SUMMIT
ENVIRONMENTAL CONSULTANTS, INC.

POCASSET LAKE AND PICKEREL POND WATERSHED SURVEY

Prepared for:

POCASSET LAKE ASSOCIATION
Wayne, Maine 04282

Prepared by

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.
640 Main Street
Lewiston, Maine 04240

March 4, 2003
Project 3520

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ACKNOWLEDGEMENTS

The following people were instrumental in carrying out the tasks necessary to complete the Pocasset Lake and Pickerel Pond Watershed Survey project and deserve special recognition:

Dennis Breed, President of the Pocasset Lake Association (PLA)

His efforts in recruiting volunteers and arranging meetings resulted in the successful completion of the Watershed Survey.

Watershed Volunteer Surveyors

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Steering Committee

The following individuals donated their time to provide input and support for the survey:

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Summit Environmental Consultants, Inc. and Kennebec County Soil and Water Conservation District (maps)

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INTRODUCTION

This watershed survey includes both Pocasset Lake and Pickerel Pond. Pocasset Lake and Pickerel Pond are located in the Town of Wayne, Maine. Pocasset Lake's direct watershed encompasses approximately 4.19 sq. miles. Its shoreline is developed with seasonal and year-round homes. A public boat ramp located on the northern tip of the lake provides public access. With continued use of the lake by year-round and seasonal residents, the potential exists for increased stress to water quality. Additionally, further development within the watershed is likely to occur as population centers grow (Augusta, Lewiston-Auburn, and Portland) and recreational activities increase. Pocasset Lake summer activities include increased recreational use, shoreline activity, and ongoing development within the watershed.

Pocasset Lake is located in the Lower Androscoggin River Watershed, which has been designated by the Maine Department of Environmental Protection (DEP) as a Category #1 Basin. Category #1 Basins include waters typically not meeting clean water and other natural resource goals or waters needing preventative action to sustain water quality. MEDEP has listed Pocasset Lake on their list of "Nonpoint Source Priority Watersheds." MEDEP's characterization is based on the threat of nonpoint source pollution from land use activities surrounding Pocasset Lake.

Pocasset Lake and Pickerel Pond is part of a chain of lakes that ultimately discharge to the Androscoggin River. Pocasset Lake flushes 8.46 times yearly (approximately 2.35 billion gallons per flush) into Androscoggin Lake, the last lake in the chain. Water quality data have been collected from the lake for a number of years. Pocasset Lake is a relatively shallow lake exhibiting slightly better than average water quality. Transparency data (Secchi Disk) indicate readings averaging 5.6 meters. Dissolved oxygen profiles show no DO depletion in deeper areas of the lake. Total phosphorous measurements have an average value of 10 parts per billion (ppb) with a range of 7 – 12 ppb since 1976. The potential for total phosphorous to leave the bottom sediment is low. The potential for nuisance algal bloom on Pocasset Lake is currently low to moderate.

Habitat surrounding the lake is home to loons, ducks, herons, osprey, eagles and a variety of other wildlife.

OBJECTIVES OF THE WATERSHED SURVEY

The primary purposes of the Pocasset Lake and Pickerel Pond watershed surveys were to:

1. Educate the general public about non-point source pollution and its effect on Pocasset Lake and Pickerel Pond water quality.
2. Identify and prioritize existing sources of erosion and sediment transport within the watershed.
3. Prepare a series of recommendations for areas identified as posing threats to water quality.
4. Use the information gathered as one component of a long-term lake protection strategy.

The survey is the initial step in developing a watershed Management Plan and subsequent Implementation Projects in the future. Of equal importance, the watershed survey helped raise awareness in the Town of Wayne of the connection between land use and water quality.

HOW THE WATERSHED SURVEYS WERE CONDUCTED

The Pocasset Lake Association (PLA) acted as project sponsor and worked in conjunction with Summit Environmental Consultants, Inc. (Summit) to implement the Survey. The PLA used its membership base as a means of recruiting volunteers to assist in the completion of the Survey.

On May 18, 2002, a Watershed Survey Steering Committee was formed consisting of members of the PLA, staff from the Maine DEP, and a representative from Summit. This committee guided the project and provided a forum for public input, education and involvement. Specific tasks included review of project objectives, publicizing meetings and the survey in local newspapers, preparing an informational flyer, recruitment of volunteers, scheduling of training, and review and presentation of the survey results and final report.

On May 18, 2002, a team of 13 volunteers participated in a training session. The training included a classroom session to describe Non-Point Source Pollution (NPS), describe the Survey process, identify Survey geographic sectors, familiarize volunteers with base maps, provide examples of erosion concerns, describe accurate record-keeping, interact with landowners, and provide information on how to locate and document the observed conditions.

The volunteers conducted their survey during the late spring of 2002. During this period, significant run-off occurs and the Lake experiences its highest use and highest levels. In mid-summer, a technical team arranged visits to the sites identified by volunteers to verify conditions and establish recommendations for particular sites.

Preliminary survey results were presented to the pubic during the PLA Annual Meeting held on August 15, 2002.

Ranking of Sites

For each verified site, a best management practice (BMP) or series of BMPs was recommended. In addition, where possible, a generalized repair or mitigation approach was developed for lower priority, yet widespread problem sites. This approach may allow a large number of low priority sites to be easily addressed rather than left unattended due to their relatively low priority ranking.

The criteria used for ranking sites are as follows:

Priority:

A priority rating of ***high, medium, low or none*** is assigned to each site. The following criteria were used:

1. Size of the area affected by the problem
2. Slope
3. Soil Type
4. Proximity to the lake shore, stream, ditch or other pathway to the lake
5. Natural treatment capacity.
   - ***High*** – Direct flow (sediment transport) to tributary or Lake, usually greater than 100 square feet of disturbance, steep slopes and erodable soils, little or no buffer.
   - ***Medium*** – Sediment transported off-site to buffer or wetland, generally less than 100 square feet of impact, moderate slopes, some buffer.

- ***Low*** – Erosion with limited sediment transport off-site even if the disturbed area is large.
- ***None*** – Currently no sediment transport off-site, or at the time of the technical team follow-up, the site was determined to not have an impact on the Lake.

Technical Level to Install/Perform Repair(s):

- ***High*** – Complex fix, technical assistance and engineering required.
- ***Medium*** – Moderate complexity to fix, technical assistance necessary, need some equipment necessary.
- ***Low*** – Simple technical fix, landowner can usually do work, minimal training needed or contractor can do without engineering/technical assistance.

Cost:

High - > $2,500
Medium - $500 to $2,500
Low - <$500

SUMMARY OF WATERSHED SURVEY FINDINGS

Site Identification

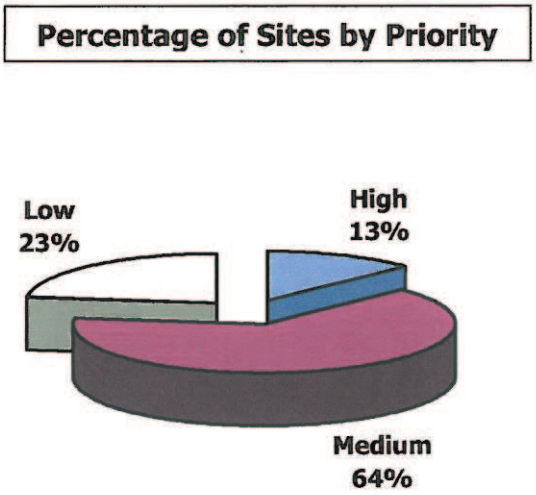
Volunteers identified 53 potential impact sites through the survey process. Of these, 39 were determined by the technical team to have a potential impact on water quality and are documented in this report. The remaining 14 sites either did not have a significant impact on water quality or could not be located and verified by the technical team.

Priority Ranking

Identified sites were assigned a priority rating of low, medium, high or none. The majority of sites (64%) were identified as medium priority. Thirteen percent of the sites in the watershed were rated high and 23% were ranked as low priority because of impact to Pocasset Lake water quality.

The assignment of high, medium, low and none should be interpreted cautiously. Five sites in the watershed were rated "high" priority due to their potential to directly impact Pocasset Lake's and/or Pickerel Pond's water quality. Although high priority sites require action, the cumulative impact to water quality of many medium or low priority sites often outweighs that of a few high priority sites. All of the listed sites in Table 1 should be considered for remediation or stabilization.

The following chart illustrates the percentage of high, medium, low sites that were identified during the survey:



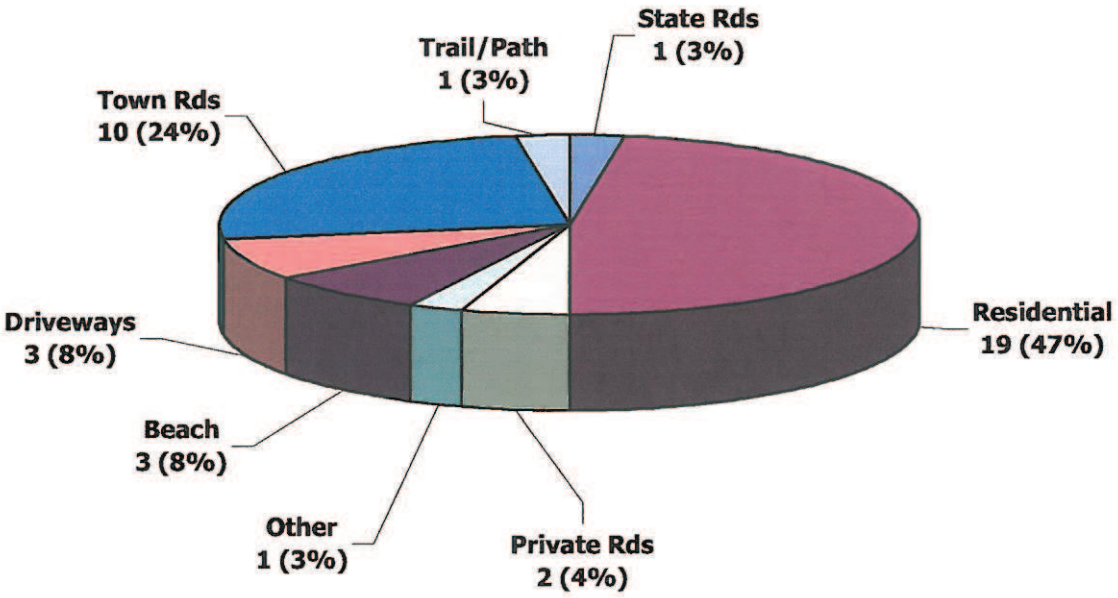
Land Use Breakdown

A total of eight land use types were associated with the identified sites. These included:

B/BA = Beach/Beach Access
D = Driveways
O = Other
P = Private Roads
R= Residential
S = State Roads
T = Town Roads
T/P = Trail/Path

Residential sites account for 47% of the identified erosion sites. State and town roads combined comprise 27% of the sites, driveways account for 8%, and private roads account for 4%. Beach and beach access sites were combined to account for 8% of the identified sites, followed by a beaver site (other) and trial/path combined accounting for 6% of the surveyed sites. The following chart illustrates the land use breakdown.

Percentage of Site by Land Use



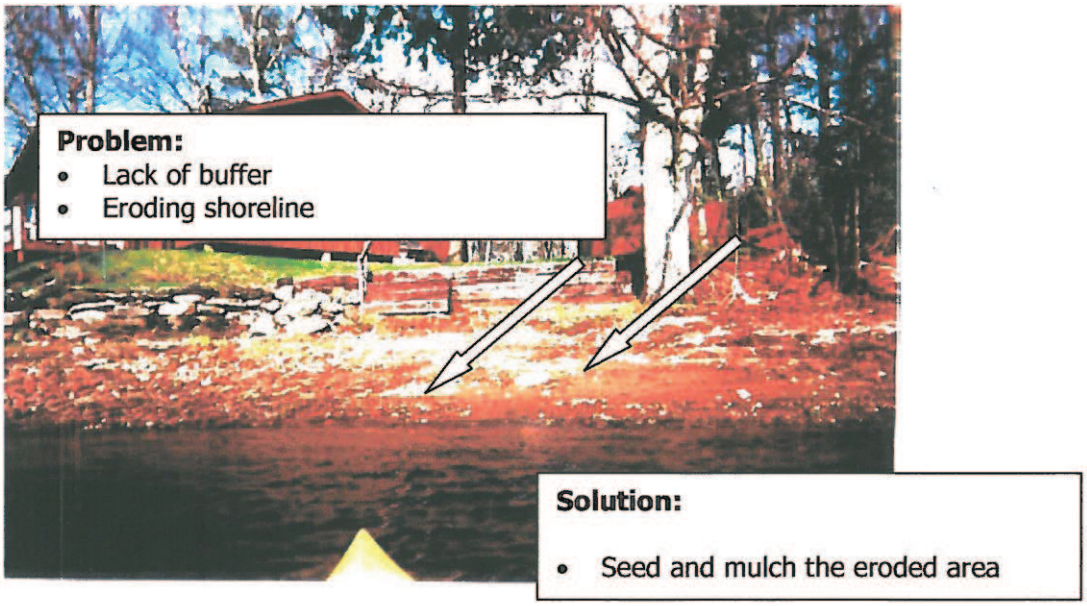
The Pocasset Lake and Pickerel Pond Watershed Map (Figure 1) provides locations for the verified sites. Table 1 contains a summary of the sites and includes the following information: Land Use Type, Type of Problem, Recommendations, Technical Level to Install, Cost, and Priority.

An example of common problems identified and recommended BMPs is provided below for each land use. A picture depicting common problems for each land use type is included. A complete set of photographs taken by the survey teams can be found in the Pocasset Lake and Pickerel Pond Watershed Photograph Archive.

Residential Sites

Nineteen residential sites were identified. Of the 19 sites, 3 were low priority, 15 are medium priority, and one high priority site was identified. Solutions for 13 sites are simple technical fixes (low) with low cost. One site is a simple technical fix with medium cost and 5 sites require technical assistance (medium) with medium cost. One identified site is a high priority but judged to be a simple technical fix with medium cost.

Common Problems Identified:	Recommended Solutions:
• Bare soil; lack of buffer • Sediment transport to the Lake • Eroding shoreline • Bank undercutting • Slight to moderate surface erosion.	• Establish/enhance buffer • Reestablish and enhance vegetation along shoreline • Stabilize shoreline



Residential sites were associated with 47% of the identified sources of runoff to Pocasset Lake and Pickerel Pond. These problems pose a significant threat to lake water quality. Fortunately, most of these sites can be corrected with easy, low cost fixes.

State and Town Road Sites

Ten Town Road sites and one State Road site were identified. Of the 11 sites, 2 are low priority, simple technical fixes and low cost, 7 are medium priority, moderate complexity fix and medium cost, and 2 sites are high priority. Of the two high priority sites, one is a simple technical fix with medium cost and one requires a high level of technical assistance with high cost.

Common Problems Identified:	Recommended Solutions:
• Slight to severe shoulder erosion	• Stabilize with fill, rip rap and vegetate
• Surface erosion; sparse vegetation	• Enhance vegetation along roadway
• Slight ditch erosion	• Stabilize ditch with riprap or vegetate
• Damaged and/or clogged culvert	• Replace and/or clean culvert
• Unstable culvert inlet/outlet	• Rip rap around culvert inlet/outlet
• Poor road shaping	• Reshape road
• Stockpiled soils	• Install silt fence or vegetate berm

Problems:

- Ditch and shoulder erosion.
- Removal of winter sand.
- Unstable culvert.

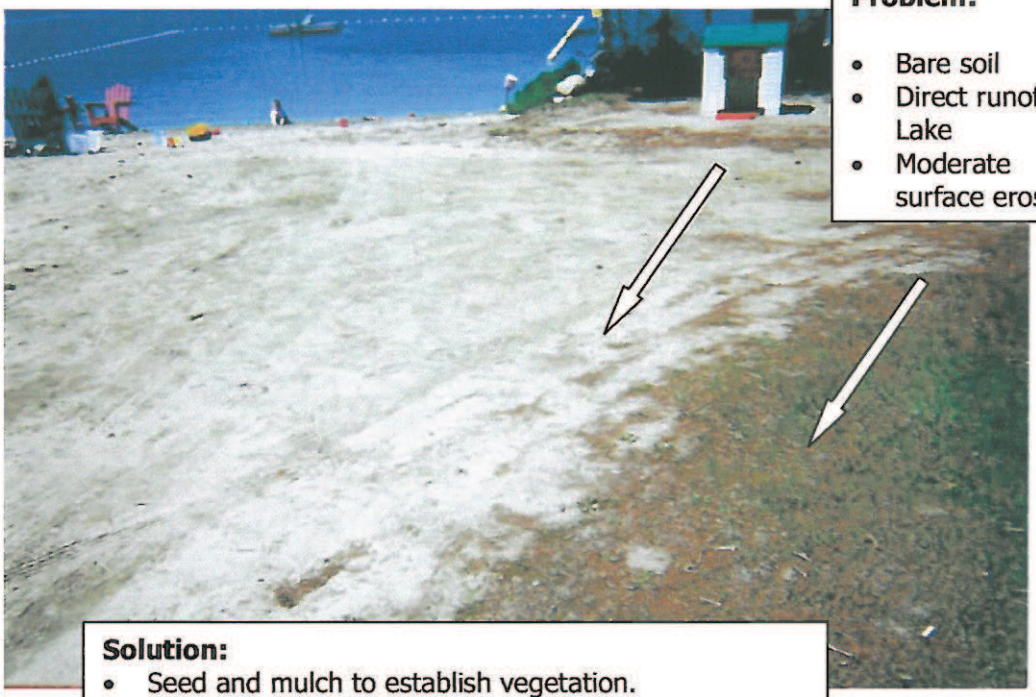
Solution:

- Reshape eroded shoulders and vegetate.
- Stabilize ditches with vegetation, erosion control matting, or stone.
- Stabilize culvert inlet and outlet with riprap.

Beach and Beach Access Sites

Three sites were identified and account for 8% of the identified sites. Of the three sites, 2 are high priority but judged to be a simple technical fix with low cost. One low priority site was identified and requires technical assistance to divert runoff to the Lake.

Common Problems Identified:	Recommended Solutions:
• Shoreline erosion • Bare soil; lack of buffer • Unstable beach access • Direct runoff to Lake	• Install rip rap to stabilize beach • Establish vegetative buffer • Seed and mulch high use areas • Divert direct runoff to vegetated areas • Install waterbar, open-top culvert, rubber razor or other runoff diverter.



Problem:

- Bare soil
- Direct runoff to Lake
- Moderate surface erosion

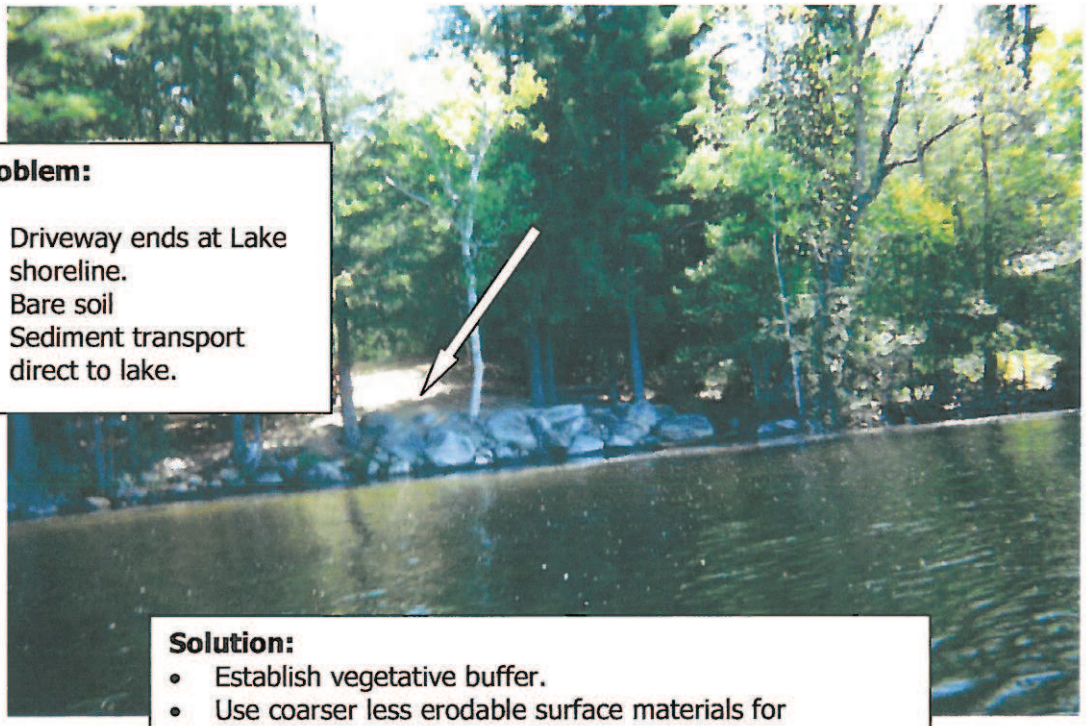
Solution:

- Seed and mulch to establish vegetation.
- Divert direct runoff to vegetated areas.
- Install erosion controls, as needed.

Driveway Sites

Three sites were found and account for 8% of the sites identified. One low priority site was identified and requires technical assistance to fix with medium cost. One medium priority site is a simple technical fix with low cost. One site was identified as a high priority with a simple fix with medium cost.

Common Problems Identified:	Recommended Solutions:
• Direct flow to Lake	• Establish vegetation along driveway • stabilize erosion



Problem:

- Driveway ends at Lake shoreline.
- Bare soil
- Sediment transport direct to lake.

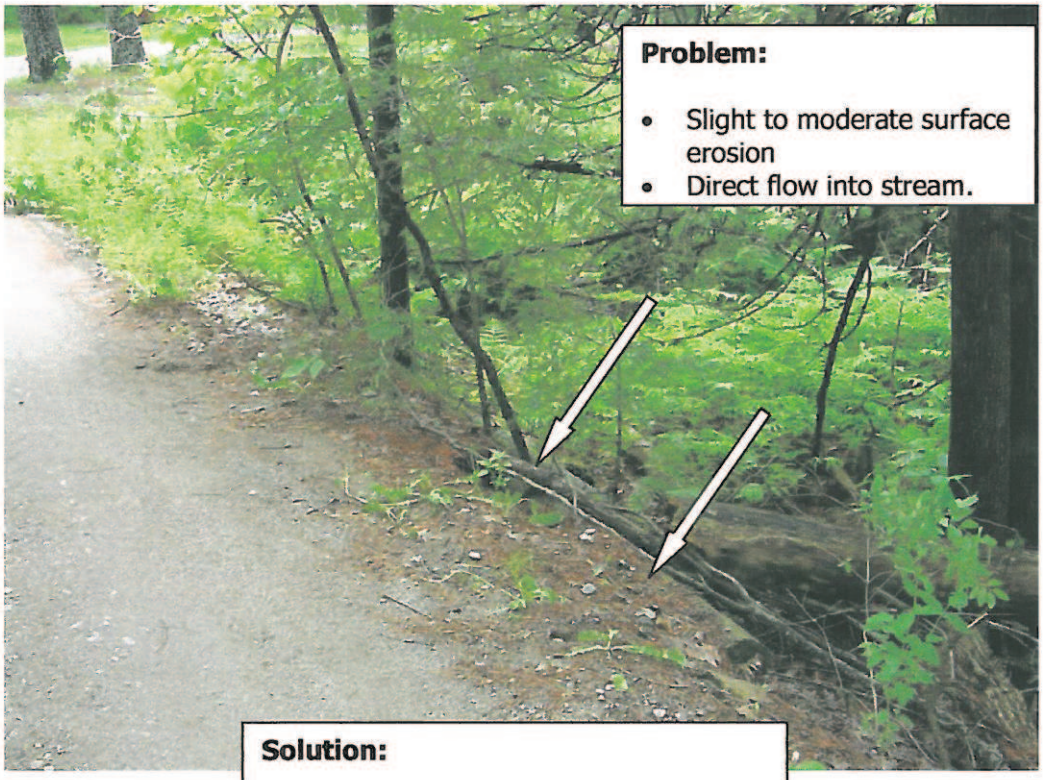
Solution:

- Establish vegetative buffer.
- Use coarser less erodable surface materials for driveway.
- Install turnouts; open top culvert or water bars to direct runoff to vegetated buffers where runoff can be treated.

Private Road Sites

Two sites were identified and account for 4% of the identified sites. One of the sites was identified as low priority, simple technical fix and low cost. The other site is a medium priority site, simple technical fix with low cost.

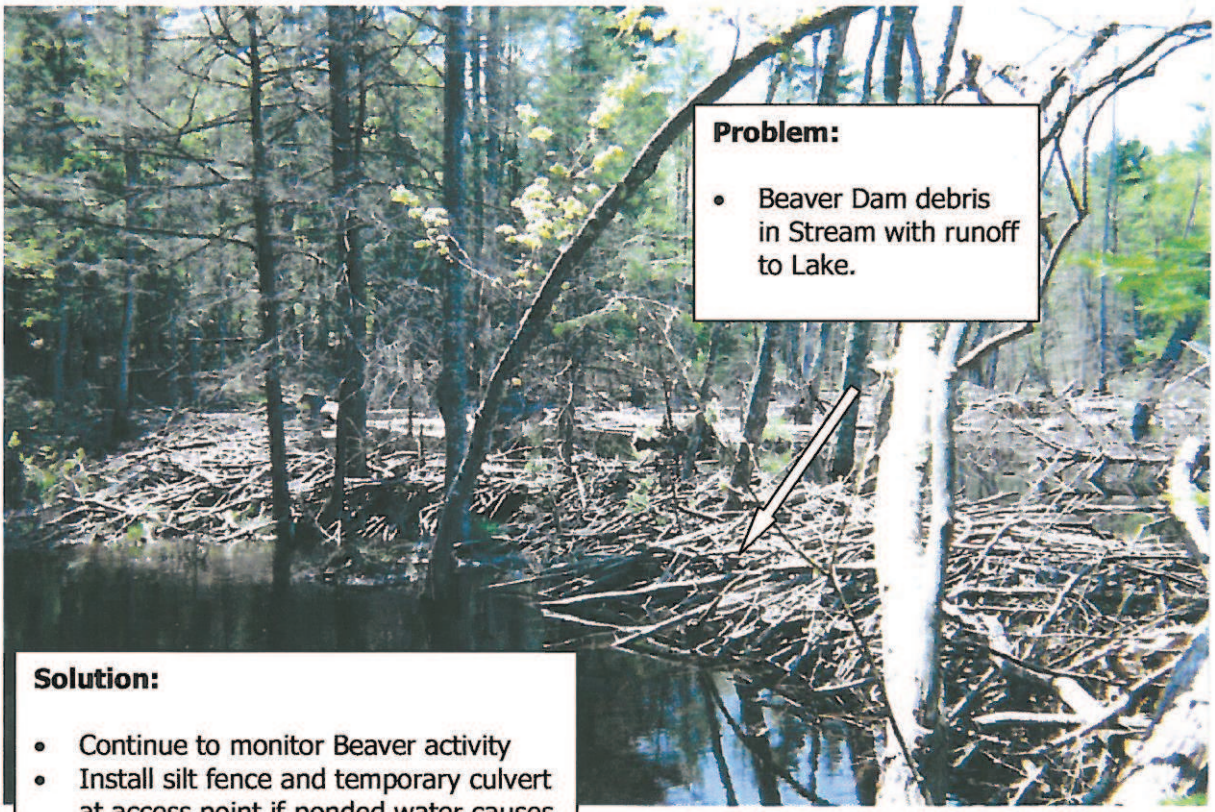
Common Problems Identified:	Recommended Solutions:
• Slight to moderate surface erosion	• Stabilize with fill, rip rap and vegetate
• Bare soil; sparse vegetation	• Enhance vegetation along roadway
• Accumulated sand at road shoulder	• Remove winter sand
• Damaged and/or clogged culvert	• Replace and/or clean culvert
• Unstable culvert inlet/outlet	• Rip rap around culvert inlet/outlet
• Slight ditch erosion	• Stabilize ditch with riprap



Other Sites

One site was found and accounts for 3% of the identified sites. The site was identified as low priority that could be fixed with medium cost and technical expertise.

Problem Identified:	Recommended Solutions:
• Runoff has direct access to Stream and Lake • Slight surface erosion • Debris in contact with water	• Continue to monitor Beaver activity



Trail/Path Sites

One trail/path site was found and accounts for 3% of the identified sites. The site is medium priority, medium technical fix with medium cost.

Problems Identified:	Recommended Solutions:
• Straight path • Surface erosion • Bare soil	• Establish meandering stone/gravel pathway. • Enhance vegetation

Problem:

- Straight path
- Bare areas

Solution:

- Establish meandering stone/gravel pathway
- Vegetate bare areas

GENERAL RECOMMENDATIONS

Solving problems associated with soil erosion and runoff should occur at many levels (individuals, associations, government, school, businesses) and in different time frames (short term, intermediate, and long term) in order to be effective. Everyone including residents, business owners, recreational users, and government officials has a part in maintaining a healthy watershed.

Individuals

- Prevent erosion and control stormwater runoff. Immediately stabilize and mulch any disturbed soils.
- Avoid clearcutting the existing trees and vegetation on your house site. Consult with the Town Code Enforcement Officer before cutting trees.
- Encourage natural vegetation along the lakeshore, streams and ditches. Encourage natural topography and drainage systems. Do not alter the shoreline. Leave existing rocks and vegetation in place along the shoreline.
- If you remove natural vegetation, seed and mulch bare soil with native deep-rooted, woody vegetation and plant shallow-rooted shrubs and grasses along lake shores.
- Do not rebuild beaches.
- Limit the use of pesticides, herbicides and fertilizers on lawns and gardens.
- Avoid the use of household toxins. Use non-phosphorous detergents (list of alternate products is available from the Maine Department of Environmental Protection (DEP)).
- Maintain your septic systems. Remove sludge and scum from the septic tank every 3 to 5 years.
- Do not use garbage disposals; they contribute unnecessary grease and solids to your septic system.
- Do not use septic system additives advertised to eliminate the need to periodically pump out the sludge. If any thing, these products can cause the system to fail prematurely.
- Conserve water. Currently, the average Maine resident uses an estimated 75-100 gallons of water per day. But only about 4 gallons of this is actually needed for survival. Take shorter showers. Don't let the water run when you are brushing your teeth, shaving, washing or rinsing dishes, washing fruit or vegetables, or waiting for water to get cold for a drink.
- Control animal waste.
- Reduce pollution from boating and recreational activities. Minimize wakes close to the shoreline.
- Reduce pollution from motor vehicles. Do not wash cars near the Lake, streams or drainage ditches.
- Get involved with the Pocasset Lake Association and become a steward of Pocasset Lake and Pickerel Pond.

Road Associations

- Create a Road Association if one is not established for your road. A copy of Damariscotta Lake Association's booklet titled "From Here to There... How to Create a Lake Friendly Road Association" can be obtained from DLWA, P.O. Box 3, Jefferson, Maine 04348 (207) 549-3836
- Minimize road runoff by planning a regular, comprehensive maintenance schedule, and then adhere to it,
- Use appropriate Best Management Practices on the road.
- Get a copy of "Camp Road Maintenance Manual – A Guide for Landowners". This reference is a must for any road association. A copy may be obtained from Kennebec County Soil and Water Conservation District (SWCD) – 9 Green Street, Room 307, Augusta, Maine 04330.
- For more extensive problems, seek a Professional Engineer's help. Contact the Kennebec County SWCD to request technical assistance.

Municipal Officials

- Review public policy and ordinances to assure full protection of Pocasset Lake and Pickerel Pond.
- Strictly administer and enforce land use laws and ordinances under their jurisdiction. This includes Shoreland Zoning, Subdivision Reviews, Site Reviews, and Subsurface Wastewater Disposal.
- Participate in and support the Pocasset Lake watershed projects.
- Participate in the Pocasset Lake Watershed Management and Implementation Plans.
- Promote training for road crews, planning boards and conservation commissions.
- Help the Maine DEP enforce the Erosion and Sediment Control law that requires landowners to properly install and maintain erosion control practices (such as hay bale barriers, silt fences, and hay mulch) anytime filling or soil disturbance activities are conducted.

Government Officials

- Maine DEP's Division of Watershed Management has a Nonpoint Source Training Center that provides numerous training courses on an ongoing basis.
- Maine DEP, Kennebec County SWCD, Androscoggin County Soil and Water Conservation District are available to help provide or facilitate workshops.

Pocasset Lake Association

- Continue to work with Kennebec County SWCD and Maine DEP to bolster public support for watershed projects.
- Participate in the development of Lake Watershed Management and Implementation Plans.
- Provide educational materials and guidance to residents of Pocasset Lake.
- Continue to provide water quality monitoring information to the Pocasset Lake and Pickerel Pond community.

- Organize workshops and volunteer "work parties" to start fixing identified erosion problems and teach citizens how to fix similar problems on their own properties.

Schools

- Schools can become involved by teaching lake and stream ecology.
- Students can be given a chance to perform community service through watershed projects either initiated by the school or others.

FUNDING

The Maine DEP administers the Nonpoint Source (NPS) Grants Program "to provide financial assistance for projects that prevent, control or abate water pollution by nonpoint sources. There are three categories of NPS grant projects:

1. NPS Watershed Project. This project is designed so that BMPs are implemented in a manner that leads to a significant reduction in NPS pollutant load to a waterbody. The load reduction is intended to restore or protect water quality.
2. NPS Watershed Survey. This project focuses on finding, describing, and prioritizing NPS pollution sources in a watershed, and recommends BMPs for correcting identified pollution sources.
3. Watershed Management Plan Development. This project is to develop and produce a locally supported "Watershed Management Plan". The plan is intended to be a comprehensive plan of action to prompt use of BMPs to prevent or abate NPS pollution sources within a watershed or subwatershed.

For information on the Maine DEP NPS grant program and funding visit website: www.state.me.us/dep/blwq/docgrant/319.htm.

PERMITTING ABC'S

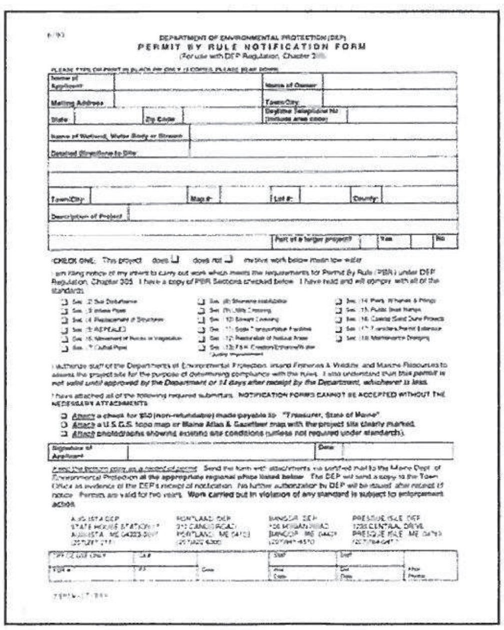
Protection of the Pocasset Lake and Pickerel Pond Watershed is ensured through the good will of residents around the lakes and through laws and ordinances created and enforced by the State and Towns.

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 Towns through the Code Enforcement Officer and the Planning Board.
- Soil disturbance within 100 feet of the lakeshore or 75 feet of a stream also falls under the Natural Resources Protection Act, which is administered by the DEP.

To ensure that permits for projects that will not result in significant disturbance are processed swiftly, the 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 project partners encourage you to contact the 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 DEP and Town to be sure.



How to apply for Permit by Rule with DEP:

1. Fill out a notification form. Forms are available from your town code enforcement officer or the Maine DEP offices in Portland or Augusta.
2. Permit by Rule requires that you follow certain standards such as installing silt fence. It is important that you obtain a copy of the standards so you will be familiar with the law's requirements.
3. The permit will be reviewed within 14 days. If you do not hear from DEP within 14 days, you can assume your permit is valid. If you bring the permit directly to a DEP office, you may be able to get your permit approved immediately.

CONTACTS

Pocasset Lake Association

P.O. Box 119, Wayne, ME 04284

Provides educational materials and directs individuals to appropriate agencies.

Kennebec County Soil and Water Conservation District

9 Green Street, Augusta, Maine 04330

(207) 743-5789, ext. 3

website: www.kcswcd.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.

Maine Department of Environmental Protection

17 State House Station, Augusta, ME 04333
Toll Free (800) 452-1942 or (207) 287-7688

Website: www.state.me.us/dep/index.shtml

Provides permit applications and assistance, numerous reference materials, technical assistance, environmental education, project funding opportunities, and stewardship activities for lakes.

PUBLICATIONS

Androscoggin Valley SWCD and Lake and Watershed Resources Management Associates. 1998. *The Buffer Handbook: A Guide to Creating Vegetated Buffers for Lakefront Properties.*

Kennebec County SWCD and Maine DEP. June, 2000. *Camp Road Maintenance Manual A Guide for Landowners.*

Maine DEP. December, 1997. *A Homeowner's Guide to Environmental Laws Affecting Shorefront Property in Maine's Organized Towns.* DEPLW-38-B98.

Maine DEP. 1999. *Maine Shoreland Zoning-A Handbook for Shoreland Owners.* DEPLW 1999-2.

University of Maine Cooperative Extension. *Gardening to Conserve Maine's Native Landscape: Plants to Use and to Avoid* Bulletin #2500. June, 1999. Folded leaflet.

Maine Department of Environmental Protection and Congress of Lake Associations. *A Citizen's Guide to Lake Watershed Surveys - How to Conduct a Nonpoint Source Phosphorous Survey.* Revised 4/97.

Maine Department of Environmental Protection, the Maine State Planning Office/Maine Coastal Program and the University of Maine Cooperative Extension. *Watershed: An Action Guide to Improving Maine Waters.* April 1990.

GLOSSARY

Algal Bloom: A growth of algae resulting from excessive nutrient (phosphorous) levels or other physical and chemical conditions that enable algae to reproduce rapidly. The overgrowth of algae can form scum and mats, and reduce the amount of oxygen in water when they decay.

Best Management Practices: (BMPs) Conservation practices to reduce nonpoint source impacts from construction, agriculture, timber harvesting, marinas, and stormwater. The State of Maine has developed manuals describing these techniques.

Buffer: (vegetative buffer) Areas of vegetation, left undisturbed or planted between a developed area and water body. Buffer vegetation should include trees, shrubs, bushes, and ground cover plants.

Culvert: A conduit through which surface water can flow under or across roads and driveways. Culverts are usually a pipe and can be made of metal, wood, plastic, or concrete.

Erosion: Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical and chemical forces. Human activity can greatly speed this process.

Erosion Control: Physical measures installed prior to and through the duration of filling or grading activities in order to prevent soil erosion. A silt fence, hay bales, and hay mulch are examples of erosion controls.

Nonpoint Source: An indirect discharge, not from a pipe or other specific source, usually as a result of stormwater runoff.

Phosphorous: An element found throughout the environment; it is a nutrient essential to all living organisms. Phosphorous binds to soil particles, is found in fertilizers, sewerage, and motor oils, and is found in high concentrations in stormwater runoff. The amount of phosphorous present in a lake determines the lake's production of algae. A very small change in phosphorous levels can dramatically increase alga growth.

Runoff: That part of precipitation or snowmelt that runs off the land and into water bodies. It can carry pollutants from the air and land into a water body (polluted runoff).

Technical Team: In a watershed project, the individuals responsible for providing training, technical advice, and review and analysis of data gathered by the steering committee and volunteers.

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.

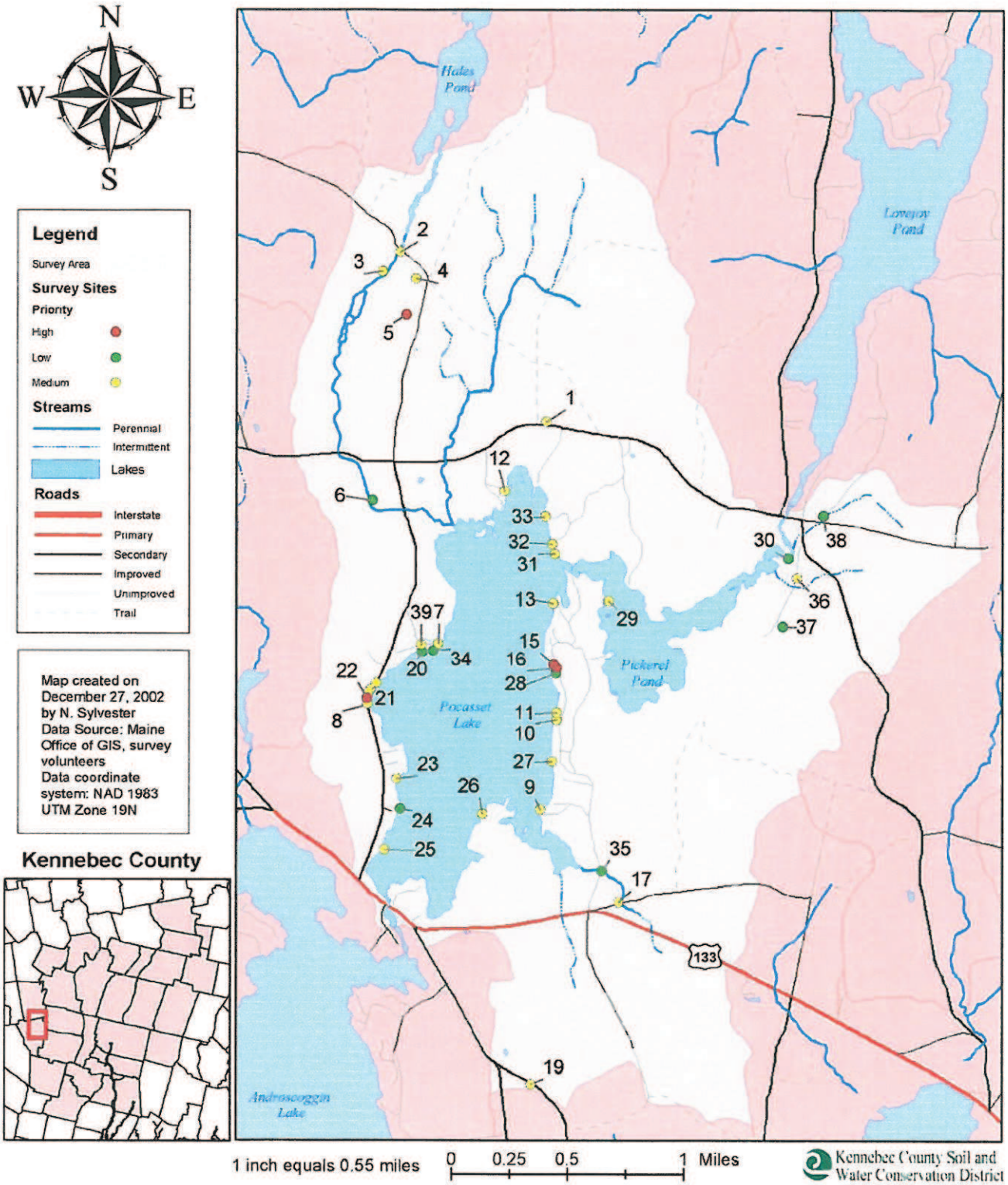
Watershed: The geographic region within which water drains into a particular river, stream, or body of water. A watershed includes hills, lowland, and the body of water into which the land drains. The ridges of land separating the watersheds define watershed boundaries. All land is located in a watershed. Approximately 50% of the land areas in the State of Maine are located in a lake watershed.

Figures

Figure 1: Pocasset Lake and Pickerel Pond Watershed Map

Figure 1:

Pocasset Lake Watershed



Tables

Table 1: Pocasset Lake and Pickerel Pond Watershed Sites

Table 1
Pocasset Lake and Pickerel Pond
Watershed Survey Sites

Site ID	Land Use	Type of Problem	Land Use / Description	Recommendation	Technical Level to Install/ Perform	Cost	Priority
1	T	Ci/o	Unstable culvert, north side of Walton Road.	Stabilize both inlet and outlet with Riprap	Medium	Medium	Medium
2	T	SLSE	Hales Brook Outlet.	Discourage pull-off on south side of Road (i.e. stones, etc.) Add riprap between outlet pipes.	Medium	Medium	Medium
3	R	PW, DL, MS	Animal pen within 75 feet of Brook.	Request meeting with owner to evaluate waste handling practices.	Low	Low	Medium
4	T	SLSE, SLSHE	Swale and culvert.	Clean out and stabilize swale to culvert inlet. Riprap outlet.	Medium	Medium	Medium
5	R, D	BS, LB, CS	New construction, severe slope, no silt fence. Wood chip mulch on steep slope.	Install and maintain silt fence until vegetation established.	Low	Medium	High
6	O	LB	Loss of vegetation near stream.	Continue to monitor Beaver Dam.	Medium	Medium	Low
7	R	CS	New construction.	Silt fence at distribution areas and stockpiles. Maintain vegetative buffer. Town ordinances for construction.	Medium	Medium	Medium
8	T	DL	Sand and salt from road direct flow to lake.	Eliminate pull off area. Establish buffer. Snow plow SOP's - push away from area.	Medium	Medium	High
9	R	DL	Lack of vegetative buffer.	Stabilize with vegetation, clean shoreline.	Low	Low	Medium
10	R	DL	Lack of vegetative buffer.	Stabilize bare areas with vegetation.	Low	Low	Medium

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BO - unstable boat access
Ci/o - unstable culvert
CS - unstable construction site
DL - direct flow to lake
DT - direct flow to tributary
LB - lack of buffer.

MDE - moderate ditch erosion
MSE - moderate surface erosion
MSHE - moderate shoulder erosion
P - poor shaping
PW - pet waste
SDE - severe ditch erosion
SE - shoreline erosion

SLDE - slight ditch erosion
SLSE- slight surface erosion
SLSHE - slight shoulder erosion
SS - stockpiled soil
SSHE - severe shoulder erosion

Table 1
Pocasset Lake and Pickerel Pond
Watershed Survey Sites

Site ID	Land Use	Type of Problem	Land Use / Description	Recommendation	Technical Level to Install/ Perform	Cost	Priority
11	R	DL	Bare soil. Lack of vegetative buffer.	Stabilize bare areas with vegetation.	Low	Low	Medium
12	R	DL	Bare soil. Lack of vegetative buffer.	Stabilize with vegetation. Minimize use as boat landing.	Low	Low	Medium
13	R	DL	Bare soil. Lack of vegetative buffer.	Stabilize with vegetative cover.	Low	Low	Medium
14	D	DL	Direct flow to Lake from driveway.	Stabilize with vegetative cover.	Low	Low	Medium
15	B	DL	Beach erosion.	Maintain Beach. Clear of accumulated debris. Continue to monitor Beach and Boat repair facility. Keep vehicles out.	Low	Low	High
16	B	DL	Beach erosion.	Maintain Beach. Clear of accumulated debris. Continue to monitor Beach and Boat repair facility. Keep vehicles out.	Low	Low	High
17	T	MDE	Moderate ditch erosion on Maxim Road.	Grade road surface to improve drainage. Stabilize culvert inlet/outlet with riprap.	Medium	Medium	Medium
18	S	DL	Storm drain with direct flow to Lake.	Have ME DOT install "vortex" catch basin to remove sediments.	High	High	High
19	T	MDE	Old Winthrop Road.	Remove pile of soil, grade area and vegetate.	Medium	Medium	Medium
20	P	DL	Small stream outflow, carries silt during heavy rainfall.	Further investigate stream course for possible silt source.	Low	Low	Low

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Pocasset Lake and Pickerel Pond
Watershed Survey Sites

Site ID	Land Use	Type of Problem	Land Use / Description	Recommendation	Technical Level to Install/ Perform	Cost	Priority
21	P	SLSE	Moderate erosion. Little buffer between Road and Lake.	Vegetate bank.	Low	Low	Medium
22	T	MSHE	Pond Road shoulder erosion. Multiple sites with silt/sand deposits visible on bottom. Little or no vegetative buffer in many places.	Vegetate bank, stabilize areas of undercutting with riprap.	Medium	Medium	Medium
23	R	SLSE	Minor shoreline erosion.	Overseed bank.	Low	Low	Medium
24	R	CS	New construction. Silt fence in place.	Okay. Continue to monitor for grass establishment.	Low	Low	Low
25	R	SLSE	Bare soil above riprap.	Vegetate bare area above riprap.	Low	Low	Medium
26	R	LB, BS	Long bare slope from house down to landing. No vegetative buffer.	Establish meandering stone/gravel pathway from house to landing. Vegetate bare areas.	Medium	Medium	Medium
27	R	LB, BS	Long bare slope from house down to landing. No vegetative buffer. Potential for direct flow to Lake.	Vegetate bare areas. Place gravel around camp to minimize erosion from roof runoff.	Medium	Medium	Medium
28	B	DL	Potential for run off from Camp Road to beach to Lake.	Install waterbar across road.	Medium	Medium	Low
29	T/P	DL, LB	Straight, bare path to landing.	Establish meandering stone/gravel pathway from house to landing. Vegetate bare areas.	Medium	Medium	Medium
30	R	SLSE	Slightly eroded slope in front of trailer at shoreline.	Overseed to fill in areas of weak vegetation. Add stone to stabilize bank undermining.	Low	Low	Low

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Pocasset Lake and Pickerel Pond
Watershed Survey Sites

Site ID	Land Use	Type of Problem	Land Use / Description	Recommendation	Technical Level to Install/ Perform	Cost	Priority
31	R	LB	Broad, unvegetated slope to Lake.	Mulch slope with wood chips and seed.	Low	Low	Medium
32	R	LB	Broad, unvegetated slope to Lake.	Vegetate bare areas.	Low	Low	Medium
33	R	DL	Sandy slope. Some indication of silt/sand deposits in water.	Establish vegetative buffer along shore. Use plants that thrive in sandy soil.	Low	Low	Medium
34	R	SE	Undercut bank under pine trees at shore.	Stabilize bank.	Medium	Medium	Low
35	T	DL	Runoff from Lord Road into lowland near stream on Pocasset Lake side.	Establish vegetation along shoulder.	Low	Low	Low
36	R	CS	Excavation for new home on White Road. No silt fence near stream. No evidence of silt in stream.	Install silt fence. Maintain existing vegetative buffer. Mulch slope following seeding.	Medium	Medium	Medium
37	D	CS	Excavation for driveway of new home on White Road. No silt fence near seasonal stream locate approximately 10 meters from driveway.	Install silt fence around home. Some mulch in place. Stabilize erosion at driveway.	Medium	Medium	Low
38	T	P, MSE	Tall Timbers Road. Road slopes toward culvert. Some erosion and runoff.	Currently good vegetation with turnouts to direct water off road. However, road could be graded and disturbed shoulders seeded.	Medium	Low	Low
39	T	MSE	Some runoff with minor erosion on bridge side of Walton Road. BMP in place but not working.	Stabilize both inlet and outlet with Riprap	Medium	Medium	Medium

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Appendix A

Pocasset Lake Water Quality Data

LAKE: POCASSET L (VLMP)
TOWN: WAYNE
COUNTY: KENNEBEC

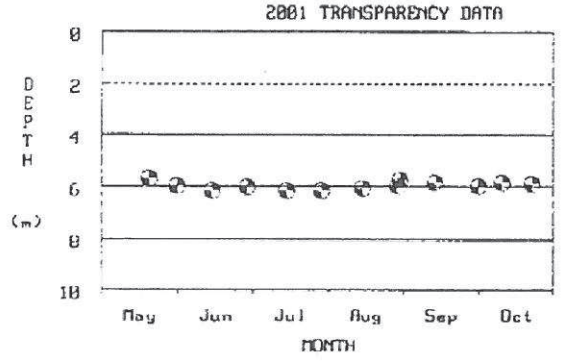
MIDAS: 3824
*TRUE BASIN: 1
*SAMPLE STATION: 1

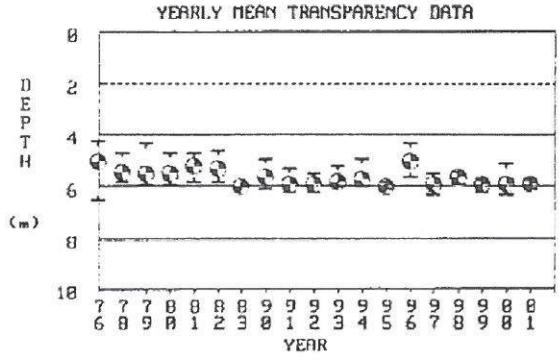
WHOLE LAKE INFORMATION
MAX. DEPTH: 6 m. (20 ft.)
MEAN DEPTH: 5 m. (16 ft.)
DELORME ATLAS #: 12
USGS QUAD: WAYNE
IFW REGION B: Belgrade Lakes (Augusta)
IFW FISH. MANAGMENT: Warmwater

TRUE BASIN CHARACTERISTICS
SURFACE AREA: 229.0 ha. (565.9 a.)
FLUSHING RATE: 8.46 flushes/yr.
VOLUME: 8911998.0 cu. m. (7229 ac.-ft.)
DIRECT DRAINAGE AREA: 10.85 sq. km. (4.19 sq. mi.)

* PLEASE NOTE THE FOLLOWING: The SAMPLE STATION # refers to the location sampled. The term TRUE BASIN is used to define areas within a lake that are separated by shallow reefs or shoals and therefore function as separate lakes. There are approximately 50 lakes in the state that have more than 1 True Basin. True Basin Characteristics are now being included in the first section of these reports to enable users of the Phosphorous Loading Methodology to better evaluate the data. If there is no data for a particular True Basin, True Basin Characteristics must be obtained from the DEP. POCASSET L has 1 True Basin(s).

SECCHI DISK TRANSPARENCY GRAPHS:





Note: 2001 graphs may indicate multiple readings taken on a given day.

SUMMARY OF CHEMICAL AND TROPHIC STATE PARAMETERS:

	MEAN COLOR (SPU)	MEAN pH	MEAN ALK (mg/l)	MEAN COND. (uMHOS /cm)	TOTAL PHOS. MEANS (ppb) EPI CORE	EPI GRAB	SURF GRAB	BOT. GRAB	PRC. GRAB	SECCHI DISK (m.) MIN.	MEAN	MAX.	N	CHLOROPHYLL A(ppb) MIN.	MEAN	MAX.	TROPHIC STATE INDICES EPI PHOS C	G	SEC	CHL
YEAR																				
1976	-	-	-	-	11	-	-	-		4.2	5.0*	6.5*	6	1.8	2.9	3.8	44	-	-	39
1977	-	-	-	-	-	-	-	-		-	-	-		3.3	3.3	3.3	-	-	-	-
1978	-	-	-	-	-	-	-	-		4.7	5.4	5.8	2	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-		4.3	5.5	5.9	3	-	-	-	-	-	-	-
1980	25	6.80	13.0	44	-	-	-	-		4.7	5.5*	5.9*	5	2.3	2.3	2.3	-	-	-	-
1981	-	7.05	-	-	-	-	-	-		4.7	5.2*	5.8*	3	-	-	-	-	-	-	-
1982	-	7.07	-	-	-	-	-	-		4.6	5.3*	5.8*	5	-	-	-	-	-	-	-
1983	20	7.10	11.5	-	7	-	-	-		6.0	6.0	6.0	1	1.5	1.5	1.5	-	-	-	-
1990	22	7.38	14.5	42	7	-	-	-		4.9	5.6*	6.1*	6	2.7	2.7	2.7	-	-	-	-
1991	-	-	-	-	-	-	-	-		5.3	5.9*	6.2*	6	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-		5.5	5.9*	6.2*	5	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-		5.2	5.8*	6.0*	6	-	-	-	-	-	-	-
1994	-		-	-	-	-	-	-		4.9	5.7*	6.0	5	-	-	-	-	-	-	-
1995	7	-	13.0	-	11	-	-	-		5.8	6.0*	6.1*	6	-	-	-	-	-	-	-
1996	6	-	12.3	-	12	-	-	-		4.3	5.0	5.6	6	2.7	4.7	6.6	-	-	48	-
1997	7	-	-	-	-	-	-	-		5.5	5.9*	6.3*	5	-	-	-	-	-	-	-

LAKE: POCASSET L (VLMP)
TOWN: WAYNE
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MIDAS: 3824
*TRUE BASIN: 1
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SUMMARY OF CHEMICAL AND TROPHIC STATE PARAMETERS:

	MEAN COLOR (SPU)	MEAN pH	MEAN ALK	MEAN COND. (uMHOS /cm)	TOTAL PHOS. MEANS (ppb) EPI CORE	SURF GRAB	BOT. GRAB	PRO. GRAB	SECCHI DISK (m.) MIN.	MEAN	MAX.	N	CHLOROPHYLL A(ppb) MIN.	MEAN	MAX.	TROPHIC STATE INDICES EPI PHOS C	G	SEC	CHL
YEAR																			
1998	-	-	-	-	-	-	-	-	5.4	5.6	5.9	5	-	-	-	-	-	43	-
1999	-	-	-	-	-	-	-	-	5.7*	5.9*	6.2*	6	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	5.1	5.9*	6.3*	6	-	-	-	-	-	-	-
2001	22	7.36	13.5	55	6	6	-	-	5.7	5.9*	6.1*	6	2.6	2.6	2.6	-	-	-	-
SUMMARY:	15	7.08	13.0	47	9	6	-	-	4.2	5.6*	6.5*19		1.5	2.8	6.6	44	-	45	39

LATE SUMMER TEMPERATURE / DISSOLVED OXYGEN PROFILES:

DEPTH	SAMPLE DATE 09/27/81		08/09/83		08/24/90		08/18/94		09/05/95		08/05/96		09/05/96		08/29/01	
m	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm
0.0	-	-	25.5	8.0	24.9	7.8	-	-	21.5	8.1	-	-	26.0	0.0	23.0	8.7
1.0	-	-	25.5	8.0	24.0	7.7	26.0	7.2	21.5	8.1	25.0	7.9	24.0	7.7	23.0	8.7
2.0	7.8	8.2	25.5	8.0	23.5	7.6	-	-	21.0	8.1	24.5	8.2	23.5	8.0	23.0	8.5
3.0	-	-	25.5	8.1	23.0	7.2	24.0	7.2	21.0	7.9	23.0	8.5	23.5	8.0	23.0	8.5
4.0	-	-	25.5	8.0	23.0	7.2	-	-	21.0	7.9	22.5	6.2	22.5	7.8	23.0	8.5
5.0	-	-	25.0	7.8	23.0	7.1	25.0	7.1	21.0	7.5	21.0	4.3	22.0	6.6	23.0	8.2
6.0	-	-	21.5	3.2	22.9	6.5	25.0	6.8	-	-	20.5	3.3	-	-	-	-
7.0	-	-	-	-	-	-	25.0	6.8	-	-	-	-	-	-	-	-

WATER QUALITY SUMMARY

Pocasset Lake, Wayne
Midas: 3824, Basin: 01

The Maine Department of Environmental Protection (ME-DEP) and the Volunteer Lake Monitoring Program (VLMP) have collaborated in the collection of lake data to evaluate present water quality, track algal blooms, and determine water quality trends. This dataset does not include bacteria, mercury, or nutrients other than phosphorus.

Water quality monitoring data for Pocasset Lake has been collected since 1976. During this period, 5 years of basic chemical information was collected in addition to Secchi Disk Transparencies (SDT). In summary, the water quality of Pocasset Lake is considered to be slightly better than average based on measures of SDT, total phosphorus (TP), and Chlorophyll-a (Chla). The potential for nuisance algal blooms on Pocasset Lake is low to moderate.

Water Quality Measures: Pocasset Lake is a non-colored lake (average color 16 SPU) with an average SDT of 5.6 m (18.4 ft). Transparencies often reach to the bottom of the lake. The range of water column TP for Pocasset Lake is 7-12 parts per billion (ppb) with an average of 10 ppb, while Chla ranges from 1.5-6.6 ppb with an average of 2.9 ppb. Recent dissolved oxygen (DO) profiles show no DO depletion in deeper areas of the lake because it is relatively shallow (20 ft). The potential for TP to leave the bottom sediments and become available to algae in the water column (internal loading) is low.

The flushing rate is the amount of time required for the lake water to be renewed each year. The average flushing rate is about 1-1.5 flushes per year for Maine lakes. The flushing rate for Pocasset Lake is 8.46 flushes per year.

See ME-DEP Explanation of Lake Water Quality Monitoring Report for measured variable explanations. Additional lake information can be found on the World Wide Web at: pearl.spatial.maine.edu and/or state.me.us/dep/blwq/lake.htm, or telephone ME-DEP at 207-287-3901 or VLMP at 207-225-2070.

Filename: poca3824, Revised: 2/00, By lb