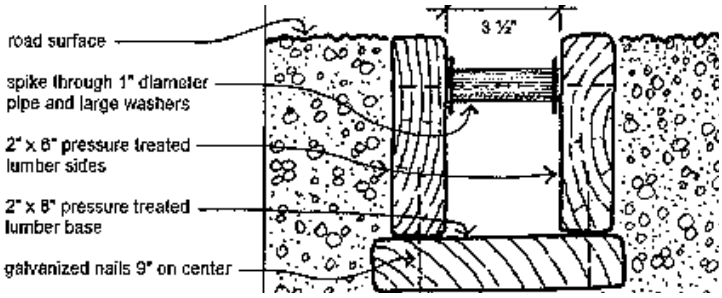
Crown profile: 1/4" of crown per foot of road width (e.g., 1/4" x 12' road—3' crown)

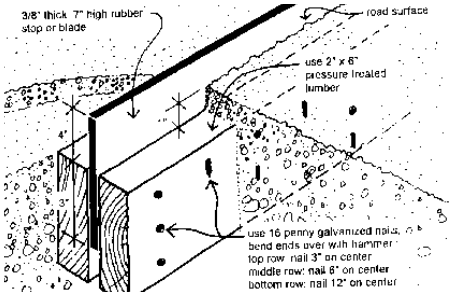
Crown—High point that runs lengthwise along the center of a road or driveway. The high point slopes gently away from the center toward the outer edge of the road, allowing water to drain off the road and preventing erosion of the road surface.



Dripline Trench—Rock-filled trench beneath the roof edge dripline that collects and stores roof runoff until it soaks into the ground. Helps control erosion and reduce wear on the house by preventing backsplash. A typical trench is 6-8" deep and 12-18" wide and filled with 3/4" stone. Can also be used along the edges of driveways to encourage infiltration of runoff.

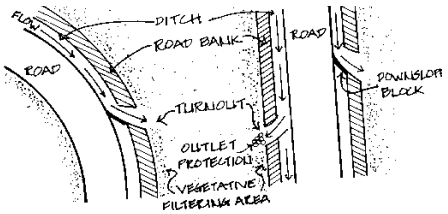
Open Top Culvert—Box-like structure that collects and diverts road surface runoff away from a sloped driveway or camp road. They are seldom recommended for year-round roads due to the likelihood of plow damage. Install at a 30º angle to the road and direct the outlet into a stable buffer. Clean out leaves and debris periodically.

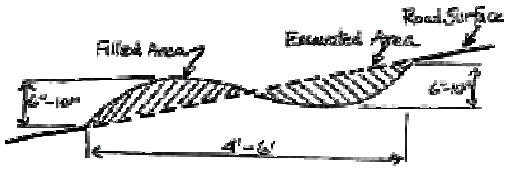




Rubber Blade—Structure that protrudes above the road surface high enough to intercept and collect water, while allowing traffic to pass over it. It is generally not used on year-round roads and driveways because of the likelihood of plow damage. Install at a 30º angle to the road and direct the outlet into a stable buffer. The rubber conveyor belts can be purchased at some hardware stores or Portland Rubber Company (774-3993).

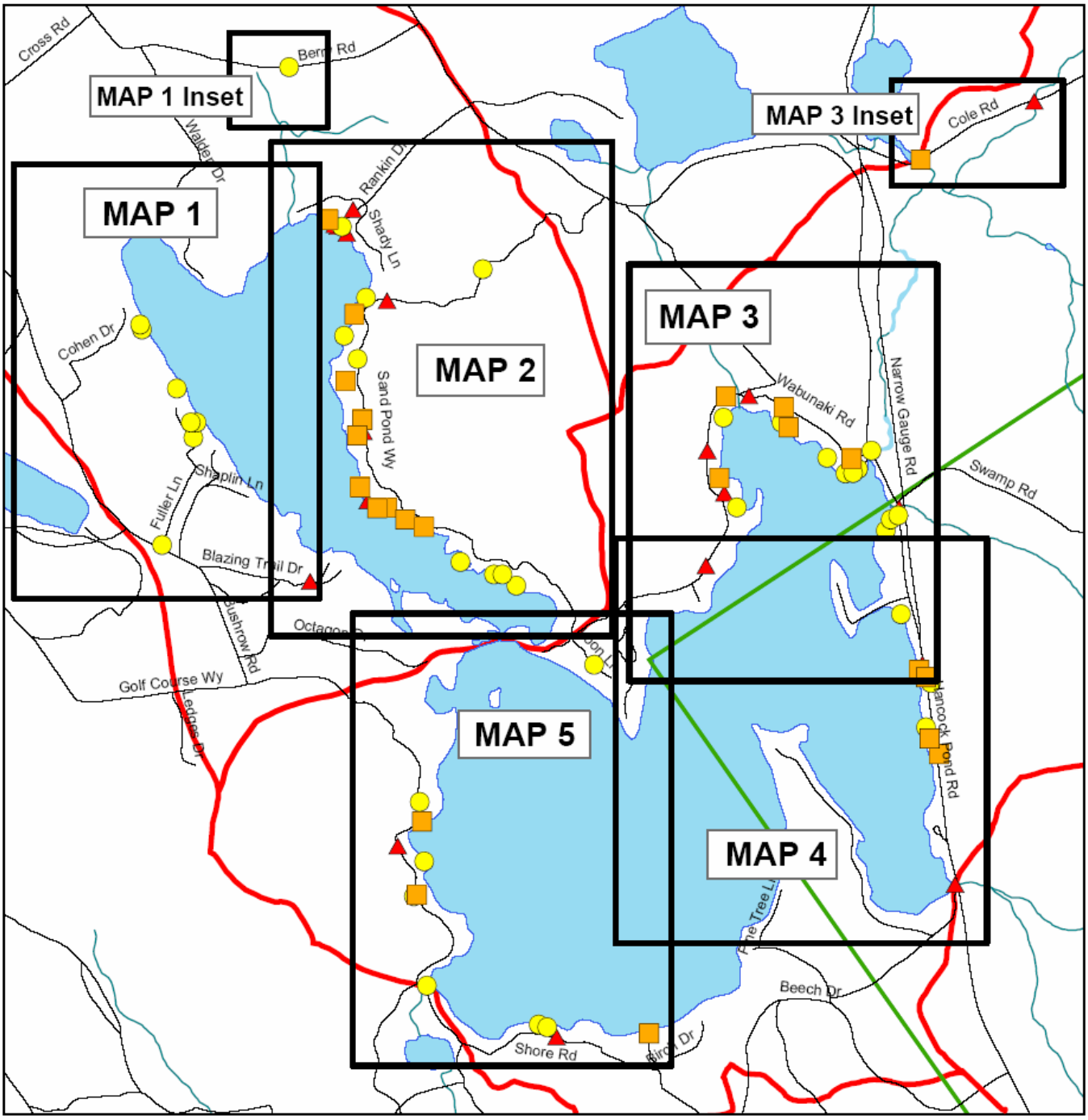
Turnout—A conservation practice used to direct runoff from a ditch (or road ruts) into a vegetated buffer. The turnout should have a flared end section that is level and lined with rock to spread out the flow.





Waterbar—Ridge (like a speed bump) that runs diagonally across a road, driveway or path, typically at a 30º angle. Stops water from running down the road and diverts it to the side. Easy to construct and most appropriate for roads with low traffic volume. Needs to be rebuilt periodically.

Key to Detailed Maps



Legend

Impact to Lake

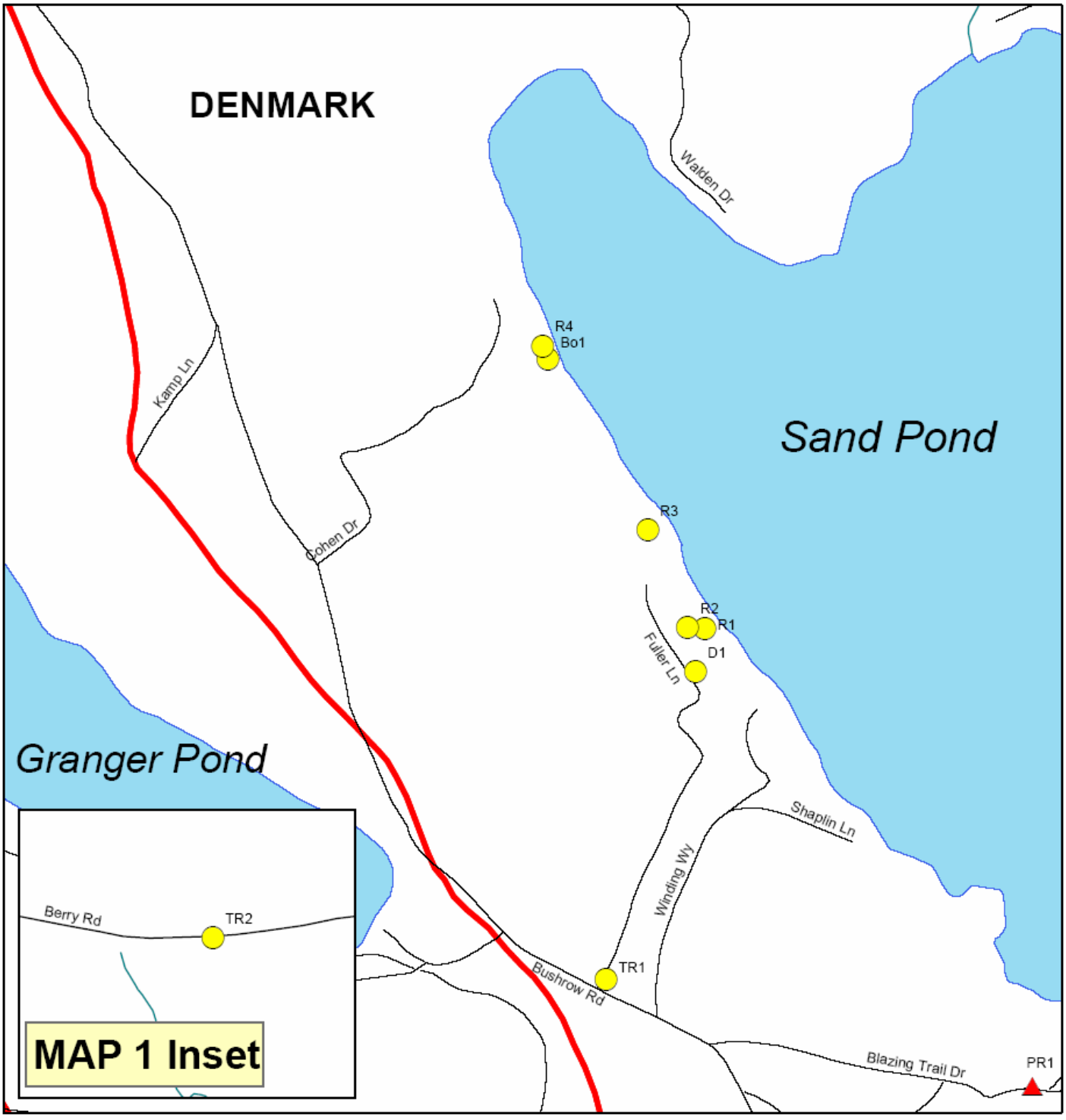
- high
- medium
- low

- Watershed
- Streams
- Roads
- Towns
- Lake

0 0.25 0.5 0.75 1 Miles

N W E S

MAP 1 - Erosion Sites



Legend

Impact to Lake

- High
- Medium
- Low

Site Land Use

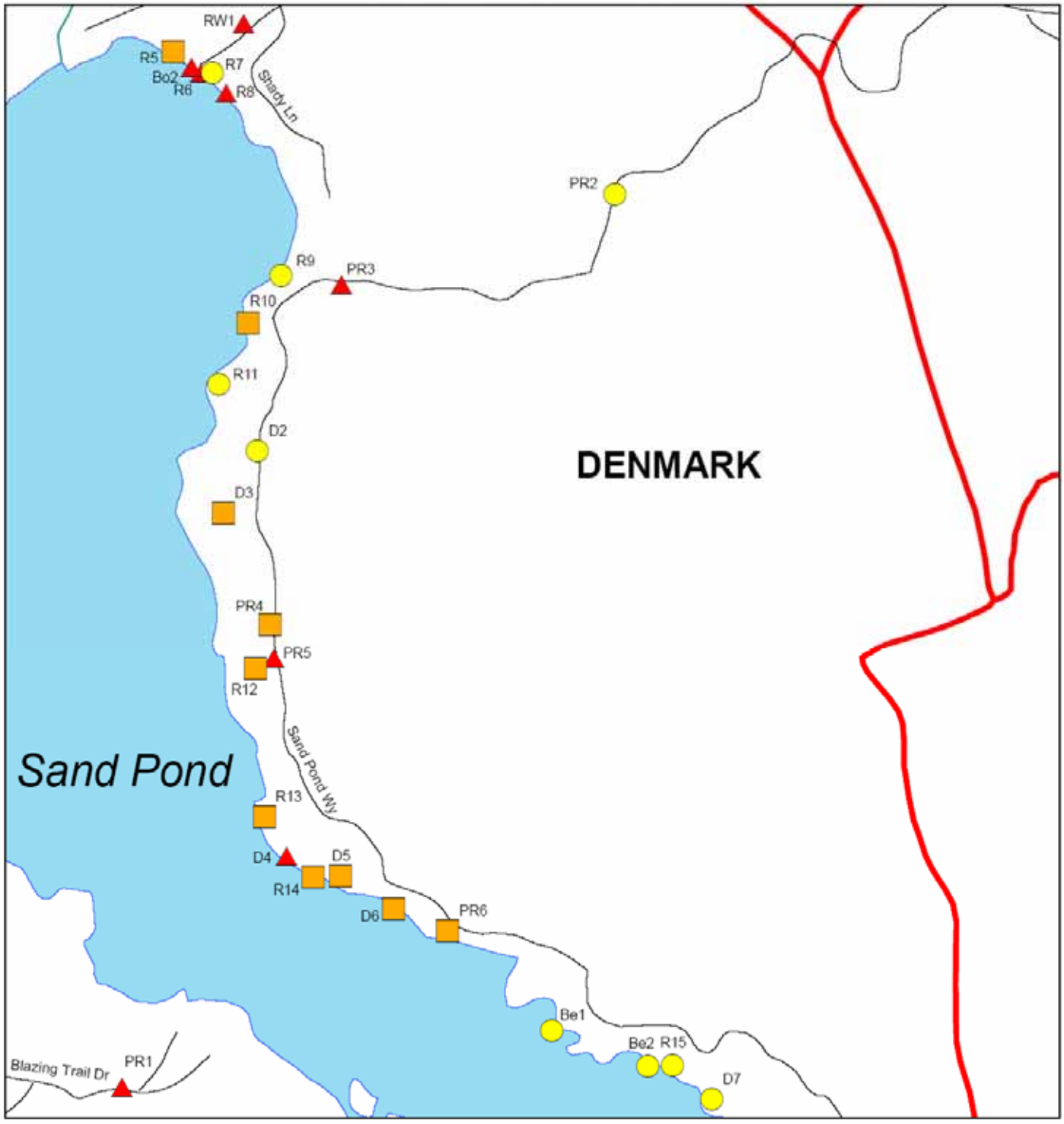
TR	Town Road
PR	Private Road
D	Driveway
R	Residential
Be	Beach
Bo	Boat Access
CS	Construction Site
RW	Right of Way
T	Trail

- Watershed
- Streams
- Roads
- Towns
- Lake

0 400 800 1,200 1,600 Feet

N W E S

MAP 2 - Erosion Sites



Legend

Impact to Lake

- High
- Medium
- Low

Site Land Use

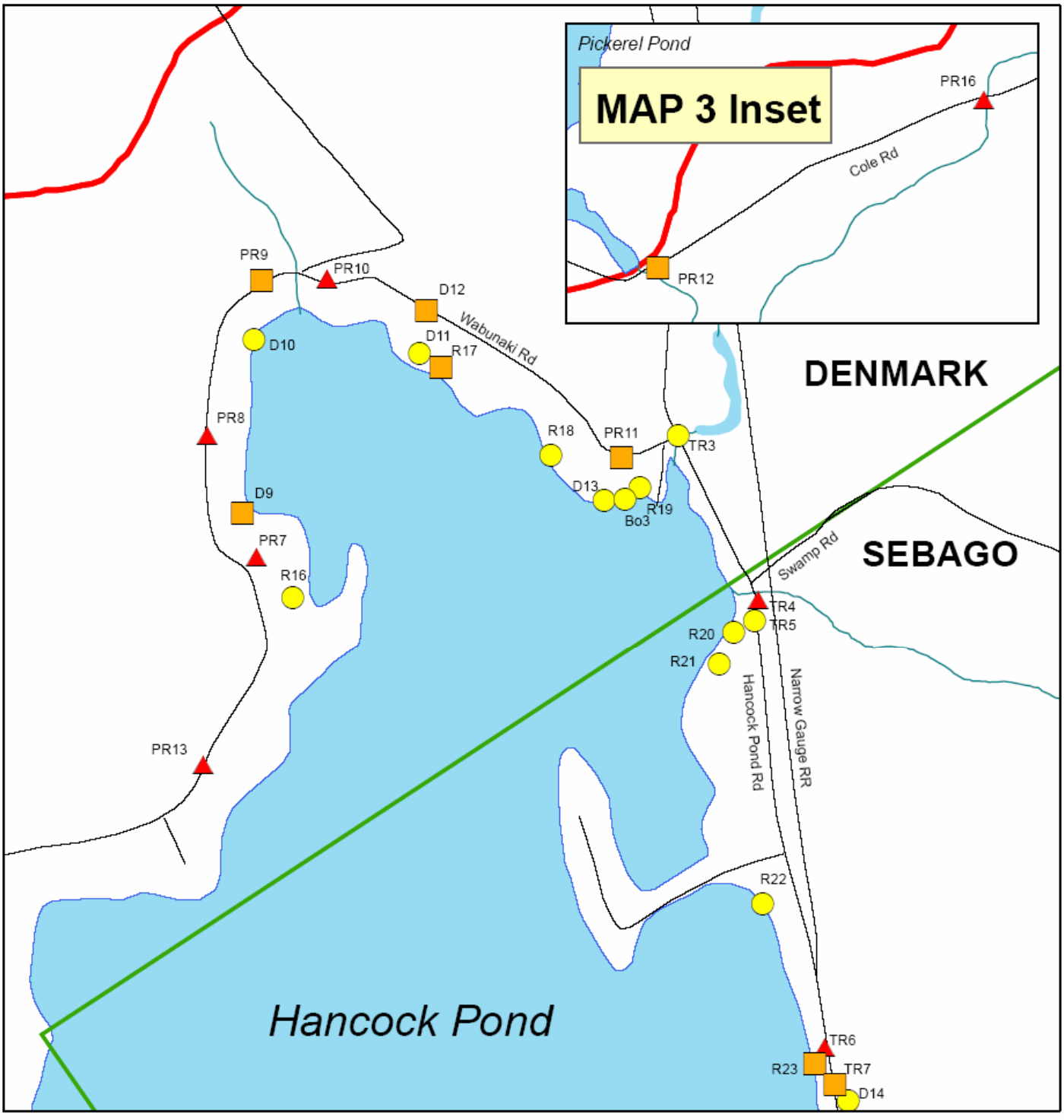
TR	Town Road
PR	Private Road
D	Driveway
R	Residential
Be	Beach
Bo	Boat Access
CS	Construction Site
RW	Right of Way
T	Trail

- Watershed
- Streams
- Roads
- Towns
- Lake

0 400 800 1,200 1,600 Feet

N W E S

MAP 3 - Erosion Sites



Legend

Impact to Lake

- High
- Medium
- Low

Site Land Use

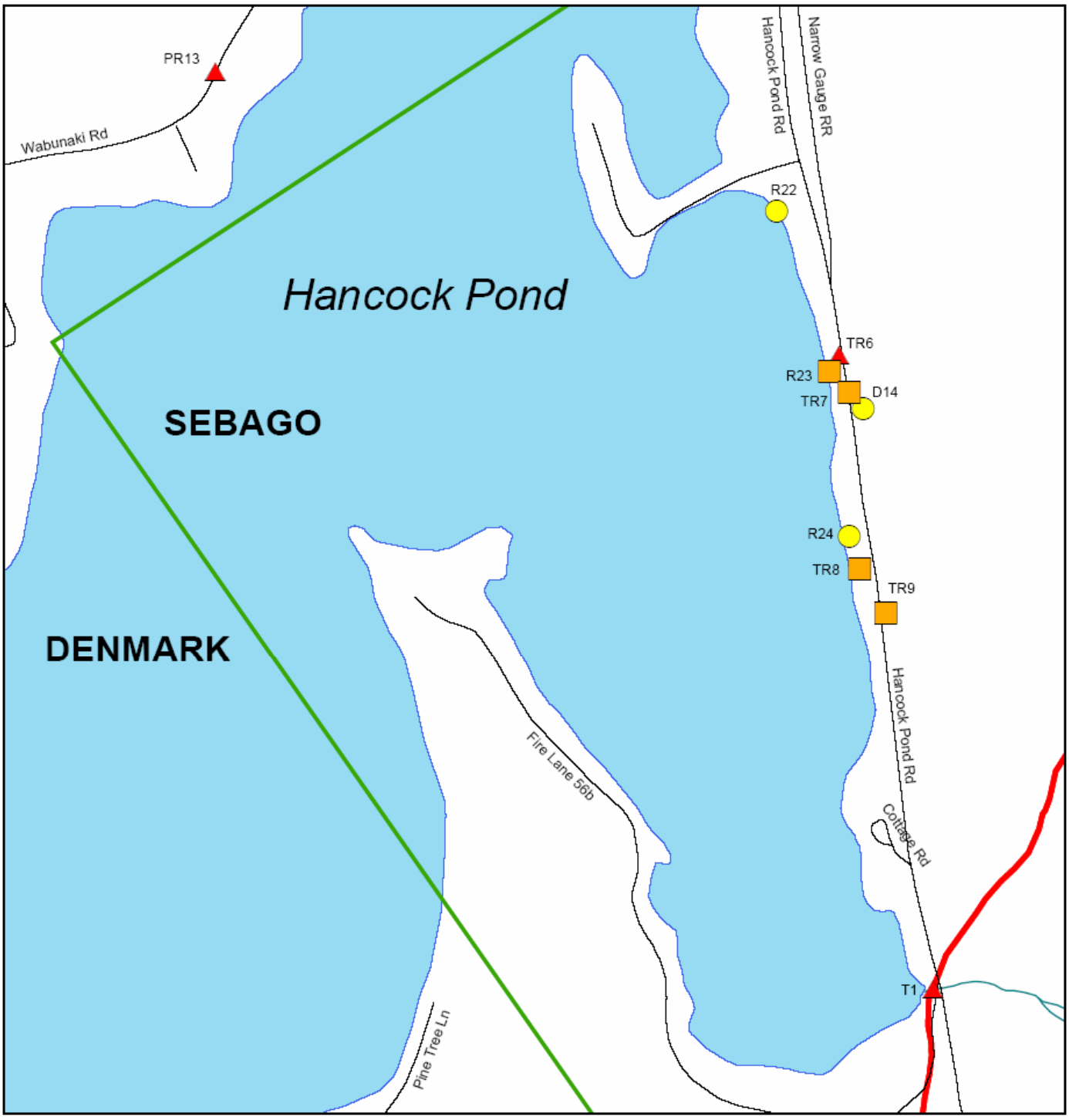
TR	Town Road
PR	Private Road
D	Driveway
R	Residential
Be	Beach
Bo	Boat Access
CS	Construction Site
RW	Right of Way
T	Trail

- Watershed
- Streams
- Roads
- Towns
- Lake

0 400 800 1,200 1,600 Feet

N W E S

MAP 4 - Erosion Sites



Legend

Impact to Lake

- High
- Medium
- Low

Site Land Use

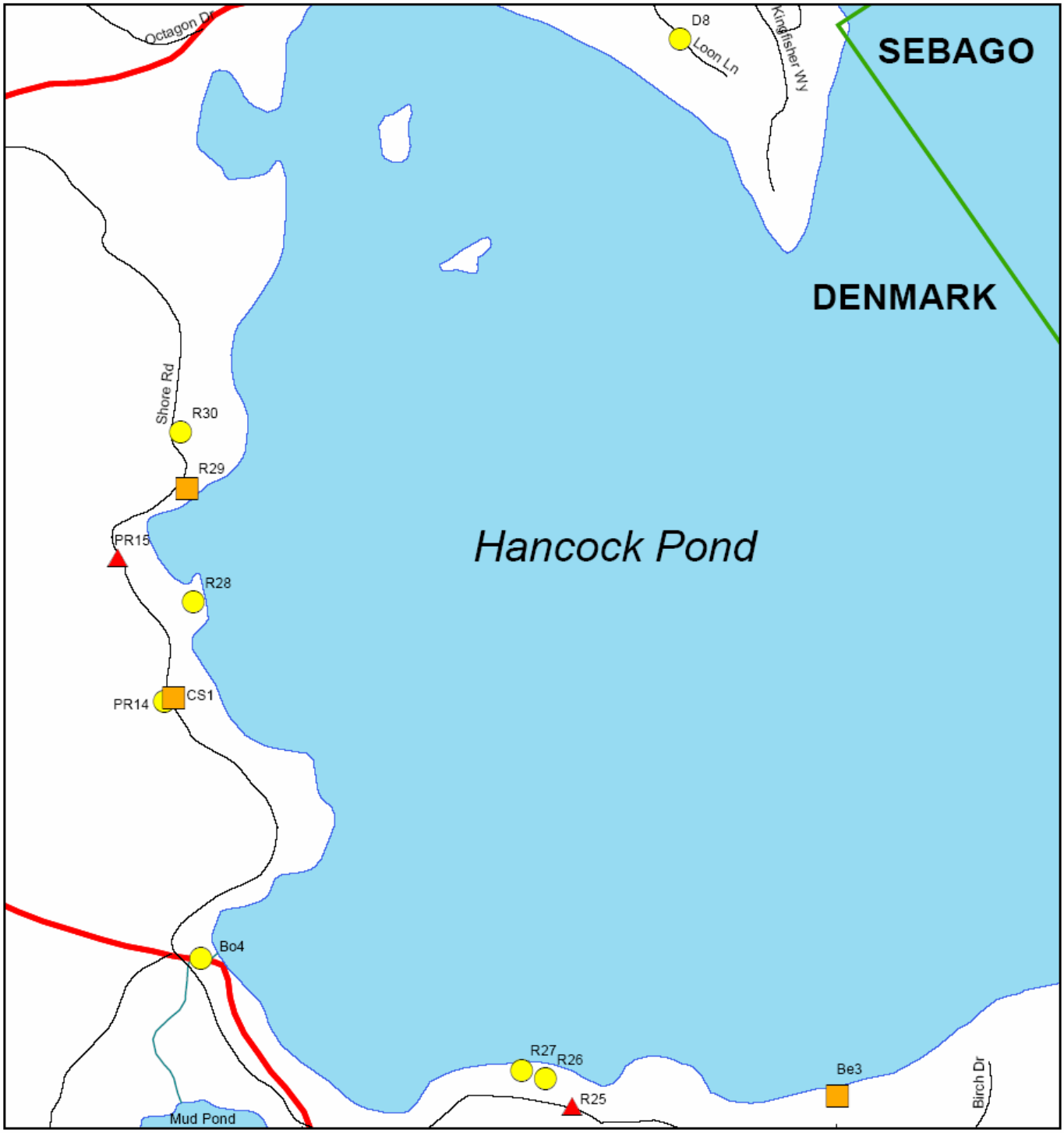
TR	Town Road
PR	Private Road
D	Driveway
R	Residential
Be	Beach
Bo	Boat Access
CS	Construction Site
RW	Right of Way
T	Trail

- Watershed
- Streams
- Roads
- Towns
- Lake

0 400 800 1,200 1,600 Feet

N W E S

MAP 5 - Erosion Sites



Legend

Impact to Lake

- High
- Medium
- Low

Site Land Use

TR	Town Road
PR	Private Road
D	Driveway
R	Residential
Be	Beach
Bo	Boat Access
CS	Construction Site
RW	Right of Way
T	Trail

- Watershed
- Streams
- Roads
- Towns
- Lake

0 400 800 1,200 1,600 Feet

N W E S

Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
1	Bo1	28	16 & 17	Boat Access	Slight surface erosion, direct flow to lake	Install rubber razorblade	low	low	low
1	D1	28	14	Driveway	Slight surface erosion, bare soil, direct flow to lake	Install runoff diverters, add erosion control mix	low	low	low
1	R1	28	13	Residential	Moderate surface erosion, bare soil, roof runoff, direct flow of sediment to lake	Install runoff diverter, plant rain garden, install dripline trench, plant groundcover	low	medium	low
1	R2	28	12	Residential	Direct flow to lake, slight surface erosion, bare soil, roof runoff	Define footpath, install runoff diverter, use rain barrel to collect roof runoff	low	low	low
1	R3	28	8	Residential	Direct flow to lake, slight surface erosion, bare soil	Define footpath	low	low	low
1	R4	28	18	Residential	Direct flow to lake, bare soil, inadequate shoreline vegetation, unstable shoreline access, underground spring saturating steep slope causing bank to collapse	Plant trees and shrubs	low	low	low
1	TR1	26	47	Town Road	Direct flow to stream, slight road shoulder erosion, winter sand	Install turnouts before culvert, remove winter sand, grade shoulder	low	medium	low
1	TR2	9		Town Road	Unstable culvert inlet/outlet, slight road shoulder erosion, direct flow to stream, bare soil	Armor culvert inlet/outlet	low	low	low
1, 2	PR1	5	12-1	Private Road	Severe road shoulder erosion, direct flow to lake	Establish ditch, install sediment pool, crown road, install waterbars	high	high	high
2	Be1	26	10	Beach Access	Unstable beach access	Mulch or terrace	low	low	low
2	Be2	26	9	Beach Access	Unstable beach access	Mulch, no raking, enhance path with plantings, add edging to contain sand on path	low	low	low

*Although every effort was made to ensure their accuracy, Tax map & Lot numbers reflected here may not be the actual location of the problem cited.

Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
2	Bo2			Boat Access	Severe surface erosion, direct flow to lake, shoreline erosion, unstable shoreline access	Add new surface material, reshape, install concrete lock blocks	high	high	high
2	Be1	26	10	Beach Access	Unstable beach access	Mulch or terrace	low	low	low
2	D2	26	30	Driveway	Slight driveway erosion, direct flow to lake	Install rubber razorblades	low	low	low
2	D3	26	27	Driveway	Moderate ditch erosion	Reshape ditch and armor with stone, install check dams, install sediment pools	medium	low	low
2	D4	26	22	Driveway	Moderate surface erosion, direct flow to lake	Install waterbars, mulch, vegetate, add new gravel	high	medium	medium
2	D5	26	20	Driveway	Direct flow to lake, Moderate surface erosion, lack of shoreline vegetation, shoreline erosion	Install runoff diverter, mulch, establish vegetation, add crushed stone to parking area	medium	medium	medium
2	D6	26	18	Driveway	Direct flow to lake, Moderate surface erosion	Install runoff waterbar, mulch, install dripline trench at roofline	medium	medium	medium
2	D7	24	55	Driveway	Moderate surface erosion, direct flow to lake	Install runoff diverter, mulch, crushed stone in driveway ruts	low	low	low
2	PR2	6		Private Road	Direct flow to stream, bank failure, roadside plow berm	Stabilize/reshape failing bank, remove plow berm	low	low	medium
2	PR3			Private Road	Unstable culvert inlet/outlet, severe ditch erosion, moderate road shoulder erosion, roadside plow berm, delta in stream, direct flow to lake and stream	Armor culvert inlet/outlet, clean out culvert, armor ditch with stone, reshape ditch, remove plow berm, crown road, install detention basin, erosion control mulch, reshape banks	high	medium	high

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Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
2	PR4	26	25-2	Private Road	Clogged culverts, severe ditch erosion, moderate road shoulder erosion, roadside plow berm, direct flow to stream	Armor culvert inlet/outlet, armor ditch with stone, reshape ditch, remove plow berms, crown road	medium	medium	medium
2	PR5	26	25-3	Private Road	Undersized, clogged and broken culvert	Armor culvert inlet/outlet, replace and enlarge culvert, lengthen culvert	high	medium	medium
2	PR6	26	12	Private Road	Moderate ditch erosion, moderate road shoulder erosion	Vegetate ditch, reshape ditch, install plunge pool, stabilize culvert outlet	medium	low	low
2	R5	28	24	Residential	Moderate surface erosion, bare soil, roof runoff, inadequate shoreline vegetation, direct flow of sediment to lake	Install runoff diverter, rain barrel to collect roof runoff	medium	low	low
2	R6	28	25	Residential	Severe surface erosion, bare soil, shoreline erosion , direct flow to lake	Define footpath, install infiltration steps, stop raking, mulch	high	medium	low
2	R7	28	26	Residential	Direct flow to ditch, roof runoff	Define footpath, plant rain garden or use rain barrel	low	medium	low
2	R8	28	27	Residential	Moderate surface erosion, bare soil, roof runoff, inadequate shoreline vegetation, direct flow of sediment to lake	Mulch, plant grass between house and store patio, rain barrel to collect roof runoff, establish buffer	high	medium	medium
2	R9	26	35	Residential	Direct flow to lake, slight surface erosion, bare soil, lack of shoreline vegetation, unstable shoreline access	Install runoff diverter, limit foot traffic, mulch/erosion control mix	low	low	low
2	R10	26	30	Residential	Direct flow to lake, bare soil, uncovered pile of sand, inadequate shoreline vegetation, unstable shoreline access	Establish buffer, mulch, cover/ remove sand pile	medium	low	low

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Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
2	R11	26	31	Residential	Direct flow to lake, moderate surface erosion	Vegetate, rock-line gully	low	low	low
2	R12	26	25-3	Residential	Severe surface erosion, Direct flow to lake	Install infiltration trench, mulch area	medium	low	low
2	R13	26	23	Residential	Unstable beach access, direct flow to lake	Define footpath, install runoff diverter, mulch, install roof dripline trench, establish buffer at base of driveway	medium	medium	medium
2	R14	26	20	Residential	Moderate surface erosion, bare soil, lack of shoreline vegetation, direct flow to lake	Establish native plants along shoreline	medium	medium	medium
2	R15	24	57	Residential	Moderate surface erosion, roof runoff, bare soil, unstable path, direct flow to stream	Define footpath, retrofit steps for infiltration, redirect gutter downspout to vegetated area or install drywell	low	low	low
2	RW1			Right Of Way	Severe surface erosion, direct flow to lake	Monoslope, install waterbar	high	medium	high
2, 5	D8	5	12-2A	Driveway	Direct flow to lake, slight ditch erosion,	Secure loose ground, vegetate shoulder, install catch basin	low	low	low
3	Bo3	25	3	Boat Access	Moderate road shoulder erosion, bare soil, shoreline erosion, lack of shoreline vegetation, direct flow to lake	Riprap side of boat launch	low	low	low
3	D9	25	30	Driveway	Slight driveway erosion, direct flow to lake	Install runoff diverter	medium	low	low
3	D10	25	23	Driveway	Slight surface erosion, direct flow to lake	Install runoff diverter	low	low	low
3	D11	25	14	Driveway	Slight surface erosion, direct flow to lake	Crown driveway, add new surface material, install waterbar	low	low	low
3	D12	25	15	Driveway	Moderate surface erosion, direct flow to lake	Install runoff diverters	medium	low	low

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Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
3	D13	25	5	Driveway	Slight surface erosion, direct flow to lake	Install rubber razor, enhance with plantings below waterbar, install timber steps across path leading to driveway	low	low	low
3	PR10	25	18	Private Road	Moderate ditch erosion, moderate road shoulder erosion, moderate surface erosion, direct flow to vernal pool then lake	Install ditch on lake side, reshape ditch on non-lake side, vegetate ditch, add new gravel	high	medium	medium
3	PR7	25	33	Private Road	Moderate ditch erosion, slight road shoulder erosion, direct flow to stream	Install detention basin	high	medium	medium
3	PR8	25	27	Private Road	Unstable culvert inlet/outlet, severe ditch erosion, severe surface erosion, bare soil, direct flow to stream	Armor culvert inlet/outlet, install plunge pool, vegetate ditch, install turnouts	high	medium	medium
3	PR9	25	21	Private Road	Moderate ditch erosion, slight road shoulder erosion, direct flow to lake	Reshape upper portion of ditch, vegetate ditch, install detention basin	medium	medium	medium
3	PR11	25	4	Private Road	Moderate road shoulder erosion, bare soil, winter sand, direct flow to lake	Create ditch, vegetate, armor ditch with stone, install detention basins	medium	medium	medium
3	PR12			Private Road	Moderate to severe ditch erosion, bare soil piled at top of road, moderate surface erosion, direct flow to stream	Reshape ditch & armor with stone, install check dams, install runoff diverter, put erosion control berms around sediment piles, maintain/replace existing silt fence/hay bales	medium	medium	medium
3	R16	25	34	Residential	Bare soil, roof runoff, direct flow to lake	Define footpath, install dripline trench along garage, mulch, no raking, plant vegetation	low	low	low
3	R17	25		Residential	Moderate surface erosion, bare soil, roof runoff, inadequate shoreline vegetation, direct flow of sediment to lake	Establish buffer, define footpath, install infiltration trench	medium	medium	medium

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Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
3	R18	25	6	Residential	Bare soil, uncovered pile, inadequate shoreline vegetation, shoreline erosion, direct flow to lake	Establish buffer, no raking, cover or remove sand pile, stabilize banking with vegetation or rip rap	low	low	low
3	R19	25	4	Residential	Moderate surface erosion, unstable lake access, direct flow to lake	Install waterbar at big pine near base of path, mulch area, establish grass	low	low	low
3	R20	43	15	Residential	Slight surface erosion, bare soil, direct flow to lake	Define footpath, plant groundcovers, stop raking, mulch	low	low	low
3	R21	43	15A	Residential	Slight surface erosion, bare soil, direct flow to lake	Plant groundcovers, stop raking	low	low	low
3	TR3			Town Road	Slight road shoulder erosion, direct flow to stream	Reshape shoulder to allow for sheet flow, vegetate shoulder	low	low	low
3	TR4	43	between 17 & 17A	Town Road	Unstable culvert inlet/outlet, severe road shoulder erosion, direct flow to stream	Armor culvert inlet/outlet, vegetate ditch, remove winter sand	high	medium	low
3	TR5			Town Road	Unstable culvert inlet/outlet	Armor culvert inlet/outlet	low	low	low
3,4	PR13	25	48	Private Road	Slight ditch erosion, direct flow to stream	Install turnouts, install sediment pools	high	medium	medium
3, 4	D14	42	16	Driveway	Needs culvert under driveway, direct flow to ditch	Install culvert under driveway, install runoff diverters on driveway	low	medium	medium
3, 4	R22	43	5	Residential	Direct flow to lake, slight surface erosion, bare soil	Vegetate bare area under dock	low	low	low
3, 4	R23	42	12	Residential	Undercut shoreline, sediment in lake, direct flow to lake	Stabilize shoreline with vegetation, technical visit required for site	medium	medium	medium
3, 4	TR6	42	12	Town Road	Unstable culvert inlet/outlet, severe road shoulder erosion, direct flow to lake	Lengthen culvert, clean out ditch, vegetate ditch	high	medium	medium

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Appendix B: Sites Documented through the Hancock & Sand Ponds Watershed Survey - 2005

Map #	Map ID	Tax Map*	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
3, 4	TR7			Town Road	Unstable culvert inlet/outlet, clogged culvert, slight ditch erosion, bank failure, moderate road shoulder erosion, winter sand, direct flow to lake	Armor culvert inlet/outlet, remove clog, install plunge pool, reshape ditch, remove winter sand	medium	medium	medium
4	R24	42	18	Residential	Direct flow to lake, moderate surface erosion, bare soil	Establish vegetation, no raking	low	low	low
4	T1	16	3A	Trail	Severe surface erosion, bare soil, direct flow to lake	Remove berms, add new surface material, reshape/grade trail, mulch surface, block ATV entrance to right of gate	high	high	high
4	TR8			Town Road	Unstable culvert inlet/outlet, moderate surface erosion, direct flow to lake	Armor culvert inlet/outlet, install plunge pool, reshape and vegetate ditch, vegetate shoulder	medium	medium	medium
4	TR9	42	18	Town Road	Direct flow to lake, unstable culvert inlet/outlet, severe ditch erosion	Lengthen culvert, install plunge pool, lengthen culvert, reshape ditch, vegetate ditch	medium	medium	medium
5	Be3			Beach Access	Severe surface erosion, inadequate shoreline vegetation, shoreline erosion, unstable beach access	Close vehicle access to lake, define path to lake with mulch, install runoff diverters, seed/ mulch area	medium	low	low
5	Bo4			Boat Access	Moderate surface erosion, direct flow to lake	Add vegetation, install runoff diverters	low	low	low
5	CS1	24	31	Construction Site	Moderate surface erosion, bare soil, direct flow to lake	Mulch bare soil, install silt fence/ erosion control mulch berms	medium	low	low
5	PR14	24	31	Private Road	Unstable culvert inlet/outlet, direct flow to stream	Lengthen culvert, armor inlet and outlet	low	medium	medium
5	PR15	24	near 27	Private Road	Unstable culvert inlet, severe road shoulder erosion, roadside plow berm, moderate surface erosion, direct flow to stream	Armor culvert inlet, reshape ditch, install gradual swale, install turnouts, remove plow berm, add new surface material, crown	high	medium	medium

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Map #	Map ID	Tax Map	Tax Lot	Land Use	Type of Problem	Recommendations	Impact of Problems	Cost - Materials	Cost - Labor
5	R25	23	28	Residential	Severe surface erosion, bare soil, direct flow to lake	Install infiltration trench, plant rain garden, engineer needs to look at site	high	medium	medium
5	R26	23	26	Residential	Moderate surface erosion	Install infiltration trench and runoff diverter	low	low	low
5	R27	23	25	Residential	Moderate surface erosion, direct flow to lake, bare soil	Install runoff diverter, mulch, install infiltration steps, establish vegetation	low	low	low
5	R28	24	28	Residential	Slight surface erosion, inadequate shoreline vegetation, shoreline erosion, direct flow to lake	Enhance shoreline vegetation with shrubs, mulch, stop raking	low	low	low
5	R29	24	24	Residential	Moderate surface erosion, direct flow to lake, roof runoff, inadequate shoreline vegetation	Define footpath, install infiltration steps	medium	low	low
5	R30	24	22	Residential	Moderate surface erosion, direct flow to lake	Install runoff diverter to rain garden	low	low	low

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Where Do I Get More Information?

Contacts

Hancock and Sand Ponds Association (HSPA)
Dick Johnson, 12 Wynmoor Drive, Scarborough, ME 04074
(207) 883-6574
Provides outreach and advocacy within the watershed, provides educational materials, directs individuals to appropriate agencies, conducts water quality testing in conjunction with LEA.

Cumberland County Soil and Water Conservation District (CCSWCD)
35 Main Street, Windham, ME 04062
(207) 892-4700 Website: www.cumberlandswcd.org
Offers assistance with watershed planning and survey work, environmental education, engineering support, seminars and training sessions, and education on the use of conservation practices.

Lakes Environmental Association (LEA)
230 Main Street, Bridgton, ME 04009
(207) 647-8580 Website: www.mainelakes.org
Conducts water quality testing; offers assistance with lake-related issues, environmental education, seminars and training sessions.

Maine Department of Environmental Protection (MDEP)
312 Canco Road, Portland, ME 04103
Toll Free (888) 769-1036 or (207) 822-6300 Website: www.MaineDEP.com
Provides permit applications and assistance, numerous reference materials, technical assistance, environmental education, project funding opportunities, and stewardship activities for lakes.

Maine Congress of Lake Associations (COLA)
1-877-254-2511 E-mail: info@mainecola.org Website: www.mainecola.org
The only statewide network of individuals and lake associations devoted solely to the protection and preservation of our lakes.

Maine Forest Service (MFS)
1-800-367-0223 Website: www.maine.gov/doc/mfs
Provides information about the forest resources and promotes activities that encourage the sound long term management of forests.

Publications

- *A Homeowner's Guide to Environmental Laws Affecting Shorefront Property in Maine's Organized Towns.* Maine DEP. April, 2003. DEPLW0320-D2003.
- *Camp Road Maintenance Manual: A Guide for Landowners.* Kennebec County SWCD and Maine DEP. June, 2000.
- *A Guide to Forming Road Associations.* York County SWCD et al. July, 2004.
- *Maine Shoreland Zoning—A Handbook for Shoreland Owners.* Maine DEP. 1999. DEPLW 1999-2.
- *Gardening to Conserve Maine's Native Landscape: Plants to Use and to Avoid.* University of Maine Cooperative Extension. Bulletin #2500. June, 1999. Folded leaflet.
- *Best Management Practices for Forestry: Protecting Maine's Water Quality*. Maine Forest Service. 2004.
- *Maine Erosion and Sediment Control BMPS.* Maine DEP. March, 2003. DEPLW0588.

Remember, the long term health of the watershed depends on <u>you</u>!