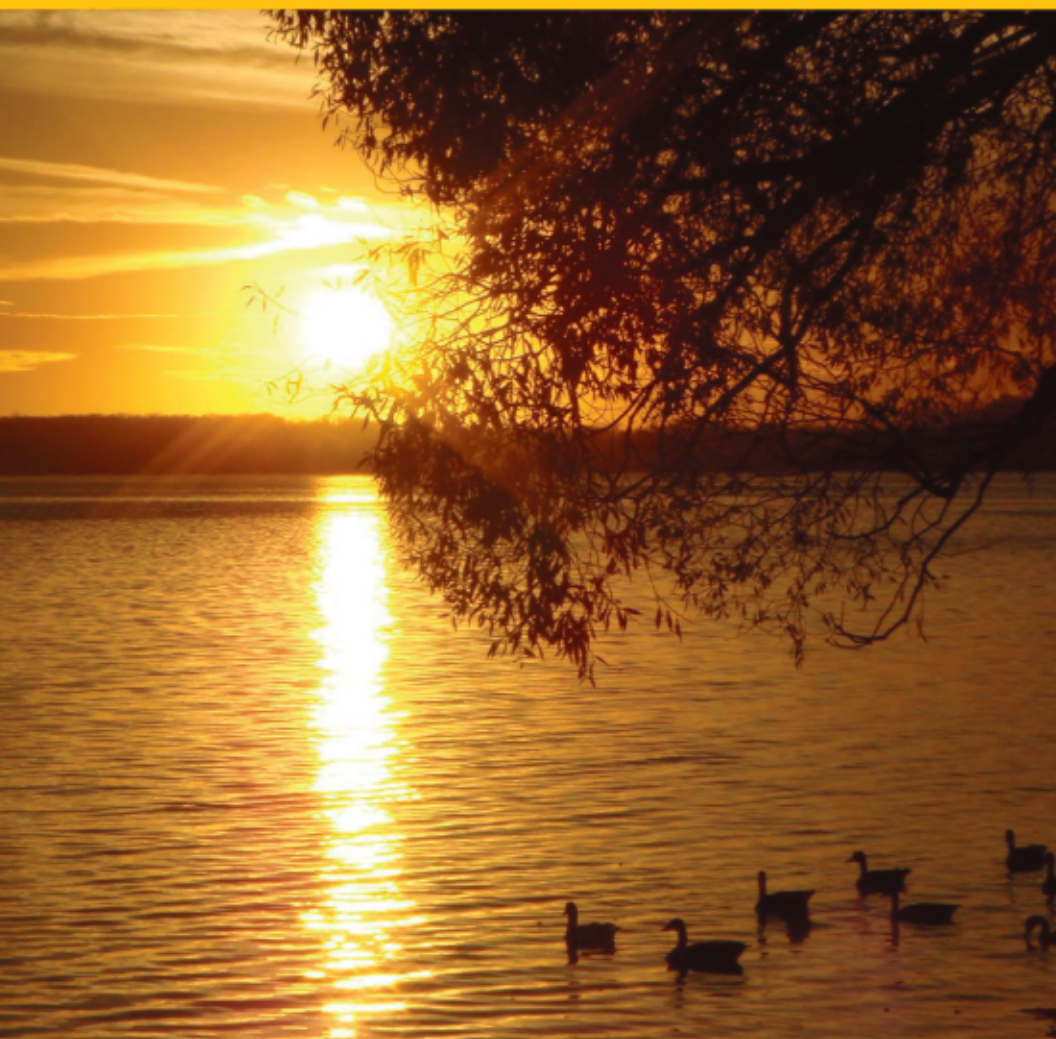


A Fresh View of the Lake



We all have a shared responsibility to protect our lakes, natural areas and wildlife habitat: to use only what we need, make smarter choices, and pass on to future generations the beauty, wildlife, water and natural resources we have today.



Let's keep it Clean!

A healthy lake doesn't just happen. It comes about when shoreline property owners , inland residents, recreational users, agricultural producers and other businesses all take positive action in maintaining and improving water quality.



It's up to everyone to:

- ◆ Prevent and control water pollution
- ◆ Conserve natural beauty and open space
- ◆ Conserve shore cover
- ◆ Protect fish spawning areas, aquatic life, bird and wildlife habitat
- ◆ Control the location of buildings
- ◆ Conserve public access to the water



One of the easiest ways to detect a change in water quality is to watch for a change in water clarity. When you notice a change, so will the fish and wildlife.



CURB POLLUTANTS

Curb pollutants at their source—fertilizers, household toxins, eroding soils, malfunctioning septic systems.

CAPTURE & CLEANSE

Use shoreland buffers, rain barrels or rain gardens to capture and cleanse pollutants before it reaches the waterway.

CUT RUNOFF

Cut the amount of runoff that picks up pollutants and carries them to the waterways by reducing the hard surfaces that create runoff.

While land activity 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 the shoreland property can have significant impact on the quality of the lake. Keeping our lakes and rivers clean means appropriately managing the land use around the lake to reduce the amount of pollution that enters the lake.

When you own shoreland you do have certain rights and privileges, but, these rights must be exercised in compliance with the rules of local government authority and the State of Minnesota. These rules are in place for the benefit of your health and safety and the health of the water resource.

Along with those rights comes responsibility to protect, improve, and enhance the quality of the water for your enjoyment and for that of future generations.

10 Simple Things You Can Do

#1 Minimize fertilizer use

Remember it is phosphorus that accelerates algae growth in our lakes and rivers. Most lawns already contain adequate amounts of phosphorus. When purchasing



fertilizer, be sure the middle number on the bag is 0. It is illegal to use fertilizer with phosphorus in Minnesota.



CURB POLLUTANTS

Curb pollutants at their source-fertilizers, household toxins, eroding soils, malfunctioning septic systems.

When fertilizing the lawn, remember, you are not just fertilizing the lawn.

#2 Dispose of Household hazardous waste properly

Gasoline, oil, solvents, old paints, thinners, fertilizers, pesticides, cleaners and many other products need to be disposed of properly. Becker County has a web page outlining the do's and don'ts of hazardous disposal in our area. See the link below.



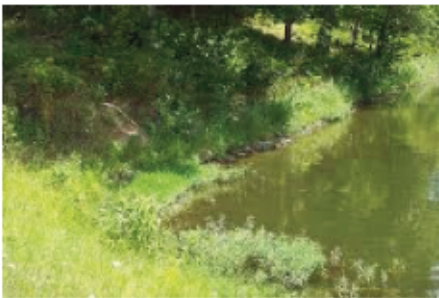
www.co.becker.mn.us/dept/environmental_services

If you wouldn't drink it—don't dump it!

#3 Minimize Erosion

Although erosion occurs naturally, human activities may significantly increase the rate of erosion. Removing natural vegetation, increasing wave action from watercrafts or construction near the shoreline will all increase the rate of erosion. Before taking action to correct erosion, determine why the erosion is occurring. Without understanding the problem, your actions may be a waste of time and money.

In it's natural state, the shoreline area is perfectly engineered to protect against erosion.

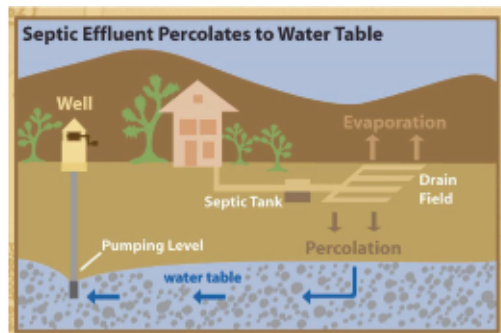


Erosion Indicators

- ◆ Noticeable recession of the shoreline.
- ◆ Leaning or downed trees with exposed roots.
- ◆ Large patches of muddy water near the shoreline.
- ◆ A large area of bare soil on a slope facing the water.

#4 Inspect & Maintain your Septic System

The more water and material that go into your septic system, the more that comes out into your drain field. If nutrients seep underground into the lake, aquatic plant growth and algae blooms are likely results. It is important for your family's health and the lake's health to be sure your septic is properly maintained.



Conserve water—use low-flow toilets, faucets and showerheads to reduce water volume.

#5 Reduce Hard Surfaces

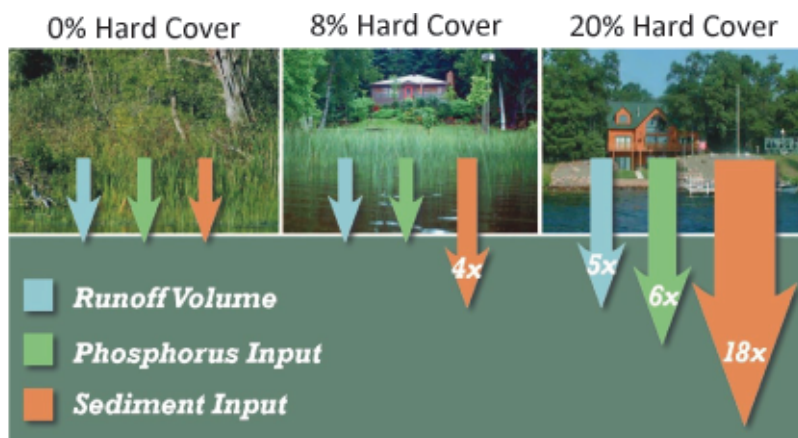
CUT RUNOFF

Cut the amount of runoff that picks up pollutants and carries them to the waterways by reducing the hard surfaces that create runoff.

Rainwater that doesn't soak into the ground but instead runs off hard surfaces (impervious) or washes off lawns and steep slopes is called runoff.

This runoff carries nutrients, sediments, toxic materials, bacteria and other pollutants that can reduce water clarity, increase aquatic plants and algae, and impact fish and wildlife habitat.

Allowing water to soak in rather than run off your property filters out pollutants and replenishes our groundwater.



The picture on the left is a half-acre undeveloped shoreland lot with minimal runoff, phosphorus and sediment inputs to the lake. The middle picture portrays a typical 1940s shoreland development with 8% of its area covered by impervious surfaces. The picture on the right shows a shoreland lot with approximately 20% of its area covered by impervious surfaces. Notice how sediment inputs drastically increase as impervious surface coverage increases.

#6 Learn from Mother Nature

Plant trees and shrubs



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

- ◆ Minimize removal of wooded areas. Their removal causes more rain to fall to the ground instead of landing on trees and branches.
- ◆ Grading large areas of land removes the natural depressions where water can pond and soak in.
- ◆ Carefully landscape your yard, especially along the shoreline, to direct runoff away from the lake.



Leave the suburban lawn mentality in the city.

- ◆ Keeping the lawn natural will reduce maintenance and increase its ability to absorb runoff.
- ◆ Consider replacing some of the grass in your lawn with native grasses that don't need watering.
- ◆ If watering is needed, water deeply to encourage deep root growth. Water with lake water, using the nutrients in the lake to make a healthy lawn instead of applying fertilizer.

#7 Direct downspouts onto your lawn or landscaping, not onto hard surfaces

This will allow the water from your rooftops a chance to be absorbed and filtered before flowing into the lake or street.



#8 Install a rain barrel

Rain barrels are fun as well as functional. Collect water from your rooftop to water your yard and gardens during dry periods.

The barrel should be covered to keep out leaves and insects. For more samples go to www.rainbarrelsrus.com.

#9 Build a rain garden



Rain gardens are excellent habitat for butterflies and birds. Blue Thumb is a great source for helping you plan and plant a rain garden at www.bluethumb.org/

It will guide you through the process including:



- ◆ Where is a good location in my yard for a rain garden?
- ◆ How big should it be?
- ◆ What plants would work well in this region of Minnesota?
- ◆ What maintenance is required after planting?

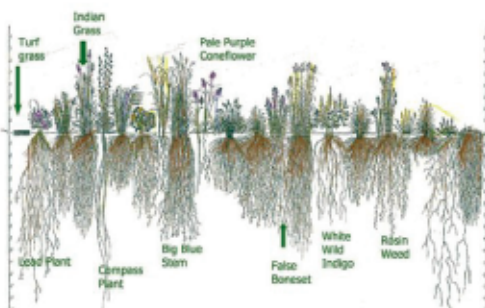
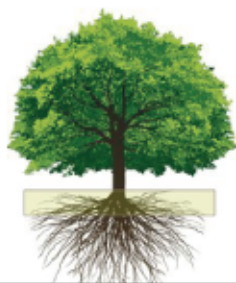
CAPTURE & CLEANSE

Use shoreland buffers, rain barrels or rain gardens to capture and cleanse pollutants before it reaches the waterway.

#10 Create a shoreland buffer

Before you begin creating a shoreland buffer, re-think what your shoreland should look like. Consider the characteristics on your property and determine what you want to accomplish. Buffers are helpful in all of the following:

- ◆ **Slows and filters runoff.** Buffers slow runoff and allow rain to soak into the ground
- ◆ **Stabilizes shoreline.** Buffers prevent fluctuating water levels, moving ice, flooding, surface runoff and wave action from eroding your shoreline.
- ◆ **Provides habitat.** The water's edge provides food and cover for birds, butterflies, turtles and other wildlife.
- ◆ **Enhances aesthetics.** Natural buffers beautify your yard with a variety of colorful wildflowers that bloom throughout the season.
- ◆ **Increase property value.** A well done buffer is an asset that adds value.
- ◆ **Limits nuisance wildlife.** A plant buffer creates a natural barrier to Canada geese.



A good buffer has several vegetation layers and a variety of plants to maximize the benefit of each type.

Let's keep it clean for the next generation

Develop Responsibly

Be sure to have all permits before your work begins!

Although it is difficult to gauge the cost of not enacting shoreland regulations, it is clear that Minnesota citizens and visitors benefit enormously from clean, clear lakes and streams; a healthy fishery; tree-lined shores; and an economy fueled by a healthy environment.

If you would like to make changes on your property, depending on where you are located and the scope of your work, you may need to apply for a permit with one or more local government agency.

Permit Water Resource Contacts

Becker County Planning & Zoning: zoning@co.becker.mn.us or
218-846-7314

Becker County Soil & Water: pemead@co.becker.mn.us or 218-846-7360
Detroit Lakes City: 218-847-5658

Pelican River Watershed District: prwdinfo@arvig.net or 218-846-0436
Wild Rice Watershed: Courtney@wildricewatershed.org or 218-784-5501
Buffalo-Red Watershed: general@brrwd.org or 218-354-7710
Cormorant Watershed: 218-532-2104 or 532-2938

MN DNR: info.dnr@state.mn.us or 218-846-8383

MN Pollution Control (MPCA): info.pca@state.mn.us or 218-847-1519

Don't try to change the lake....Let the lake change you.



Shoreland regulations are designed to help protect the public's interest in healthy shoreland and waters. Notice in the drawing below how the lawn does not extend to the water's edge. The vegetated buffer will intercept runoff from the development on the property and filter the water before it reaches the lake. The trees and plantings will help prevent shoreline erosion and provide a habitat for wildlife, while discouraging Canada geese from gathering on your shoreline. The firepit is not on the shoreline, but still allows an excellent view of the lake to enjoy magnificent sunsets.



Please consider the following as you plan the changes on your property:

- ◆ Try to keep homes and other **buildings at least 75 feet from the water's edge** if possible, this includes decks and patios.
- ◆ **Minimize impervious surface** areas to minimize pollutants and runoff your property contributes to the lake.
- ◆ **Trees and native plants** on the shoreline are better for controlling erosion than rock rip rap, and they provide great habitat for wildlife.
- ◆ **Strategically place your trees and shrubs** to maximize your view of the lake.
- ◆ Keep your **fire pit at least 35 feet from the shore** to prevent nutrient rich ash from entering the lake.
- ◆ Retain as much natural shoreline as possible. Keep your swimming and boating area as small as possible while still being adequate.

Let the skies provide the light

As a 24-hour society concerned with safety and security, the United States wastes over a billion dollars a year on lighting that doesn't provide safety or security, but simply lights the night sky and creates an adverse effect on nocturnal creatures and migrating birds.

Plants and animals depend on the daily cycle of light and dark rhythm to govern life-sustaining behaviors such as reproduction, nourishment, sleep, and protection from predators. Artificial light at night has negative and deadly effects on many creatures.



Poor Lighting—directed upward



Better lighting—directed down

"Light pollution is not a matter of life or death. We human beings lose something of ourselves when we can no longer look up and see our place in the universe."



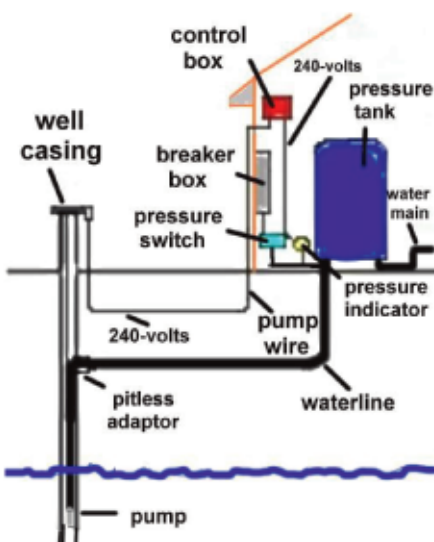
Tips for Shoreland Lighting

- ◆ Provide adequate lighting for your task, but don't over-light.
- ◆ Aim lighting fixtures away from the water and neighboring properties. Avoid light trespassing.
- ◆ Retrofit existing fixtures with shields, such as aluminum sheeting, to reduce glare.
- ◆ Use fixtures with high efficiency lamps, while still considering the color and quality of the light they produce. These may cost more initially, but the payback time is often very short.

How well do you know your well?

The source of water for private wells is groundwater. This water naturally contains impurities. Due to human activity, groundwater may also contain contaminants such as pesticides, nitrate and organic chemicals.

If you are concerned that your water may be unhealthy to drink, have a professional examine the well to be sure it is constructed and working properly. If your problem persists, check to see if there are contaminants locally that can be eliminated.



Protect the natural habitat for future generations

Although the effects of one lot's development may not result in a measurable change in the water quality of your lake, the cumulative effects of many developed lots can be substantial.

Removing trees and native plants eliminates the food sources and shelter on which wildlife depend. We can't enjoy watching the eagle soar if there are no trees in which it can build its nest. Nor can we watch him snare a fish if we have eliminated spawning areas crucial for fish reproduction.



We can't share with our children the sight of a loon travelling with its young on its back if we have not provided habitat for the loon to nest.

The shoreline is a busy place. Loons, ducks and other water birds nest along the banks. Frogs and turtles live there too. Shoreline areas—on land and into the shallow water—provide essential habitat for fish and wildlife in our lakes. Overdeveloped shorelands can't support the fish, wildlife and clean water that are so appealing.



Although we enjoy many of the birds on our shores, Canada geese can be a real nuisance. Geese love manicured lawns at the water's edge. A vegetative buffer strip, even a few feet wide, is a natural barrier used to deter geese from using shorelines directly adjacent to a water body. It obstructs their view from would-be predators and denies them easy access to the water.



Often we choose our lake property based on the fishing opportunities in the summer and the winter months. Whether we are with friends or small children, fishing gives us a chance to sit back and relax while waiting for the tug on our line.

Many of the smaller, nongame species serve as vital food sources for game fish such as walleye, smallmouth bass, and northern pike. Removal of aquatic vegetation and installation of beaches contribute to the destruction of near-shore habitat for both larger fish and smaller prey fish these predators depend on. Fewer food options for game fish will lead to lower numbers of game species overall.

When we leave shorelands in a more natural state, we all enjoy a healthier lake. Shoreland habitat and excellent water quality provide us with memorable fishing trips and wildlife watching. Let's all do our part to give future generations these same opportunities.



Activity	Impact	Alternative
Riparian Vegetation Removal <ul style="list-style-type: none"> ◆ To improve view ◆ To create a lawn ◆ Access to water 	<ul style="list-style-type: none"> ◆ Loss of shade and above ground cover for rearing fish. ◆ Loss of insect population. ◆ Bank erosion, influx of silt. ◆ Faster storm water runoff. 	<ul style="list-style-type: none"> ◆ Clear only a partial path to lake for view. ◆ Top trees and shrubs rather than removing entire plant. ◆ Replant shoreline with native species.
Lakeshore Infilling <ul style="list-style-type: none"> ◆ Includes sand and rock ◆ To create a beach 	<ul style="list-style-type: none"> ◆ Buries food organisms. ◆ Covers Spawning beds ◆ Destroys fish rearing habitat. 	<ul style="list-style-type: none"> ◆ Build a floating dock for swimming and lake access. ◆ Use public beaches for swimming.
Aquatic Plant Removal <ul style="list-style-type: none"> ◆ To “clean-up” lakefront ◆ Swimming and boat access 	<ul style="list-style-type: none"> ◆ Reduces “homes” for aquatic insects, invertebrates and fish. ◆ Destroys lake-bottom habitat. ◆ May increase nuisance plant growth. 	<ul style="list-style-type: none"> ◆ Consult with MN DNR for appropriate weed removal. ◆ Adjust your values to appreciate natural appearance.
Introduction of Nutrients and Toxic Chemicals <ul style="list-style-type: none"> ◆ Due to leaking septic systems, lawn fertilizers and livestock. 	<ul style="list-style-type: none"> ◆ Water quality deterioration. ◆ More algae blooms and aquatic weed growth. ◆ Oxygen depletion and fish kill. ◆ Contaminated drinking water. ◆ Odors 	<ul style="list-style-type: none"> ◆ Septic fields—keep to proper setback distances. ◆ Pump out septic tank every 2-3 years. ◆ Replace failing septic system. ◆ Minimize lawn size.

