

Otter Tail County Shoreland Guide to Lake Stewardship

2011



The *OtterTail County Shoreland Guide to Lake Stewardship* is a collaborative project of the Otter Tail County Coalition of Lake Associations (COLA), East and West Otter Tail Soil and Water Conservation Districts, and Otter Tail County Land & Resource Management.

This guidebook will provide you with basic information on good lake stewardship; however, it should not be considered complete or current. Many of the matters discussed are subject to detailed ordinances, rules, regulations, and statutory provisions to which you should refer for details and are subject to periodic changes that may not be reflected in this guidebook. Neither the Otter Tail County COLA nor any of the other contributors assume any responsibility for errors or omissions.

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See the inside back cover for a complete listing of funding partners.

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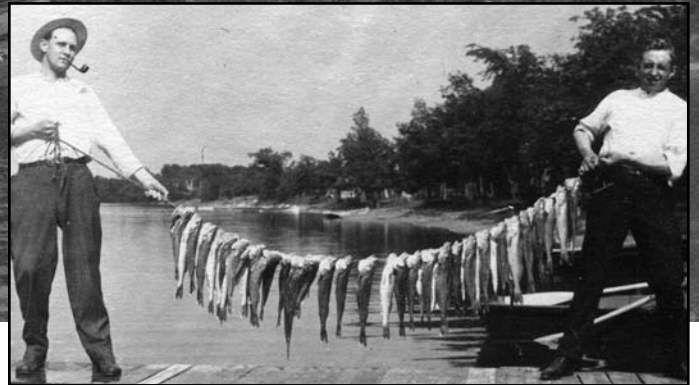
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 Open Year Round: Mon-Sat, 10:00 am-5:00 pm, Sun 1:00 pm-4:00 pm; admission is free. www.historymuseumeot.com, Email: museum@eot.com

References:

- 1 *Lakescaping for Wildlife and Water Quality*, State of Minnesota, Department of Natural Resources; Henderson C; Dindorf C; Rozumalski, F.
- 2 Rain Barrel Fact Sheet, Crow Wing County Extension, 2007.



Otter Tail County *Shoreland Guide to Lake Stewardship*



Introduction

Water is Otter Tail County's greatest natural resource covering approximately 12% of the County's total surface area. With more than 1,048 lakes and 1,174 miles of rivers, Otter Tail County is considered one of Minnesota's most beautiful and versatile recreation areas. Its water resources have provided economic sustenance and high quality of life for Otter Tail County residents and property owners for over a century. From the first major industries of lumber production and agriculture to the increasing tourism industry of today, multiple generations have enjoyed the lakes of Otter Tail County.



Recent years have seen increasing pressure on the County's lake resources as more intense development has increased along lakeshores, even on remote lakes. While lakeshore development is a prime opportunity for economic growth it can also be a threat to a limited and fragile resource. As lakeshores accommodate more houses, are ringed by more roads, and seasonal homes are converted to more intensive year-round use, the rate of lakeshore development becomes a critical variable in sustaining the County's lake resources.

Development must be balanced with environmental protection and sound lake management. From good regulations to personal responsibility, the future of Otter Tail County's lakes will depend on everyone who values these water resources to keep them healthy and productive for continued enjoyment, today and in the future.

“A lake is the landscape's most beautiful and expressive feature. It is earth's eye; looking into which the beholder measures the depth of his own nature.”

Henry David Thoreau
in *Walden*



It's Up to Us

This *Shoreland Guide to Lake Stewardship* will provide you with basic information on good lake stewardship. You'll learn about two primary ways you can manage your property to protect water quality: 1) **curbing pollution** at the source; and 2) **reducing, capturing, and cleansing runoff** that can carry pollutants to the lake. If we who live around the lake practice the ideas in this guide, collectively we will keep our lakes healthy to protect our investment in shoreland property, continue our enjoyment of the lake, and also preserve ecological integrity.

When you own shoreland you do have certain rights and privileges, such as the right to put out a dock to a navigable depth; to fish, boat, hunt, and swim; and to use the water for domestic purposes. But, these rights must be exercised in compliance with the rules of Otter Tail County, the watershed district, and the State of Minnesota. These rules are in place for the benefit of your health and safety and the health of the adjacent lake or stream.

Along with those rights also comes the responsibility to protect, improve, and enhance the quality of the water for your enjoyment and that of future generations, keeping in mind that the water itself is a public resource for everyone to enjoy. **That's called stewardship: the individual responsibility to manage one's life and property with regard for the rights of others.** The lake is a living ecosystem and part of the larger ecosystem of all living plants and animals to which we also belong.

Keeping Our Lakes Healthy

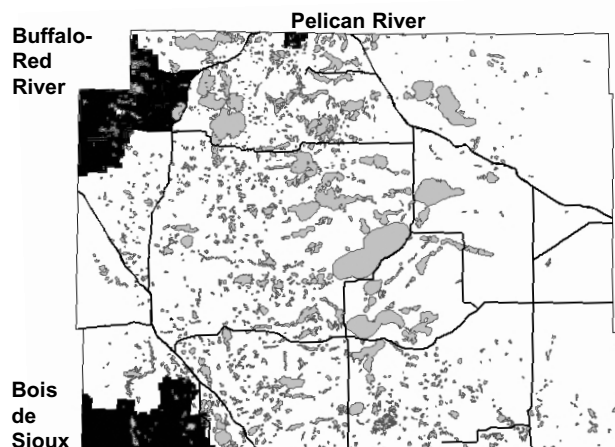
Water quality is primarily dependent on what happens on the land around the lake or along a river and within its watershed, which is the area of land that drains to a particular waterbody. It's the runoff from the land, and the pollution that is carried with it, that can determine the quality of the water.

A healthy lake depends on a healthy watershed. A healthy lake doesn't just happen. It comes about when shoreline property owners and others living in the watershed take steps to insure the lake's health.

Each lake has its own watershed or land that directly influences what comes into the lake. Each lake watershed is part of a larger watershed that influences water quality. The majority of Otter Tail County lies within the Otter Tail River Watershed. Smaller parts of the county are within nine other watersheds. The Bois de Sioux, Buffalo-Red River and Pelican River Watersheds have watershed districts that have authority for specified activities within their watershed.

While the land activity in the watershed contributes pollution to the lake, the **shoreland zone is the lake's first line of defense.** What you and your neighbors do or don't do on your shoreland property can have a significant impact on the quality of the lake. Managing water quality means appropriately managing the land use around the lake to reduce the amount of pollution that enters the lake.

Watershed Districts are special purpose units of government whose boundaries follow those of the natural watershed. A District is run by a board of managers appointed by the County Board, and its projects are funded through its taxing authority or special assessments. Three watershed districts have some authority in parts of Otter Tail County, including the Bois de Sioux, Buffalo-Red River, and Pelican River Watershed Districts. Otter Tail County has all permitting authority county-wide. For drainage issues, contact the appropriate watershed district office. Information on each watershed district can be found at: www.mnwatershed.org.



“...we must never forget that the land and the water are ours for the moment only, that generations will follow who must themselves live from the land and drink that water. It would not be enough to just leave something for them, we must also leave it a little better than we found it.”

L. L'Amour

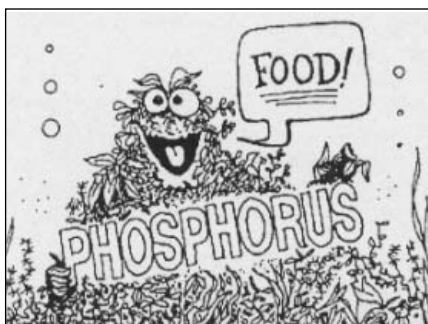
The shoreland zone where you live is the lake's first line of defense against unwanted pollution.

Curb Pollution: Reduce Phosphorus and Other Pollutants

Nitrogen, potash, and phosphorus are the nutrients necessary for plant growth. Phosphorus is the key nutrient needed for aquatic plant and algae growth. When excessive phosphorus reaches the lake, it fuels the overgrowth of aquatic plants and algae, those microscopic organisms that give water a greenish tinge and can cause blue-green scums along the shore. Excessive plant and algae growth decreases water clarity, interferes with the recreational use of the lake, and diminishes oxygen for fish.

Natural rainfall contains some phosphorus, which increases when the rain hits a surface and picks up grime. We can't control rainfall, but we can control our own shoreland practices that contribute phosphorus to the lake. Excessive phosphorus can get into lakes from shoreland properties in a number of ways, including:

- excessive fertilizer application;
- decomposition of leaves and other plant material;
- erosion of soil, which has phosphorus particles attached to it;
- improper human and pet waste management, both of which contain high amounts of phosphorus; and the
- use of household products high in phosphorus.



One pound of phosphorus can feed the growth of over 500 pounds of algae.

Apply Fertilizer Sparingly. Use Zero-Phosphorus Lawn Fertilizer It's the Law in Minnesota

By law since 2005, Minnesota homeowners cannot use fertilizers containing phosphorus, except for exemptions for new lawns or when a soil test indicates a need for phosphorus. In much of Otter Tail County, soils are naturally high in phosphorus so lawns generally don't need extra phosphorus.

When shopping for fertilizer, buy a brand that has a middle number of zero i.e. 22-0-15. The law did not prohibit retailers from selling phosphorous fertilizers, and even though most retailers are carrying more zero phosphorus fertilizers, it's up to you to make sure you comply with the law.

If you have left over phosphorus fertilizer, using it on the garden is a good way to dispose of it.

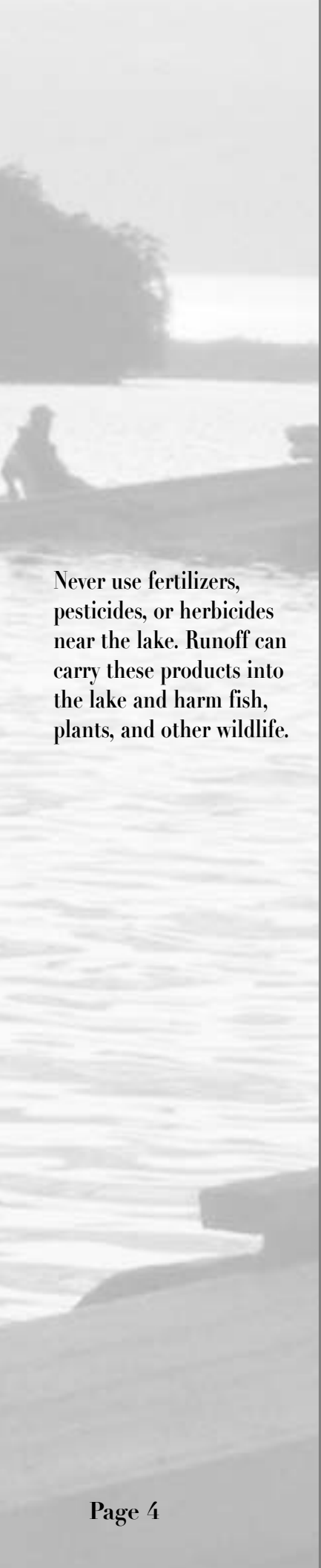
Other herbicide and pesticide precautions to follow:

- Eliminate the use of fertilizers near water or wetlands.
- Before you consider fertilizing your lawn, aerate it first and see if that improves its health.
- Use the minimum amount needed to replenish the soil and apply at the right time of year, usually spring and early fall. Water lightly after fertilizing to ensure absorption by the roots before a heavy rainfall.
- Sweep fertilizer that has spilled on the driveway and other hard surfaces back onto the lawn to prevent runoff.



The average one acre lawn yields one pound of phosphorus to the lake every year.

Managing water quality means appropriately managing the land use around the lake and within the watershed to reduce the amount of pollution that enters the lake.



Never use fertilizers, pesticides, or herbicides near the lake. Runoff can carry these products into the lake and harm fish, plants, and other wildlife.

Use Herbicides and Pesticides Sparingly, or Not at All

- Keep lawn healthy to avoid the need for herbicide applications.
- When necessary, use the least toxic and most degradable herbicide and follow directions carefully.
- Use corn gluten meal, a byproduct of the corn milling process, as a natural pre-emergent herbicide that stops the root growth of germinating plants. If you can't find it in major retail stores, ask them to carry it.
- Remove dandelions and other unwanted plants from your lawn using hand-tools instead of chemical applications. If you feel you must use a herbicide for control, do not apply it to the whole lawn. Instead, use an applicator which allows you to direct a small spray towards each unwanted plant.
- Identify the pest and learn about the best way to control it; there are many methods of control other than pesticides. See Integrated Pest Management resources.
- When you use pesticides outside your house, on the lawn and in the garden, use them according to the instructions on the label to prevent spillage on the ground, where watering or rain can percolate it into the groundwater or wash it into the lake with runoff.

Do Not Dump Yard Waste

Grass clipping, leaves, and aquatic plant material that wash up on shore all contain phosphorus, which is released when the plant material decomposes. To prevent phosphorus from getting into the lake:

- Use a mulching lawn mower and leave grass clippings on the lawn as natural fertilizer.
- Collect and compost leaves and clippings, or haul them away from the lake to a disposal site.
- Leave a strip of taller grass along the lake to catch windblown leaves and debris.
- Do not burn leaves near the lake; it destroys the organic matter releasing the phosphorus, which could then be washed into the lake.

Locate Fire Pits Away from the Shore and Dispose of Ash

The leftover ash from burning wood is very high in phosphorus. If the fire pit is located near the lake, rain can wash the ashes into the lake.

- Locate the fire pit at least 50 feet away from the lake; and,
- Remove ashes from the fire pit to prevent the phosphorus-loaded ashes from being blown or washed into the lake.

Pick Up Pet Waste

Improper disposal of pet waste not only jeopardizes water quality, but your health as well. Pet waste contains phosphorus and may contain disease causing organisms, which, if washed into the water, can make it unsafe for swimming.

- Pick up pet waste in the yard or near the shore and dispose of it properly.

Practice Low-Impact Boating

To reduce the pollution impact of motorized watercraft on the lake:

- When fueling the boat, take precautions not to overfill the fuel tank. If you do spill, wipe it up with a rag, do not hose into the water.
- Boat slowly; motors stir up sediments releasing nutrients that can lead to deterioration of water quality. A 50-horsepower motor operated full throttle can stir the water column and sediment up off the bottom in water as deep as 15 feet.
- Keep your motor well-tuned; use four-cycle motors.

Manage Waste Properly



Take Household Hazardous Waste (HHW) to the Regional Facility

Many of the products that we use at home contain substances that are hazardous. Paints, cleaners, garden chemicals, automotive products and aerosol cans are all examples of products you may have around the home that are hazardous. When these products are no longer useful, they become household hazardous waste (HHW). Household hazardous waste not only threatens the health and safety of our families and ourselves, it can also cause damage to the air we breathe and the fish and wildlife in our waters. Products are considered hazardous when they have at least one of the following properties and words on the label:

- **Flammable:** The label may say Combustible, Inflammable, Petroleum Distillates, etc. These products could easily catch on fire.
- **Toxic:** Poisonous, Harmful or fatal if swallowed, etc. These products may cause immediate harm or cause long term health problems, such as cancer.
- **Corrosive:** Acid, Lye, Alkali, etc. These products can eat through skin or other materials, such as metal.
- **Reactive/Hazardous:** Do not mix with other chemicals. These products can react with other chemicals, possibly releasing toxic or flammable gases, igniting, or even exploding.

Before buying or using a potentially hazardous product, read the entire label, buy the least hazardous product you can, purchase only the quantity you need to avoid storing, and follow the use directions carefully. Store those products you do use in a safe place, away from heat, flames, cold temperatures, and in dry areas. Store in original containers according to product directions.

HHW Regional Facility

Acceptable Items

- Automotive Items:
- Antifreeze
- Car Wax/Polish
- Carburetor Cleaner
- Battery Acid
- Degreasers, fuels, gasoline, brake fluid
- Leather Cleaners
- Transmission Fluid and used motor oil
- Oil Filters: (auto & small engine only; limit 4)

Lawn & Garden:

- Bug Spray
- Charcoal Light Fluid
- Fertilizer (all)
- Pesticides, insecticides, and herbicides
- Pool Chemicals
- Rodent Bait

Household Items:

- Aerosols
- Batteries; button & rechargeable (Dispose of alkaline, carbon zinc, and zinc air hearing aid batteries in trash. Take motorized vehicle and equipment batteries to transfer station.)
- Drain, oven, and window cleaners
- Floor care products, furniture polish
- Gun cleaning solvents
- Mercury fever thermometers
- Metal Polish
- Mothballs
- Spot and nail polish removers
- Fluorescent light tubes/bulbs (maximum of 10/household)

Home Improvement:

- Adhesives; wall paper paste
- Caulking
- Concrete Cleaner
- Crack Fillers/Putty; driveway sealer
- Paint; latex and oil-based
- Paint remover & thinner
- Roofing Tar
- Solvents, turpentine, varnish
- Stain & wood preservative

Unacceptable Items

- Home Medical Waste
- Explosives
- Hazardous Waste from Businesses

Recycle All the Materials You Can There are 30 recycling locations in Otter Tail County. Accepted materials include:

- newspaper
- phone books
- magazines/catalogs (only at redemption centers);
- office paper (no fluorescents, tag board or construction paper);
- cardboard (no cereal or shiny/waxy boxes); plastic (only #1 or #2 bottle jugs);
- glass (no light bulbs, automotive, or porcelain).

See Solid Waste Department website for specifics.

Regional HHW Facility

1115 Tower Rd. N.
Fergus Falls, MN 56537
(218) 736-2161

Thurs: 8:00-4:30 (year around)
2nd Sat: 9:00-3:00 (May-Sept)
Call for mobile collection dates and location

Free Product Exchange

Area residents can bring in paint, stain, wallpaper paste and other usable materials to the HHH facility. Materials are offered to the public for their use, free of charge.

Recycling & Redemption Centers

Fergus Falls

(Redemption and Processing Center)

1115 Tower Rd. N.
Fergus Falls, MN 56537
(north of college)
(218) 736-4400

Mon-Fri: 8:00-4:30; Sat: 9:00-4:00

Pelican Rapids (Redemption only)

24 11th Ave. SE
(behind Dairy Queen)
(218) 863-3584

Fri: 10:30-6:00; Sat: 9:30-4:00

Perham (Redemption only)

205 6th Ave. NE (Industrial Park)
(218) 346-2999

Fri: 12:00-6:00; Sat: 8:30-3:00

Other Recycling Sites:

Battle Lake: Larry's Supermarket, transfer station
Clithral: City Park
Bluffton: Tom's Body Shop
Dalton: Fire Hall
Deer Creek: Senior Citizen's Ctr
Dent: Sacred Heart Church
Dunvilla: Lakeland General Store
Elizabeth: Super H Gas Station
Fergus Falls: Sunmart, BJ's East, Recycling Center
Henning: Balmoral Avenue
New York Mills: City Utility Building
Ottertail: Carr's Supermarket
Otter Tail Lake: Near Prante's (OTC Hwy 72)
Parkers Prairie: OTC Hwy Garage
Perham: Redemption Center
Pelican Rapids: Redemption Ctr
Pelican Lake: So. Side of Pelican Hills Park, Fair Hills Hwy 20
Richville: Post Office
Rush Lake: Rush Lakelooop
Underwood: Railroad Park
Vergas: OTC Hwy 17
Vining: So. Side of MN Hwy 210
Weetown: No. Side of OTC Hwy 1

Composting Basics

GREENS provide nitrogen and act as a source of protein for the microbes that are hard at work in your compost pile.

- Green leaves
- Coffee grounds
- Tea bags
- Plant trimmings
- Raw fruit and vegetable scraps
- Fresh grass clippings
- Egg shells

BROWNS are a source of carbon and provide energy for the microbes.

- Dried grasses, leaves
- Woodchips
- Twigs and branches
- Straw
- Sawdust
- Shredded newspaper

NO meat, bones, dairy, fatty foods like grease or cooking oils, pet feces, weed seeds, and charcoal.

Don't Burn Garbage

Burning household garbage in burn barrels, wood stoves, and fire pits creates pollution that's dangerous to human health and contaminates the air, water, and soil. **It's against the law in Minnesota.**

Garbage today contains a lot of plastics; paper treated with chemicals, coatings, and ink; and many other chemicals. Backyard burning is a low-temperature fire that receives very little oxygen and produces lots of smoke. Under these conditions, a variety of toxic substances is produced and released primarily into the air close to ground level, where they are easily inhaled with no pollution controls! Dioxin, a potent human carcinogen, is the major health risk posed by residential garbage burning. U.S. EPA research shows that burn barrels are the #1 source of dioxin in the U.S. Just one burn barrel can produce as much or more dioxin as a full-scale municipal waste combustor burning 200 tons/day.

- Instead of burning garbage, dispose of it properly.
- **REDUCE, REUSE, RECYCLE.** Reduce the amount of waste you create by buying products with less packaging and buying items that last longer instead of disposable ones. **REUSE** the durable packaging you get (like wash out that sour cream container and use it to put leftovers in). **RECYCLE** all the materials you can, like cardboard, newspapers, plastic grocery bags, cans and bottles.



If you're burning garbage, you're making poison.

Compost Waste

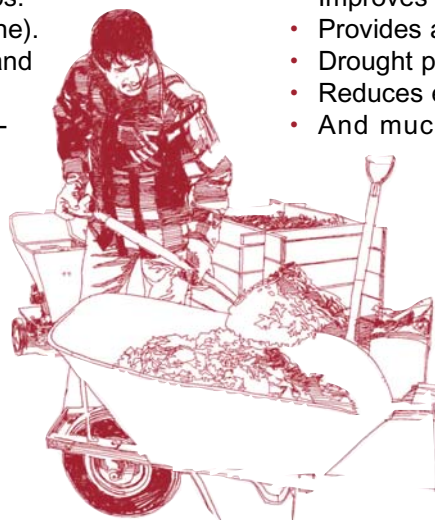
Composting is a practical and convenient way to transform yard and kitchen waste into a useable resource. Compost is a natural fertilizer that can be used as a blended potting soil mix (indoor and outdoor); as an additive to garden soil; and as a great mulch around trees, shrubs, and garden plants. You don't need fancy equipment or expensive artificial additives to break down your organic scraps and turn them into something useful. All you need is: food, water, air/oxygen, and correct temperature.

Like any simple recipe, you'll get the best results if you use the right mix of ingredients to make your compost. The key materials are nitrogen-rich "greens," carbon-rich "browns," water, and air. All of these are essential, but they're easy to mix together for quality compost.

Getting your own compost bin started can be boiled down to three simple steps:

1. Make a compost bin (or buy one).
2. Throw in your kitchen scraps and yard waste.
3. Mix it up with a shovel or pitchfork once in a while. It's that easy!

Lay a base. Start with a layer of browns, laying down 4-6 inches of twigs or other coarse carbons on the bottom of the pile for good air circulation. Add Browns and Greens, and **stir**. Add water as you go (about the amount of a damp sponge).



Benefits:

- Improves soil structure
- Provides aeration
- Drought protection
- Reduces erosion
- And much more

Working Around Wetlands

What are Wetlands?

Wetlands are a vital transitional link between land and water. When you think of wetlands you probably think of wet, swampy, marshy areas. This would be true for some, yet other types of wetlands may be dry most of the year and support trees and shrubs. Generally, a wetland is defined as an area that is mostly wet soil, is saturated with water either above or just below the surface, and is covered with plants that have adapted to wet conditions.

Wetlands have extremely valuable benefits, including:

- **Water Quality Protection:** Wetlands filter and absorb polluted surface water runoff before it enters groundwater, lakes and rivers.
- **Flood Control and Groundwater Recharge:** Wetlands serve as holding areas for water, slowing flood damage and soil erosion during heavy rain falls.
- **Fish and Wildlife Habitat:** Wetlands provide homes, nesting areas, and feeding areas for wildlife. Wetlands along shorelines are especially important due to the habitat they provide to aquatic insects and amphibians, which are also food sources for fish.
- **Reducing shoreline erosion:** Wetlands, and the deep rooted plants that grow in them, protect shorelines from the forces of wave action that erode away the shoreline.

Who has permit authority?

Despite these benefits, wetlands have been considered nuisances in the past and have been drained or filled in shoreland areas for development.

In 1991, the Minnesota Wetland Conservation Act (WCA) was passed to stop the loss of wetlands. To accomplish this, anyone proposing to drain, fill, or excavate in wetland areas must first try to avoid disturbing the wetland; second, try to minimize the impact on the wetland; and finally, mitigate, or replace the square footage of wetland loss. Some exemptions to the law may apply to certain situations. Generally, wetlands in shoreland areas are given extra consideration for protection due to the benefits they provide to lakes.

If access to the lake is limited due to the presence of wetlands along the shoreline, boardwalks and docking is encouraged. The Otter Tail Soil and Water Conservation Districts (SWCDs) can also provide assistance in helping you determine if wetlands are on your property and what permits may be needed. Work that is done below the ordinary high water level (OHWL) in lakes, rivers or public waters will require a permit from the DNR Public Works Program.

Contact the East Otter Tail SWCD (218-346-4260) or West Otter Tail SWCD (218-739-1308) and the Otter Tail Land & Resource Management Office (218-998-8095) for permit information and requirements when working around wetlands.

Also contact a SWCD for:

- Soils information for your property.
- Technical assistance for erosion control practices.
- Tree sales and design assistance for windbreaks and wildlife plantings.
- Information on sealing abandoned water wells.
- Cost share programs for installing conservation practices on your property.

For concerns about county ditches or noxious weeds, contact the Ag and Ditch Inspector at the Otter Tail Land & Resource Management Office (218-998-8095).

Statewide, Minnesota has lost over 50% of its pre-statehood wetlands and has about 9.285 million acres of wetlands remaining. Let's protect what we have left.

Wetlands are valuable because:

- they clean the water.
- recharge water supplies.
- reduce flood risks.
- provide fish and wildlife habitat.
- provide recreational opportunities and aesthetic benefits.

If access to the lake is limited due to the presence of wetlands along the shoreline, boardwalks and docking is encouraged.

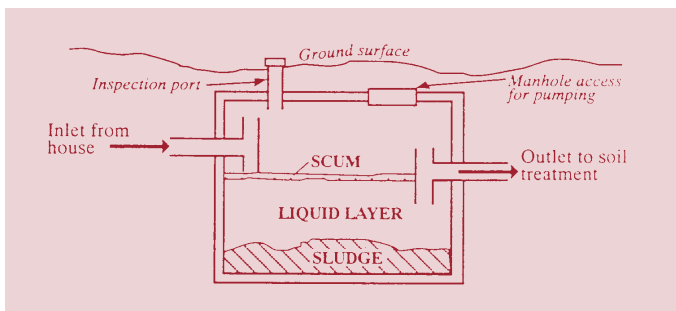
Properly Install, Operate, and Maintain the Septic System

Many homes in shoreland and rural areas rely on Subsurface Sewage Treatment Systems (SSTS), commonly known as the septic system. Your septic system, if designed, installed, operated and maintained properly, will effectively treat wastewater before it is returned to the environment to protect public health and prevent pollution of nearby waters.

Understand How Your Septic System Works

Understanding your system is essential to proper operation and maintenance. The basic components of most systems are the:

- **The Septic Tank** receives the wastewater from the household plumbing. In the tank, the solids are separated from the liquid. Here, naturally occurring bacteria decomposes food particles and human waste and the remaining solids settle to the bottom until they are pumped out on a regular basis. The tank will have an inspection pipe for monitoring of the tank and a manhole for access when pumped. The size of the tank is based on the home's potential water use and types of appliances installed. When the capacity of the tank is reached the excess liquid flows, or is pumped, over into the drainfield.
- **The Soil Treatment System (drainfield)**, which is typically a network of perforated pipes surrounded by small rock and soil. The liquid, which contains pathogens (disease-causing organisms), nutrients such as phosphorus, and fine solids, is cleansed naturally by bacteria as it percolates down through the soil. The design of the treatment system (trench, mound, etc.) is based on the soil conditions on your property, which must allow for at least three feet of unsaturated soil for the wastewater to percolate through for proper treatment. The correct type of system needed for your property will be determined by a state-licensed septic designer. Where gravity flow is not enough to move the liquids from the tank to the soil treatment system, pumps or lift stations are common. This is typical with mound systems.



Source: University of MN Extension Protecting Our Waters Series, #2

What Causes a Septic System to Fail?

Septic system failure is most commonly the result of:

- Improper design or installation of the system;
- Overuse of water in the home; and/or
- Improper maintenance.

When your system, or a neighbor's system fails, untreated wastewater could come in contact with people, causing a public health hazard. Or, it could enter the groundwater and eventually a nearby lake, river, or stream, adding pollution that can contribute to increased algae and aquatic plant growth and declining water quality.

What are the signs of a failing system?

- Sewage backup into the house or slow toilet flushing,
- Frozen pipes or soil treatment areas,
- System alarms sounding,
- Wet and/or black areas around a septic mound,
- Algal blooms and excessive plant growth in the water near shore,
- Sewage odors indoors or outdoors,
- Water or sewage surfacing in the yard or a nearby low spot, or
- High levels of nitrates or coliform bacteria in well water tests.

If you have a problem:

1. Contact a licensed installer for advice.
2. Contact the Otter Tail Land & Resource Management Office for permits.
3. If the drainfield or household pipes are not clogged, have the system pumped for both solids and liquids as a temporary measure.
4. If there is surface pooling of wastewater, temporarily fence off the area to prevent contact with humans or pets, and then repair or replace the septic system immediately.

Properly Operate and Maintain Your System

Proper operation and maintenance will extend the life of your system for many years and prevent costly repairs.

✓ Pump the Tank Regularly

Have a licensed professional pump the solids (floating scum and sludge) that have accumulated from the septic tank every one to three years. The more use, the more often pumping is needed. Make sure they pump through the manhole. While garbage disposal use is not recommended with septic systems, pump annually if you are using one. Failure to remove the solids can cause them to enter the drainfield, which can result in expensive repair or replacement. For licensed and certified septic system

maintenance services, refer to the yellow pages under septic tanks and systems-cleaning.

✓ Practice Water Conservation

Too much water flowing into the tank will cause the tank to back up and lead to ineffective treatment of wastewater. To prevent this:

- Repair all leaky faucets, fixtures, and appliances.
- Install low water-use fixtures and appliances (especially toilets and shower heads).
- Do not empty roof drains and sump pump water into the septic system.
- Wash only full loads of clothing and dishes, and spread out water use, such as laundry, throughout the day and week. Consider front loading machines; they use less water.
- Reduce the length of showers and the number of toilet flushings, especially during high use periods.
- Reroute water softener discharge water out of the septic system.
- Do not hook floor drains or drain tile into the septic system.

✓ Limit What Goes Down the Drain

- Do not put household cleaners, paint, solvents, medications, and other chemicals down the drain.
- Limit the use of antibacterial products. As the name suggests, they can reduce the amount of working bacteria in the septic tank.
- Use only the recommended amounts of liquid non-phosphorus detergents and cleaners.
- Prevent food particles, grease, lint, coffee grounds, plastics, and other non-degradable solids from getting into the system.
- Use single-ply toilet paper for the best decomposition.

✓ Do Not Use System Additives

It is not necessary to use starters, feeders, cleaners, or other septic additives to enhance the performance of your system. If your system is properly maintained and operated, it will operate at maximum performance with the use of naturally occurring bacteria.

✓ Protect Your Drainfield

Compacting or obstructing the soil over the treatment area can cause malfunctioning of the drain field. To protect it:

- Keep heavy vehicles off the drainfield.
- Maintain vegetative cover, but do not plant trees or shrubs on the drainfield because the roots may penetrate and clog the distribution system.
- Mow the area, but do not fertilize or water.
- Reroute roof drains and drain tile away from the drainfield.

For more information on septic system design and maintenance, see the University of Minnesota Water Resources Center's homeowner resources at: <http://septic.umn.edu/owners/index.htm>; call the hotline at 800-322-8642; or email questions to septic@umn.edu

Protect Your System from Freezing in the Winter

Common causes of septic system freezing during the winter can be lack of snow cover, extreme cold, compacted snow, irregular use of the system, leaking plumbing fixtures, pipes not draining properly, or a water-logged system.

What to do if the system freezes? Unplug your pump and call a septic system professional. Do not add antifreeze, additives, or continuously run water to try to thaw the system.

To prevent freezing, follow these general guidelines:

- Fix any leaking plumbing or appliances prior to winter.
- Late fall, add a layer of hay or straw mulch (8-12 inches) over the pipes, tank, and soil treatment area.
- Spread hot water use (laundry, showers, dishwasher) out over the day and week.
- For high efficiency furnaces that have low water discharge, you can put a heat tape in the pipe or install a small condensate pump.
- If you are gone for extended period of time, consider having someone stop by to run hot water regularly or pump the tank before leaving.

Otter Tail County Requirements

Who Regulates? The design and installation of septic systems is regulated by Otter Tail County, and permits are required from the Land & Resource Management Office. All septic systems, including outhouses, must be designed, installed, inspected, and maintained (pumped) by a state-licensed business. For a list see: www.pca.state.mn.us/programs/ists/ or ask your preferred provider for license information.

Who certifies systems? Licensed inspectors review all newly installed septic systems and will sign a Certificate of Compliance on properly installed new systems. For an existing system, a certificate of compliance can be obtained by a certified design professional.

When is a new compliance certificate required? If you are applying for a building permit for new construction, a compliant septic system is required. If a certificate is not on record or it is not current (less than 3 years old), a new inspection will be required. In Otter Tail County, compliance inspections are not required upon sale or transfer of property, but the owner must provide the buyer with a written disclosure statement about the location and condition of the septic system.

What are the setbacks from a structure? Ten (10) feet from the structure for the septic tank and 20 feet for the drainfield. Wells require a 3 foot setback from the structure; they are regulated by the MN Department of Health.

Call the Land & Resource Management Office (218-998-8095) for questions about septic systems, including your lake setback requirement.

Reduce Rainwater Runoff... It Doesn't Go Away!

What is runoff?

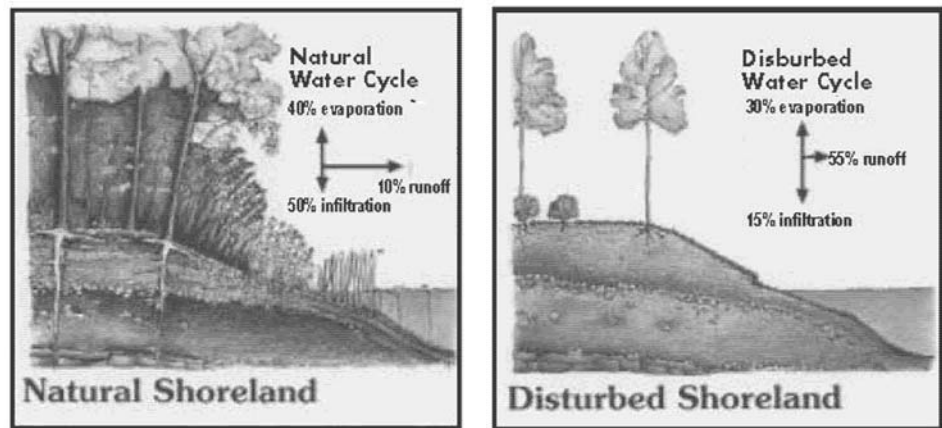
Rainwater or snowmelt that does not soak into the ground and instead runs off hard surfaces that don't absorb water (impervious surfaces) or washes off lawns and steep slopes is called *runoff*. Impervious surfaces include roofs, driveways, sidewalks, and compacted soils. When the runoff reaches the lake, it can carry with it nutrients, eroded soil sediments, toxic materials, bacteria and other pollutants that can cause reduced water clarity, increased aquatic plants and algae, and impact fish and wildlife habitat.

What was once an occasional cabin along a wild shore has become a ribbon of structures and paved areas circling the lakes. All this construction has added more rooftops, roads, walkways, decks, parking areas and driveways, increasing the amount of impervious surfaces, which act like funnels for runoff to reach lakes, rivers, and wetlands. Runoff from compacted soils and impervious surfaces also increases erosion and sedimentation.

Managing runoff on your property is the best way to reduce pollutants before they reach the lake. Increasing opportunities for water to soak into the ground (infiltrate) instead of running off is the best way to reduce runoff and filter out the pollutants before they reach the lake.

Learn From Mother Nature

With the natural water cycle, when there is precipitation, water will evaporate, run off the land, or soak (infiltrate) into the ground. The amount of vegetative cover on the ground will determine the amount of runoff and infiltration. Natural vegetation will hold back the runoff providing time for it to soak into the ground.



You Don't Have to Live on the Lake for Runoff to Impact Water Quality

If you live in town, the water running off your lawn and into the storm sewers has to go somewhere, and it eventually drains to the lake carrying with it nutrients, pollutants, and sediments that impact water quality. Whether you live on the lake or not, practice the principles in this guide for reducing the amount of runoff from residential and commercial properties to increase the amount of rainfall that infiltrates back into the ground.

Rainwater runoff is the #1 source of pollution to our lakes. Residential and urban runoff has been increasing in Otter Tail County in recent years while other sources of pollution have been declining.

How much of the rainfall runs off?

Woods	0.05%
Prairie	1%
Lawn	3%
Impervious surfaces	98%

Maintain Natural Vegetation

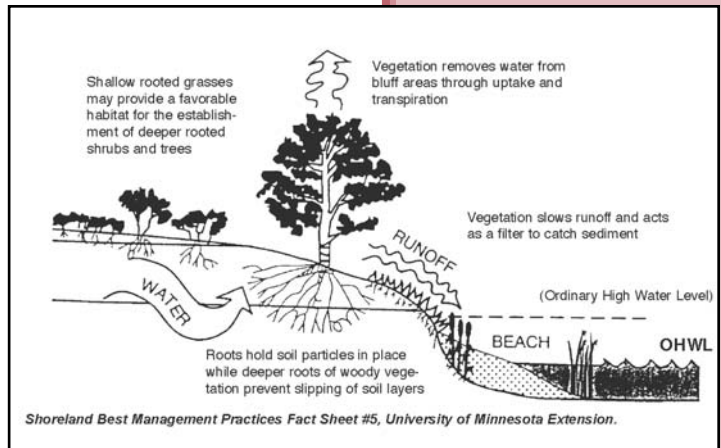
Natural vegetation will naturally reduce runoff by holding back the water to provide time for it to soak into the ground.

- When clearing your lot, minimize the removal of wooded areas, trees and low growing shrubs. Their removal causes more rain to fall to the ground instead of landing on leaves and branches.
- Grading large areas of land removes the natural depressions of land where water can pond and soak in.
- Carefully landscape your yard near roads, driveways, and along the shoreline to direct runoff away from the lake.

Practice Good Lawn Management

Maintain a Healthy Lawn to Absorb More Water

- Aerate your lawn to alleviate some of the compaction that turns many lawns into green concrete.
- Mow to a height of two to three inches; mow when dry to prevent clumping. Taller grass provides shade for better root growth, which helps with water absorption.
- Consider replacing some of the grass in your lawn area with clover, native grasses, or other groundcovers that don't need watering.
- If watering is necessary, water deeply, but infrequently, to encourage deep root growth. Water with lake water. (*Hint: use the nutrients in the lake to make a healthy lawn instead of frequent fertilizer applications.*) Water in the morning, not mid-day or evening.
- In hot weather, allow lawn grasses to go dormant so that they require less water and nutrient intake for survival. Water 1/4 to 1/2 inch every two or three weeks to keep crowns from dehydrating beyond the point of recovery.



If we love our lakes, we have to change our ideas about what is a good lawn for shoreland properties. Limit the amount of lawn and keep it as natural as possible to reduce maintenance and increase its ability to absorb runoff.

Identifying Lake Problems Caused by Runoff

Problem	Is the water near shore cloudy?
Possible Cause	<i>Excess sediment reaching the water.</i>
Problem	Is there an oily rainbow film on the water?
Possible Cause	<i>Possible petroleum contamination.</i>
Problem	Are there algal blooms, green scum, or abundant plant growth in the water?
Possible Cause	<i>Excess nutrients such as nitrate or phosphorus reaching the water.</i>
Problem	Are washouts, trenches, small piles of sediment, leaves, or debris found at the bottom of slopes?
Possible Cause	<i>Excessive water runoff across the property.</i>
Problem	Is your shoreline eroding?
Possible Cause	<i>Removal of natural vegetation for property development or creation of beaches, both on-shore and in the lake; dredging, filling, or construction on or near the shoreline; trampling of banks; inadequate protection against runoff from roofs, driveways, roads, or other developed areas.</i>

Building a home and establishing a lawn to the water's edge can cause seven times the amount of phosphorus and 18 times the amount of sediment to enter the water compared to a natural shoreline.¹

Allow Water to Settle Into the Soil— Not Run Off Into the Lake!



The fewer hard surfaces there are for rainwater to collect and runoff from the less likely there will be erosion and runoff into the lake. The key to solving this problem is to stop water from running off your property so it can soak into the ground. You can **capture** rainwater and allow it to be **cleansed** through natural soil processes.

The best way to do this is to: divert rainwater off roofs, driveways, walkways, and other hard surfaces into rain barrels or to the lawn, or create a rain garden designed to capture and cleanse the rainwater naturally.

Divert Rainwater off Roofs and Driveways

Paved driveways and roofs of buildings comprise most of the impervious surfaces on a lot. Redirect rainwater flow from downspouts, roof gutters, and driveways onto lawns or into a rain garden where it will have time to naturally infiltrate into the ground. Or, capture the water in a rain barrel, where it can be used later for watering.

Install a Rain Barrel

A rain barrel is any type of container used to catch water flowing from a downspout and store it for later use.

The rain barrel is placed underneath a shortened downspout diverting the roof runoff into the barrel. The rain barrel has a spigot to collect the stored water for use in watering flower gardens, house plants and lawns. Rainwater is naturally high in phosphorus it's a natural way to fertilize.

Humans and pets should not drink the stored water, nor should it be used on food products. A screen should be installed on the barrel to keep mosquitoes and debris from entering. Mosquitoes cannot breed if the barrel is drained weekly.

Rain barrels need to be drained regularly during spring and summer months to reduce algae growth. During winter months, take your barrel out of operation by simply turning it upside down at the same location or storing elsewhere. Rain barrels can be purchased at garden centers, ordered online from garden catalogs, or you can make your own. **(Send in the inserted postcard if you are interested in obtaining and installing a rain barrel.)**

How much rain do I need to fill a 50-gallon barrel? For every inch of rain that falls on one square foot of your roof, you can collect just over half a gallon of rainwater. Example: 100 square feet of roof could collect 60 gallons of rainwater during a 1-inch rain event.² Sixty-five (65) percent of all annual rain events are one inch or more.



Plant a Rain Garden

A rain garden is just what it sounds like, a garden to soak up rain water. It is a recessed planting bed, shaped like a saucer or shallow bowl, and is designed to collect runoff from driveways, roofs, other hard surfaces or sheet flow of rain from lawns. The collected water is then infiltrated into the ground instead of running off to the lake.

Rain gardens are planted with hardy, water-loving native perennial plants that have deep roots, which along with the soil, work to provide a filter system to catch pollutants such as phosphorus, oil, mercury and other heavy metals in rainwater that run into the garden area. Rain gardens allow sediments that are carried with runoff to settle so plants can absorb the nutrients. During a rainfall, the highest concentration of pollutants is during the first inch, or first flush of a storm, which is retained in the rain garden. Rain gardens are designed so that collected water will infiltrate into the ground within a few hours of the rainfall ending.

To be effective, rain gardens must be properly designed for the right shape and size to accommodate the amount of roof, driveway, and other hard surfaces on your property as well as your soil conditions. For proper design, it is recommended to consult resources to help you determine the proper plants and dimensions. Remember to always call the Digger Hotline (800-242-8511) before digging to prevent cutting into an electrical line or cable.



Use Pervious Pavement and Pavers

Pervious pavement and pavers are made of special materials that allow the water to flow through and infiltrate into the ground. They can be used for driveways, sidewalks, walkways, and patios. Pavers are quite attractive and some have a 5-year life span. A 1,000 square foot pervious driveway can infiltrate over 12,000 gallons of water per year. Runoff from rooftops and lawns can be diverted to pervious areas for additional water treatment.

Note: In Otter Tail County, pervious pavers are considered impervious and count as part of the 25% impervious surface limit per parcel.

Additional Resources for Rain Barrels and Gardens:

Constructing a Rain Barrel:

<http://home.comcast.net/~leavesdance/rainbarrels/construction.html>

Designing a Rain Garden:

http://www.lowimpactdevelopment.org/raingarden_design/how2designraingarden.htm

<http://bluethumb.org/raingardens/>

Rain Garden Tips:

- Don't worry about mosquitoes. Most rain gardens should not hold water long enough for mosquitoes to reproduce.
- When first planted, hand weed biweekly until native plants are established.
- Don't fertilize near the rain garden, it will stimulate weed competition without benefiting the native plants.

Source: Taylor Creek Restoration Nurseries



Buffer the Lake from Runoff

Benefits of a Shoreland Buffer

- 1. Enhances water quality.** A good buffer protects your lake, stream, or wetland by slowing runoff and allowing it to soak into the ground.
- 2. Stabilizes shorelines.** Buffers prevent fluctuating water levels, moving ice, flooding, surface runoff and wave action from eroding your shoreline.
- 3. Provides fish and wildlife habitat.** The shoreline buffer provides habitat for fish and cover for birds, butterflies, turtles, and other wildlife.
- 4. Enhances aesthetics.** Natural buffers beautify your yard with a variety of colorful wildflowers, create a natural screen for privacy, and enhance that “Up North” feeling.
- 5. Increases property value.** A high quality buffer is an asset that can add resale value.
- 6. Limits nuisance bugs and wildlife.** A native plant buffer creates a natural barrier to Canada geese.

Scientific research shows that the way we treat our shorelines affects lake water quality and fish and wildlife habitat. **To protect and improve our lakes, we need to improve our shorelines.** The best way we can do that is by adding or keeping a buffer strip of natural vegetation along the shore. Buffer strips of native wildflowers, grasses, trees, and shrubs protect water quality and provide habitat for fish and wildlife.

If you have lawn to the water's edge, lawn behind rip-rap, steep slopes, or little vegetation near the shore, consider a natural shoreland landscaping project to restore the native vegetation by creating a shoreland buffer zone—an area of native vegetation along the water's edge.

Rethinking How our Shorelands Should Look

Creating and maintaining a natural buffer zone along your shore does not mean your property has to look messy, but it may mean you have to re-think what your shoreland should look like. Lawn-to-lake shorelines are no longer ecologically smart.

Creating or keeping a native shoreline buffer reduces the amount of nutrients entering the lake along with providing better wildlife habitat. For example, a 20-foot buffer strip along the lake can trap about 80% of the phosphorus runoff and about 90% of the sediment pollutants.

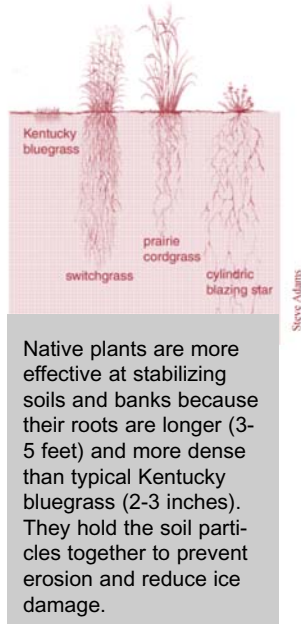


This lawn is labor-intensive and expensive to maintain. Fertilizer and grass clippings add nutrients to the lake leading to weed and algae growth. A shallow-rooted lawn (turfgrass) has a minimal ability to filter nutrients and sediment entering from rain-water runoff and is ineffective at allowing infiltration of water into the soil. The shallow roots leave subsurface runoff untreated while native plant roots intercept and withdraw the nutrients and water.

This shoreland buffer of native vegetation protects the shoreline, maintains the natural landscape, and filters out boat noise. Many plants are suitable that are low growing and won't impede your view of the lake. Using ornamental grasses, perennials and smaller woody plants will significantly reduce and filter runoff while restoring the natural beauty to the shore, and they are less work—more time to recreate.



One of the greatest benefits of establishing native vegetation is their deep root systems that stabilize the shore from erosion and ice damage, and they loosen the soil allowing the rain to soak into the ground instead of running off to the lake.



What is a shoreland buffer?

A shoreland buffer is an unmowed strip of native vegetation that extends both lakeward and landward from the water's edge. A buffer zone of native plants that extends 25-50 feet landward from the shore is preferable, but even adding a buffer as narrow as 10-15 feet can restore many functions critical to the health of the lake that may have been eliminated previously by sod, hard structures, or mowing. **When it comes to shoreland buffers, wider is better for more benefits.**

A shoreland buffer consists of:

- The shallow **aquatic zone** of the emergent, submerged, and floating leaf aquatic plants that provide food and shelter for ducks, songbirds, frogs and other amphibians, and fish. The taller plants, like bulrush, sedges, and cattails can reduce the energy of wave action to minimize erosion and help maintain water quality.
- The **wetland transition zone** of more water-loving plants that bind the lake bed to the upland soils.
- The **upland zone** of native trees, shrubs, grasses, and wildflowers slows rainwater running over-land, making sediment drop out, absorbing water and nutrients, and breaking down pollutants.

Getting Started Creating a Shoreland Buffer

There are a number of ways to create a shoreland buffer depending on the characteristics of the shoreland and the desires of the property owner. Some decisions in creating a buffer are easy, such as: How tall do you want the plants to be? Others, are more complicated, like: What is your soil type and moisture?

Otter Tail County has a program to assist you in designing and installing a shoreland buffer. For personal assistance, fill out and mail the inserted postcard or contact the Otter Tail County Shoreland Specialist:

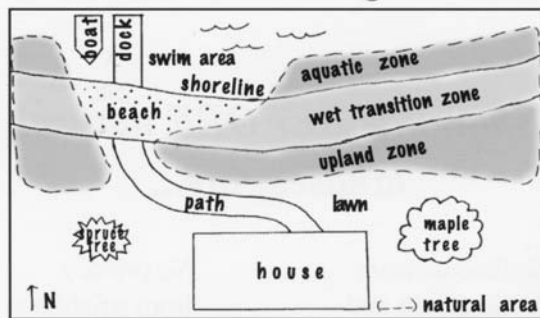
801 Jenny Ave SW Suite 2
 Perham, MN 56573
 218-346-4260 ext.3
 Email: steve.henry@mn.nacdnet.net



Native Shoreland Buffer

Resource professionals recommend that you maintain a shoreland buffer along 75% of the shoreline frontage.

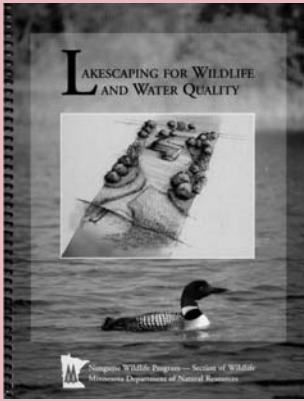
Plan a natural area along the shore.



Source: University of Minnesota Extension Service, 2005; Item #08308

Here are some options to help you decide how you want to establish a shoreland buffer.

Don't Mow, Let It Grow A simple, no-cost way to get started in restoring your shoreland is to stop mowing for the width of the desired buffer strip. Turf grasses will grow 12-24 inches before going to seed, after which seeds in the soil will germinate and valuable native plants will begin to appear. You can note the types of native plants and wildflowers growing on natural shorelands around lake to get an idea of what is likely to appear or will be suitable for growing in your area. While the buffer is getting established, you may need to weed out nuisance species or add native plants for diversity, but not mowing will get you started. Perennial native plants will take three to five years to become apparent.



The book *Lakescaping for Wildlife and Water Quality* and the DNR CD *Restore Your Shore* are two highly recommended resources to get you started. They are available in bookstores and online through the Minnesota Bookstore at www.mnbookstore.com



The *Restore Your Shore* CD is also online at www.dnr.state.mn.us/restoreyourshore/index.html

Check local Otter Tail County libraries for copies of both resources.

Restore Your Shoreline

Local nurseries and garden centers are starting to carry more native plant stock and can recommend the best plants for your site. Plants used should be indigenous to this region of Minnesota—don't buy plants from a mail order catalog grown in another part of the country and expect them to grow. The DNR website has a list of native plant suppliers and landscapers. Consult with University of Minnesota Shoreland Specialists, DNR Shoreland Restoration Specialists, or the Otter Tail County Soil and Water Conservation Districts for resources and fact sheets on designing your project, selecting plants, preparing the site, and planting. Take one of the many classes, tours, and open houses offered throughout the summer on the basics of shoreland restoration. Professionals teaching the classes will help you design your own project and may later be available for further consultation. Many classes include an opportunity to participate in the planting of a restoration project to give you experience for planting your own project. Check with the Otter Tail Shoreline Specialist for possible cost-share assistance.



Hire a Professional

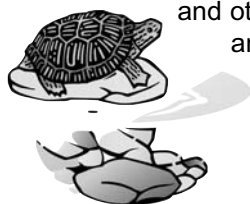
Shoreland restoration is a rapidly growing field among landscape professionals; consult the yellow pages or watch for promotions. Ask for recommendations from other property owners who have completed re-vegetation projects. If your site has a steep slope or other unusual characteristics, getting professional assistance will be very important to the success of your project.

Maintaining Your Restored Shoreland

A shoreland restored with native vegetation should maintain itself once it is established. Apply mulch to new planting beds to prevent soil erosion, hold moisture in the soil, and control weeds. You may need to water and weed the first season, but once the plants are established, they will be able to out-compete most weeds. Native species should never be fertilized because they are adapted to the nutrient levels found in local soils, and fertilizers and pesticides applied to areas near shore can be a threat to aquatic life and water quality. Plants left standing in fall and winter provide seeds and shelter for wildlife, protect the soil from wind erosion, and capture windblown leaves and debris.

Leave Fallen Trees and Branches Alone

Unless they are interfering with your recreational access, leave trees and branches that have fallen into the water alone. They form critical habitat for aquatic organisms that fish and other aquatic life feed on, provide cover from predators for small fish, and they serve as a dock for turtles, kingfishers and other interesting wildlife.



Protect the Aquatic Zone

The aquatic zone is a vital part of the shoreland buffer. Emergent vegetation, such as soft stem bulrush, wild rice, and cattails, help purify the lake by removing contaminants and calming the water, which allows suspended soil particles to settle to the lake bottom. They provide food, shelter and spawning areas for fish and other wildlife and add oxygen back into the water. If submerged aquatic plants are interfering with swimming, clear by hand only what is needed to provide a small swimming area and access to the water. Leave other submerged plants in place. Remember, aquatic plants are protected and any disturbance may require a DNR Fisheries permit (218-739-7576) to remove or treat with chemicals.



Requirements When Working in the Shoreland District

All counties and municipalities with shorelands within their jurisdiction are required to have and enforce a Shoreland Ordinance that regulates activities done in the shoreland district. The shoreland district is established as 1,000 feet from a lake or 300 feet from a river or floodplain. The local government ordinance must meet or exceed the Minnesota State Shoreland Rules.

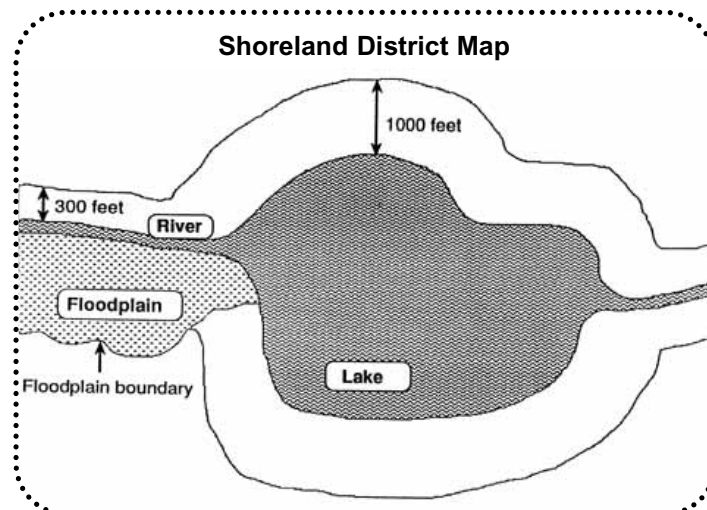
The Otter Tail County Shoreland Management Ordinance is not a building code. It addresses the setbacks and the location of structures on a shoreland lot and defines restrictions on the types of activities that can take place within the shoreland zone. It also regulates the setback and construction of septic systems. It does not address the type of structure that may be built or anything regarding the interior of the structure.

The requirements in the shoreland management ordinance are based on the established classification of the lake on which the work is to be done. Lakes in Otter Tail County are classified by the Minnesota DNR as one of the following types:

1. General Development (GD)
2. Recreational Development (RD)
3. Natural Environment (NE)

Most of the more populated, well-developed lakes are designated as general development (GD), while many of the less developed lakes are natural environment (NE). Because each type of lake has unique characteristics, each has different shoreland development standards to provide adequate protection of water quality and fish and wildlife habitat. Natural environment lakes generally have the most restrictive standards while general development lakes have less restrictive standards. To find the classification of your lake, see the DNR Lake Finder at www.dnr.state.mn.us or Waters of Otter Tail County on the home page of the Otter Tail Land & Resource Management web page.

The Otter Tail Shoreland Ordinance is periodically revised to insure that it is fair and yet protective of the environment. **Before doing any work in the shoreland district, contact the Otter Tail Land & Resource Management Office to see if permits are required or there are other requirements.** See pages 23 and 24 for some requirements in the Otter Tail Shoreland Management Ordinance.



Otter Tail Land & Resource Management
Government Services Center
540 West Fir
Fergus Falls, MN 56537
218-998-8095
<http://www.co.ottertail.mn.us>;

Business Hours:
8 a.m. - 4:30 p.m.
Monday-Friday
No applications processed
after 4 p.m.

The Otter Tail Shoreland Ordinance is located at:
www.co.ottertail.mn.us
Under Departments
choose Land & Resource
Management.

Don't Let Your Shoreline Slip Away—Curb Erosion

Curbing the erosion of soil into the lake will reduce pollutants reaching the lake.

A survey of Otter Tail County shoreland owners found that over 25% of shoreline stabilization projects were not performing as landowner's expected.

Success Rates Reported

Rip-Rap	74%
Native Plants	68%
Retaining Wall	50%
Sandbags	15%
Aerator	8%
Concrete Blocks	7%

Rainwater runoff or waves lapping at the banks of your shore can erode the shoreline, silt up the water, and wash away sand blankets and impair fish spawning areas. When soil washes into the lake, it carries with it phosphorus, the desired nutrient for aquatic plant and algae growth. It causes sediment to build up in the lake; increases turbidity after rain events, which interferes with normal lake functions; and impacts fish and wildlife habitat. Degradation to water quality is the result. **Curbing the erosion of soil into the lake will reduce pollutants reaching the lake.**

Shorelines can erode through many processes. Natural causes of erosion include currents, waves, ice, and rain. Many human activities may significantly increase the rate of erosion. Some common causes of erosion include:

- removal of natural vegetation for property development or creation of beaches, both on shore and in the lake.
- improper installation of erosion control structures, such as retaining walls.
- increased wave action from watercraft traveling close to the shore.
- dredging, filling, or construction on or near the shoreline.
- trampling of banks by human, animal, or vehicle traffic.
- inadequate protection against stormwater runoff from roofs, driveways, streets, and other paved or hard surfaces.

Signs of a Serious Problem

- A large area of bare soil on a steep, high shoreline bank.
- A noticeable recession of the shoreline over a period of time.
- Large patches of muddy water near a lakeshore, or unusually muddy streams during periods of high water or following a rain-storm.
- Excessive deposits of sand or other sediments on the stream bed, or very wide, shallow areas in a stream.



Erosion may be accelerated by activities such as boat wakes or high waves during storms. Each year erosion causes the loss of valuable shorefront property.

How can shoreline erosion be controlled?

If your shoreland is eroding away, stabilizing the shoreland will be necessary to reduce erosion.

Each shoreland situation is different. You are encouraged to consult with shoreland landscaping professionals, the DNR Area Hydrologist, University of Minnesota Shoreland Specialists, or an Otter Tail County Soil and Water Conservation District to determine the best solution for your shoreline erosion situation.

Rip-rap, stone, retaining walls, or turf grass might seem like good solutions for stabilizing erosion, but they are not usually the best choice. Rip-rap reflects wave energy back towards the lake causing previously sandy areas to erode to gravel or cobblestones. Water can undercut retaining walls and turf grasses. Rip-rap and non-native grasses don't reduce chemical runoff polluting the water and causing unsightly algal blooms. These choices can negatively impact the lake by creating an unnatural barrier between upland areas and the shoreland environment that destroys vegetative transition areas and eliminates critical habitat for many species.

Retaining walls deflect wave energy back to the lake instead of diffusing it, which can undercut the base of the wall and cause increased erosion at the ends making the water more turbid. And, neither rip-rap or retaining walls will prevent ice ridges from forming because rock cannot withstand the up to 30,000 pounds of ice pressure per square foot.

Preventing Erosion

Some basic preventive actions include:

- Preserve existing rock and vegetation that naturally occur along the shoreline.
- Stop mowing a strip of land near the shoreline or restore a shoreland buffer of native vegetation.
- Prevent impervious surface (i.e. roofs, driveways, etc.) runoff from flowing to the shoreline, steep slopes and bluff areas.
- Avoid construction within 100 feet of the shoreline, steep slopes or bluffs.
- Protect berms pushed up by ice action along lakeshores. They prevent excessive surface runoff and trap sand which "nourishes" the beach.
- Limit the amount of foot traffic and other recreational activities in erosion prone areas. Regardless of preventive measures, the right combination of conditions, such as high water level, violent windstorms, drastic ice movement, and certain shoreline configurations, may result in serious shoreline erosion.

Preventing Erosion on Steep Slopes and Bluff Areas

The erosion potential on steep slopes and bluffs can be reduced by:

- Diverting water away from steep slopes by rerouting drainpipes and gutters. If diverting water away from the bluff is impractical, it should be routed through a non-perforated plastic drain pipe that outlets at the very bottom of the bluff into rock drainage.
- If you need a walkway to the shore, follow the natural contours of the slope to go across or around the slope, or use steps when a walkway must go directly up and down a slope, but minimize destruction of natural vegetation during construction.
- Keep the moisture- and nutrient-absorbing natural vegetation on steep slopes by limiting clearing and grading.
- Replant vegetation on barren slopes.
- Create a view corridor through the trees with selective pruning for an excellent view while maintaining the natural trees and shrubs.



On steep bluffs, selectively prune trees to create a view corridor of the lake. Keep the vegetative undergrowth to stabilize the soil on the bluff.

Neither rip-rap or retaining walls will prevent ice ridges from forming because rock cannot withstand the up to 30,000 pounds of ice pressure per square foot.

Naturalizing your shoreline or maintaining the natural shoreland vegetation is the most important way to reduce shoreland erosion.

Ice ridges provide a natural form of shoreline protection and have many benefits to the lake.

Reduce Erosion By Slowing Down the Boat

Boat wakes can cause tremendous shoreland erosion, so slow the boat down. In shallow areas (less than 15 feet), motor at slow-no-wake speeds (5 mph or less) to reduce the boat wake and the consequent wave action that can erode your shoreline and the shoreline of others around the lake. Observe all posted no-wake and low-speed zones. For personal watercraft, running at slow, no-wake speed within 150 feet of the shore is the law.

Boating slowly makes less wake, less noise, reduces pollution and is less disruptive to bottom sediments, wildlife and other people. When running at higher speeds, keep the motor properly trimmed to reduce noise and the boat wake.

Make Friends with the Ice Ridge

Ice ridges are formed by the pushing action of the lake's winter ice sheet against the shore. Cracks form in the ice because of different contraction rates at the top and bottom of the ice sheet, and it is especially pronounced in years when there is little insulating snow cover. Ice cracks also develop because the edges of the ice sheet are sometimes firmly attached to the shore. Then, as the water rises in cracks and freezes, the ice sheets expands slightly and exerts thrust against the shore.

Unless the ice ridge is impeding your use of the lake or access to your dock area, consider making friends with the ice ridge and leave it alone. Historical ice ridges are a feature of many lakes and are protected by state law as a valuable resource to prevent runoff into the lake.

Otter Tail County Ice Damage Repair Policy

Alteration of a permanent ice ridge must be authorized by a Conditional Use Permit approved by the Otter Tail County Planning Commission. Permit applications can be obtained from the Otter Tail Land & Resource Management Office.

For ice ridges formed during the immediate past winter, a conditional use or grade and fill permit will not be required for earthmoving to repair ice damaged shoreline provided:

- The property owner's name, address, lake name and number are placed on the County's ice damage repair list.
- The repair is limited to damage from the immediate past winter and repair is completed between May 15 and September 1 of the current year.
- Not more than 200 feet of shoreline is affected.
- The ice ridge is leveled and flattened in place, when possible. If conditions do not allow that, it may be pulled landward from the lake on upland areas or removed from the site. No ice ridge material can be pushed towards the lake.
- No additional excavation or replacement fill material occurs on the site.
- All disturbed areas are appropriately stabilized within 10 days of completion of the repair.

Before doing any repair work on an ice ridge, contact Otter Tail Land & Resource Management for the current requirements.



Natural shoreline vegetation and other preventive actions are the best protection from both wave erosion and ice heaves, and it's less expensive and longer lasting.

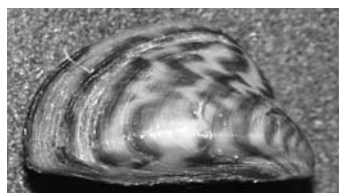
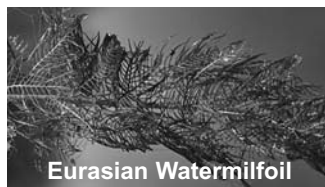
Be a Careful Boater

Stop the Spread of Aquatic Invasive Species (AIS)

Aquatic Invasive Species (AIS) are plants and animals released either accidentally or intentionally into areas where they are not native. Such introductions usually occur through human activities and often are spread through boating activity.

Common AIS in Minnesota lakes include:

- Eurasian watermilfoil, now in over 246 lakes, rivers, and streams statewide. There are no infested lakes in Otter Tail County yet; let's keep it that way.
- Curlyleaf pondweed, found in 18 lakes in Otter Tail County.
- Zebra mussels, now in 7 lakes and streams in Otter Tail County.
- Flowering Rush, not yet in Otter Tail County but it is found in 7 lakes in neighboring Becker County and in the Pelican River.



Zebra Mussel

AIS, such as Eurasian watermilfoil and Curlyleaf pondweed, cause problems by replacing native plants important for fish and wildlife habitat and form thick mats that make boating difficult. When Curlyleaf pondweed dies back in mid-summer it releases phosphorus that can fuel noxious algal blooms. Zebra mussels attach to hard surfaces and interrupt the food chain eventually impacting fish

populations. Flowering rush outcompetes native shoreland vegetation impeding access to the lake and interrupting shoreland ecological functions.

To stop the spread of AIS, careful boaters:

- Inspect boat, trailer, and boating equipment (anchors, centerboards, rollers, axles) before entering a lake or leaving a lake, and remove any plants and animals that are visible.
- Drain water from the motor, livewell, bilge, and transom wells while on land before leaving any waterbody; it is the law.
- Dispose of unwanted bait in the trash. Never release live bait into a waterbody. When cleaning off fishing lines, collect plant fragments in a bucket and dispose of onshore away from the lake.
- Wash then dry your boat, tackle, downriggers, trailer, and other boating equipment to kill harmful species that were not visible at the boat launch.
- Know what waters are infested; check lake accesses for DNR infested waters signs.

Jet skis can carry AIS, too, so clean out all water intakes and other parts before transporting jet skis.

Other Boating Cautions

- Do not dump wastewater from toilets, porta-potties, sinks, or showers into or near the lake. All waste must be held on board and disposed of properly onshore.
- Avoid boating in very shallow areas, where motors can churn up the bottom and increase the amount of damaging, nutrient-rich sediment in the water.
- Make sure boat engines do not leak oil, gas or other contaminants. Be extra careful when filling fuel tanks and be sure to clean up any spills.
- Keep unsightly litter out of the lake. Take it ashore and place in recyclable trash containers.
- Be safe: wear a Coast Guard approved life vest when boating. Stay 100 feet away from swimmers, paddle boats, and other small objects in the water. Remember who has the right away on the lake.

In Minnesota it is against the law to transport any aquatic plants and invasive species.

The law requires boaters to remove the drain plug and drain all water from the boat. The plug must remain out while the boat is transported.

AIS Infested Lakes in Otter Tail County:

Zebra Mussels: Bass, Crystal, Fish, Little Pelican, Lizzie, Pelican, Prairie & the Pelican River from Fish Lake downstream to Prairie Lake.

Curlyleaf Pondweed:

West Battle, Clitheral, Deer, Hoot, Jolly Ann, East Leaf, Leek/Trowbridge, North & South Lida, Lizzie, Orwell, Otter Tail, Big Pelican, Big & Little Pine, Rush, Swan, & North Turtle.

Lakes in neighboring Becker County infested with Flowering Rush:

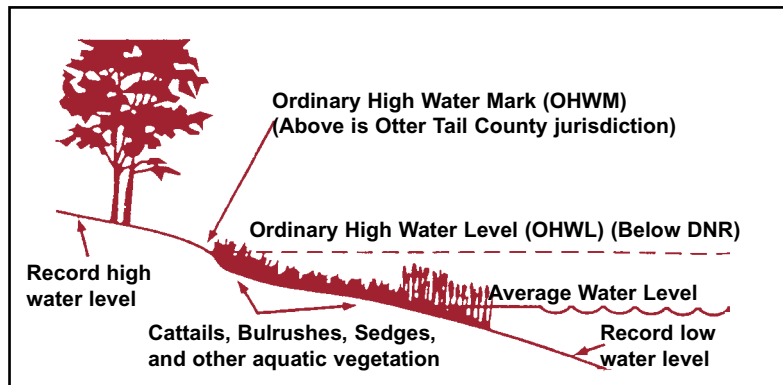
Buck, Detroit Lake, Curfman, Melissa, Mill, Muskrat, & Sallie plus the Pelican River from Detroit Lake to Muskrat Lake.

What Can I Do On Shoreland Property? What Permits Are Required?

Who Has Regulatory Authority in the Shoreland Zone?

The shoreland zone is defined as the land within 1,000 feet of a lake and 300 feet of a river or stream plus the near shore waters.

- **For any actions in the water or on the land below the ordinary high water level (OHWL)** of a public water (lakes, rivers, streams, wetlands), check with the appropriate Minnesota Department of Natural Resources (DNR) office for permits that may be required.
- **For any actions on the land above the OHWL (the upland areas of your property) and within the shoreland zone**, contact the appropriate county, city or watershed office.



See checklist on inside back cover for appropriate authority in various situations.

Knowing what you can and cannot do in the water and on the adjacent shoreland area, and following the regulations that apply, is an important stewardship practice.

Any activity that disturbs land, plant or animal life or applying chemicals in the water is a regulated activity to ensure that the quality of the environment is not compromised.

How do I know where the ordinary high water level (OHWL) is? For lakes and wetlands, the OHWL is the highest water level that has been maintained for a sufficient period of time to leave evidence on the landscape; it is not necessarily the highest place the water has been. It is commonly that point where the natural vegetation changes from predominately aquatic to predominantly terrestrial.

If there is a question about the OHWL on your property, contact the DNR Area Hydrologist or check Otter Tail County Land & Resource Management.

What Rules Apply To These Shoreland Activities?

Shoreland Structures and Repairs



Any land alteration in the shoreland area, including building retaining walls, installing rip-rap or beach blankets, and ice ridge repair requires a permit from Otter Tail Land & Resource Management.

Dock Placement and Size



Docks are privately owned structures, which are allowed to be placed in the public waters of the state to provide access to the use of the water. The DNR establishes dock rules to prevent the deterioration of the lake's ecosystem from excessive or inappropriate dock placement that can harm aquatic plants or disturb fish spawning, feeding, and shelter from predators.

Local governments have the authority to regulate docks; Otter Tail County currently defers to state rules.

The DNR is currently revising its dock rules. No DNR permit is needed to install, construct, or reconstruct a dock if: 1) the dock, not including the watercraft lift or canopy, is not wider than 8 feet and is not combined with other structures that create a larger structure; or 2) the dock is no longer than is necessary to reach navigable water depth, is not a safety hazard, it does not close off access for others to the lake, allows for free flow of water under it, and is not intended for use as a marina.

A general permit was issued in 2008 that allows for a modest platform at the lake end of the dock under the following circumstances: 1) a single temporary platform up to 120 square feet measured separately from the access dock, or; 2) 170 square feet including the area of the adjacent access dock. The access dock must be 5 feet or less in width and is located on a lake with a classification of General Development or Recreational Development. The general permit for platforms expires when the revised rules for docks are adopted. A DNR Waters permit will be needed if a dock exceeds these conditions. Check the DNR website for final dock rule revisions.

Control of Aquatic Plants



The removal or destruction of aquatic plants in Minnesota lakes is regulated by the Minnesota DNR. Aquatic plants are a valuable part of the lake system. They stabilize bottom sediments, protect water clarity, prevent shoreline erosion and provide fish habitat. Keep destruction of aquatic plants to a minimum.

If you see unusually high plant growth where it has not previously occurred, look for possible sources of phosphorus getting into the lake from your property that might be fueling this growth, such as excessive runoff, a malfunctioning septic system, or shoreland erosion.

If it is necessary to manage submersed aquatic vegetation for swimming or boat docking consider removing only that vegetation allowed without permit (see below). DNR regulations restrict submersed vegetation control with a permit to up to 100 feet or one-half the length of the person's shoreline, whichever is less.

DNR Aquatic Plant Management rules require:

- No destruction of emergent aquatic plants (bulrushes, cattails, wild rice) is allowed unless authorized by a DNR permit.
- Limited mechanical control (cutting or pulling) of submersed vegetation not exceeding 2,500 square feet or wider than 50 feet along the shore or half the width of your property, whichever is smaller; more than that requires a permit.
- Cut or pulled vegetation must be removed from the water and the cleared area must remain in the same place from year to year.

A permit from the DNR Fisheries Regional office is needed for:

- Use of any chemicals or automated mechanical devices (such as the Crary WeedRoller, Beachgroomer or Lake Sweeper).
- Use of copper sulfate for control of swimmers itch or filamentous algae.
- Removal of lily pads in an area larger than a channel 15 feet wide to open water.
- Any removal of any bulrushes, cattails, or wild rice.
- Removal or relocation of a bog.
- Planting aquatic plants below the OHWM (ordinary high water mark).

These activities are not allowed in any circumstances:

- Excavating the lake bottom for aquatic plant control.
- Using lake-bottom barriers to prevent the growth of aquatic plants.
- Removing vegetation within posted fish-spawning areas.
- Removing aquatic plants from an undeveloped shore.
- Removing aquatic plants where they do not interfere with swimming, boating or other recreation.

Otter Tail County Site Permits:



General Permit Requirements

The following information is based on the Otter Tail Shoreland Management Ordinance effective at the time this guide was written. However, ordinances do change periodically. Before doing any work in the shoreland zone, contact Otter Tail Land & Resource Management.

An Otter Tail County Site Permit is required prior to erecting or installing a new structure or altering a structure. Alterations include projects which make structural changes, alter the outside dimensions of a structure or the cost of the project exceeds 50% of the market value of the structure. A Site Permit is also required prior to moving a structure.

Before the site permit is issued, the current Otter Tail Shoreland Management Ordinance requirements must be met. This includes bringing a non-conforming septic system on the property in compliance.

A Single Family Residential lot can contain only one (1) dwelling structure. Guest houses would be prohibited as a second dwelling. The following exemptions are allowed without a Site Permit.

- A tent no more than 100 sq. ft., or tents whose cumulative size is no more than 100 sq. ft.
- A Recreational Camping Unit (RCU) of less than 40 feet in length and less than 399 sq. ft. when erected is allowed provided the lot is compliant with the Shoreland Management Ordinance and there are no sewer or water connections. RCUs include, but not limited to tents, motor homes and travel trailers.

General Otter Tail Shoreland Management Ordinance Requirements

The following general requirements apply to work done in the shoreland zone of a lake or river.

Building and Landscaping

If you intend to build or alter a structure or change the landscape on your shoreland lot, develop your ideas in a drawing of your lot and the lake and then visit the Land & Resource Management Office. Your drawing should be drawn to scale, including lot dimension, water frontage and setbacks from the road right of way, lake, sewage system, and top of a bluff. The drawing should also include existing structures and all impervious surfaces.

Lot Building Requirements: The Otter Tail Shoreland Management Ordinance establishes minimum requirements for building on shoreland lots. Requirements include buildable lot area (in square feet), shoreland width, setbacks from the lake or river, and setbacks from the structure and water well for the placement of a septic system. Requirements vary depending on the lake classification (natural environment, recreational development, or general development) for the lake or river on which the building will take place. Check with Otter Tail Land & Resource Management for specific requirements for a particular lake and before purchasing a lot to make sure your plans are consistent with the lot requirements. You can refer to a chart in the Shoreland Management Ordinance on the Land & Resource Management website. (www.co.ottertail.mn.us)

Shoreland Alterations or Excavation: In general, no grading, filling or alternation of land, including retaining walls, is allowed in the Shoreland Impact Zone (SIZ), Bluff Impact Zone (BIZ) or a wetland. Land alteration not to exceed 20 cubic yards per year may be allowed elsewhere in the shoreland zone. Check with Otter Tail Land & Resource Management for allowable activities with a Conditional Use Permit or Grade/Fill Permit, which must be issued before any earth is moved. See page 20 for ice ridge repair requirements.

Building On a Bluff: Because bluffs are potentially unstable, no structures or accessory facilities, except stairways and landings, are allowed in the Bluff Impact Zone (BIZ), the land located within 30 feet from the top of the bluff.

Stormwater Management: The goal of stormwater management is to keep precipitation from running off the land and into the waterbody because water runoff carries with it nutrients and pollutants that may be detrimental to water quality. Development of a lot should be planned to minimize disturbed areas and erosion to reduce runoff potential. Impervious surfaces, those that water cannot penetrate, must not exceed 25% of the lot area. Permeable pavers for walkways and patios must be included in the calculation. Minimization of paved areas is discouraged while rain gardens and the use of natural drainage areas are encouraged.

Clearing of Vegetation: Limited clearing of vegetation and trees in the shoreland zone is allowed. Minimal clearing is allowed to accommodate construction, but keep as much vegetation as possible to minimize runoff.

Stairways, Lifts, and Landings: These are the preferred alternatives to major topographic alterations for access to the shore area. The maximum width of stairs is 4 feet. Landings must be no more than 36 square feet in area. Stairs and landings may not have canopies or roofs. Other placement and building restrictions may apply.

Decks: Decks must meet the structure setback requirements. Non-conforming decks may be allowed without a variance for structures existing prior to 2/5/1992; contact Land & Resource Management for allowable criteria.

Water Oriented Accessory Structures: A small building such as a boathouse, screen porch, sauna, fish house or detached deck, may be located closer to public waters than the normal structure providing a site permit is obtained from Otter Tail Land & Resource Management. The structure cannot be used for human habitation or have water or sewer connections.

Drainage and/or filling of Wetlands: Wetlands are protected by the State Wetland Conservation Act (WCA) and in most cases drainage and/or filling of wetlands is prohibited. If wetland acreage is lost as a result of permitted land alteration, they must be replaced in accordance with the WCA requirements.

Non-Conforming Structures and Lots

Buildings and lots platted before 10/15/1971 are grandfathered in. If these structures and lots do not conform to the current ordinance they are designated nonconforming. The Otter Tail Shoreland Management Ordinance places limitations on the amount of expansion or replacement that is allowed for these structures and what may be built on nonconforming lots without getting a variance. Contact Land & Resource Management for allowed activity.

Conditional Use Permits and Building Variances

To obtain a conditional use permit, the proposed uses must be presented to the Otter Tail County Planning Commission for their determination of its applicability to the Shoreland Management Ordinance. In granting a permit, the Planning Commission may impose conditions on setbacks, vegetation, location of septic system, placement of docking and other conditions. An application must be filed along with detailed drawings not less than 21 days prior to the next scheduled meeting of the Commission.

The Board of Adjustment can issue variances to the Shoreland Management Ordinance requirements. Variances are only granted when the request is in harmony with the general purpose of the ordinance. No variance will be granted that would allow any use or expansion of use that is prohibited in the shoreland district. Contact Land & Resource Management for filing requirements.

✓ Otter Tail County Shoreland Homeowner s Checklist:

Depending on what you want to do with your shoreland property, permission and/or permits may be required from one or more agencies before proceeding with a project.

Contact the Otter Tail Land & Resource Management Office before:

- Buying, clearing, or developing shoreland property.
- Building a new structure, remodeling or adding on to an existing structure.
- Building detached accessory structures, i.e. fences, decks, patios.
- Installing a septic system, including an outhouse.
- Building a boardwalk, raised path to the lake, or anything that does not meet setback requirements.
- Building or repairing any accessory structure near the shore (boat house, gazebo, storage locker, etc.).
- Draining, excavating, or filling a wetland anywhere in Otter Tail County.
- Building stairways, landings, or clearing access paths in bluff areas.
- Installing rip-rap, a beach blanket, or ice ridge repair.
- Seasonally placing an RV on a shoreland lot.
- Building on a sub-standard lot.

When planning and before starting a project in the shoreland zone, contact the Otter Tail Land & Resource Management Office. Bring in a detailed plan of the project to review with staff. Contact staff at 218-998-8095 or stop by the office at the Government Services Center, 540 Fir Avenue in Fergus Falls.

Contact the East or West Otter Tail Soil and Water Conservation District (SWCD) for:

- Technical information and assistance on projects that involve shoreland stabilization (erosion control) and shoreland and woodland management.
- Technical information and assistance on shoreland restoration/landscaping projects; talk with the shoreland specialist in the East Otter Tail SWCD Office.
- Funding assistance for abandoned well sealing, low interest septic compliance loans, and conservation program assistance.
- Cost-share programs for water quality and shoreline restoration projects; wildlife projects on private land; and wetland restoration projects.
- Tree sales.

See the map at <http://www.eotswcd.org> for the East and West SWCD boundaries.

Contact the appropriate Watershed District (see page 2 for district boundaries):

- For assistance with projects that involve shoreland stabilization.
- Before starting any shoreland project to see if watershed district permits are required.

Contact the appropriate Minnesota DNR Office before:

- Removing emergent vegetation (cattails, bulrushes, wild rice); contact the Fisheries office.
- Using chemicals to control any aquatic vegetation (emergent or submerged); contact the Fisheries office.
- Clearing a path through lily pads for access to open water; contact the Fisheries office.
- Altering a lake bed or any work done below the OHWL; contact Waters/Fergus Falls.

Funding Partners

- MN DNR Native Shoreland Buffers Incentive Program
- Otter Tail County Coalition of Lake Associations
- Otter Tail County Land & Resource Management
- Lake Region Electric Cooperative "Operation Round Up"
- Otter Tail Lakes Property Owners Association
- Otter Tail Power Community Connections Program
- East Battle Lake Lakeshore Association
- East and West Otter Tail Soil and Water Conservation Districts
- Buffalo-Red River Watershed District
- RMB Environmental Laboratories, Inc.
- Park Region Mutual Telephone Company
- Dead Lake Association
- Wall Lake Association

Frequently Called Numbers & Contact Information in Otter Tail County

Projects that impact Minnesota's water resources are regulated by a variety of local, state, and federal agencies. This guidebook does not attempt to offer a comprehensive list of water-related contacts.

OTTER TAIL COUNTY CONTACTS

Otter Tail County Government Services Center

540 Fir Avenue, Fergus Falls, MN 56537
Main telephone: 218-998-8000

Otter Tail County Website

www.co.otter-tail.mn.us
Government officials (county, city, and township) and links to county departments.

Otter Tail County Land & Resource Mgmt

540 Fir Avenue West (Government Services Ctr)
Fergus Falls, MN 56537
Phone: 218-998-8095
Hours: Mon-Friday, 8 a.m.-4:30 p.m.
No applications are processed after 4:00 pm.
<http://www.co.otter-tail.mn.us/land>

Otter Tail Soil & Water Conservation Districts

East Otter Tail SWCD

801 Jenny Ave SW, Suite 2, Perham, MN 56573
Phone: 218-346-4260 ext.3
Email: steve.henry@mn.nacdnet.net
Hours: Mon-Friday 7:30 a.m. to 4:00 p.m.
Shoreline Specialist: Steve Henry
www.eotswcd.org

West Otter Tail SWCD

506 Western Ave N, Fergus Falls, MN 56537
Phone: 218-739-1308 ext.3
Email: brad.mergens@mn.nacdnet.net
Hours: Mon-Friday 7:30 a.m. to 4:00 p.m.
www.wotswcd.org

Otter Tail Solid Waste Department

Solid Waste: 218-998-4898
Recycling Center: 218-736-4400
HHW Facility: 218-736-2161
<http://www.co.ottertail.mn.us/solidwaste/default.php>

Otter Tail County Geographic Information Systems (GIS)

525 Fir Avenue West (Government Services Ctr)
Fergus Falls, MN 56537
Phone: 218-998-8310
Provides general information on enhanced 911 Ordinance and 911 house address signs.
<http://www.co.ottertail.mn.us/gis/default.php>

Otter Tail County Highway Administration

505 South Court Street (South Court Building)
Fergus Falls, MN 56537
Phone: 218-998-8470
<http://www.co.ottertail.mn.us/highway/default.php>

Otter Tail Emergency Preparedness

Information on spring flooding and other emergencies.
<http://www.co.ottertail.mn.us/emergency>

Watershed Districts (WD): (see page 2)

Bois de Sioux WD

704 Hwy 75 South, Wheaton, MN 56296
Phone: 320-563-4185
bdswd@frontiernet.net; www.frontiernet.net/~bdswd

Buffalo-Red River WD

123 Front Street S.; P O Box 341
Barnesville, MN 56514, Phone: 218-354-7710
brrwd@bvillemn.net; www.brrwd.org

Pelican River WD

801 Roosevelt Avenue, Detroit Lakes, MN
Phone: 218-846-0436
Email: tera.guetter@arvig.net
Website: <http://www.prwd.org/>

Cormorant Lakes WD

Cormorant Community Center
10929 Cty Hwy #5, Pelican Rapids, MN 56572
Phone: 218-532-5025
Email: admin@cormorantlakeswatershed.org
Website: www.cormorantlakeswatershed.org

MINNESOTA STATE OFFICE CONTACTS:

Minnesota DNR

MN DNR Information Center

Toll free: 1-888-646-6367
info.dnr@state.mn.us; www.dnr.state.mn.us
Link to Area Offices by Division:
<http://www.dnr.state.mn.us/areas/index.html>

MN DNR Multi-Discipline Office/Fergus Falls

Waters, Fish & Wildlife, AIS Specialist, Parks & Trails
1509 First Avenue North, Fergus Falls, MN 56537
Phone: 218-739-7576

DNR Fisheries Regional Office in Bemidji

(For aquatic plant management permits)
2115 Birchmont Beach Rd NE, Bemidji, MN
Phone: 218-755-3959

Minnesota Pollution Control Agency (MPCA)

Detroit Lakes Office: 218-847-1519
ISTS Licensing Phone: 651-296-7789

Minnesota Department of Health (MDH)

Fergus Falls Office: 218-332-5150
State Office Phone: 800-383-9808

University of Minnesota Extension

Extension Educator, Water Resource Management
220 West Washington Avenue; Suite 201
Fergus Falls, MN 56537; Phone: 218-998-5787
kterry@umn.edu; www.extension.umn.edu/Shoreland/

OTTER TAIL COUNTY COALITION OF LAKE ASSOCIATIONS (COLA)

P O Box 53, Ottertail, MN 56571
Email: otccolameeting@gmail.com
Website: www.minnesotawaters.org/group/otccola
The COLA is organized to facilitate cooperation among member lake associations and assist in fostering the wise use of the county lakes.

