



# Natural Shorelines

## Natural Shorelines Minimize Development Impacts on Minnesota Lakes and Streams



Minnesota's shorelines are being urbanized at a record pace. Structures and turf grass lawns replace natural shores and have adverse impacts on water quality and the diverse life that depends on a natural shore. A natural shoreline is more than an aesthetic buffer for the water; it is a complex ecosystem that provides habitat for fish and wildlife and protects water quality for the entire lake.



This vividly illustrates the explosive effect of a raindrop hitting unvegetated soil.

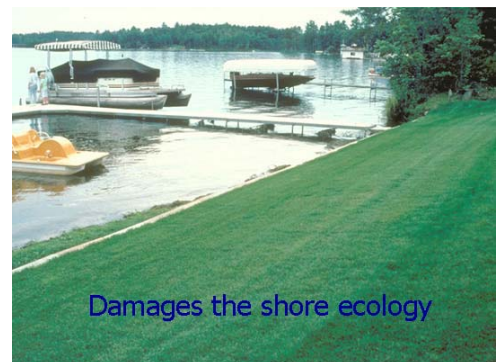
Our lakes, wetlands, and streams need healthy shoreline buffers to reduce and filter rainwater runoff. Rainwater runoff from manicured lawns can be 5 times to 10 times higher than natural shorelines, and the runoff from turf lawns can carry up to nine times more phosphorus to the lake than natural shorelines. Runoff from lawns occurs more frequently than previously thought with a high percentage of storms resulting in runoff. Water flowing over lawn surfaces also picks up more dirt, pesticides, toxic chemicals, pet waste, and other pollutants than on a naturally vegetated shore. Therefore, it is critical to limit both alterations to existing natural shoreline and encroachments into the shore impact zone.

Natural shores not only reduce runoff but also help stabilize lakes and riverbanks, reducing erosion and sedimentation. The roots of trees and bushes hold soil better than turf grass and allow a pathway for water to infiltrate into the soil. Trees and bushes can also limit the impact of rain hitting the soil that can start the erosion process. A natural shore will also preserve the natural character and beauty of the shoreline for any others recreating on the water by screening the shoreland development.

Natural shores are protected through shoreland management based on community ordinances. The shore impact zone (SIZ) is defined as the land located between the ordinary high water level of a public water and a line parallel to it at a setback of 50 percent of the structure setback.

Any encroachment into the shore impact zone, including pathways, stairs, or other structures, should take into account visual impacts. Pathways, stairs, homes, and sheds can be less conspicuous with vegetative screening from trees, bushes, or even natural grasses. Retaining walls should not be allowed in shore or bluff impact zones unless extraordinary erosion problems preclude the use of natural landscaping techniques. Some existing lots have failing slopes or retaining walls that need attention. In rebuilding these, every effort should be made to limit the height of walls, restore a natural shore impact zone, and use vegetation to stabilize the soils and screen structures.

Some homeowners need to protect the shore from wave action with rock. While rock riprap can reduce erosion, it also reduces habitat for many species. Minnesota lakeshores and even some wetlands are being ringed with rock, often when it is not needed. Rock riprap protection should be limited to the amount necessary to protect eroding areas from wave action or high stream velocities. It should only be used where an erosion problem has been documented and can require approval of the Department of Natural Resources, depending on the scope of work.



This turf grass setting in the foreground contrasts with the naturally vegetated shore in the upper right.

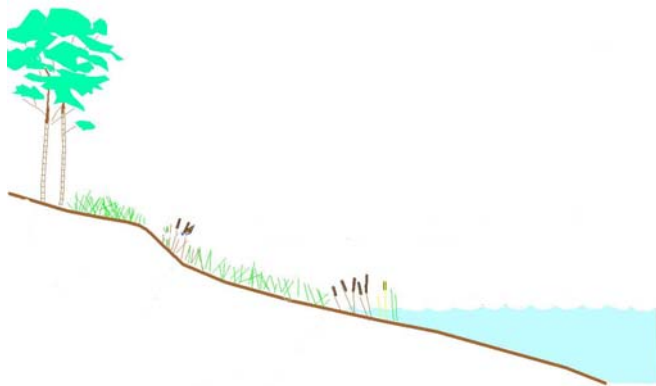
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Even where rock is needed, plantings among the rocks can soften the “industrial” look and improve on reducing erosion from wave action.

Not surprisingly, biologists have found that removing the native trees and plants around lakes, wetlands, and streams changes both fish and wildlife species found along our shores. As native trees and shrubs decline, diverse species like warblers, loons, and hummingbirds are replaced by common birds like house sparrows, blue jays, and grackles. Loons, ducks, and other birds will not likely nest on a groomed and manicured shore or beach. Even small areas of native grass can attract nesting ducks and other wildlife. Green frogs are also disappearing with development. Removal of aquatic plants alters the spawning habitat, food supply, and protective cover that fish need. As we “clean up” our shores, we are removing inlake vegetation, logs, and other parts of the lake’s ecosystem. We are removing the place where turtles and ducks sun and the habitat in which fish and frogs lay eggs. We are removing the turtles, ducks, fish, and frogs.

Nobody moves to the lake with the intent of ruining it, but we need to be more careful not to destroy homes for wild things as we make our home. It diminishes fish and wildlife, water quality, and the scenic quality. Many of our waters are connected, so our impacts can be extensive. A lawn down to the lake, stream, or wetland edge negatively affects the public value of Minnesota’s lakes and streams. Folks living on the waterfront have a responsibility to leave as much shore natural or restore as much shoreline as possible.

A necessary part of managing the shoreland and shore impact zones within your community is to promote the restoration of areas that are degraded. Natural shorelines are gaining acceptance as people understand that shorelines play an important role in protecting their lakes and streams and that these buffers can bring natural beauty to yards.



The vegetation on the right reduces the energy of waves, which is a natural solution that does not carry the cost or impact of riprap seen on the left.



The green frog has become a casualty of developed shorelines.

*The comments in this brochure address jurisdictional matters and concerns of the DNR, Division of Waters. Please contact your DNR Area Hydrologist to discuss issues relating to your project or this brochure. More information is available at this website: <http://mndnr.gov/waters/shoreland.html>*

