

Water Quality Wisdom

8 tips

for creating and maintaining a
beautiful and healthy lake



Lake LeAnn
Property
Owners
Association

WE ALL LIVE IN A WATERSHED — an area of land that drains to a common waterbody, such as a lake, river or stream even an underground aquifer. Because of the way water moves in a watershed, pollutants travel from upstream to downstream areas or where water and groundwater connect. This means that your actions can have an impact on water quality far beyond your home.



Lake front properties aren't the only properties impacting our lakes water quality. Every property in the watershed contributes to water quality. The lighter blue/green area on the map shows the watershed for the South Lake and the dark blue area shows the watershed for the North Lake. However, due to the South Lake flowing into the North Lake, the North Lake is also affected by the South Lake's watershed.

The Grand River flows more than 250 miles from its headwater lakes in Hillsdale County to Lake Michigan at Grand Haven.

Lake LeAnn is part of the Headwaters of the Grand River.

Watershed map provided by RLS

TODAY, THE GREATEST THREAT TO WATER QUALITY IS NOT INDUSTRIAL DISCHARGE BUT POLLUTED RUNOFF, ALSO KNOWN AS NONPOINT SOURCE POLLUTION.

When rainwater or melting snow washes over the land, it carries with it contaminants such as dirt, fertilizers, motor oil, pet waste, pesticides, road salt, transmission fluid, and even heat from the pavement. The runoff enters our waterways directly or through the storm drains and ditches that were designed to send it there.

These pollutants compromise the health of our lakes, streams, rivers and even our drinking water. As more land is altered, developed or paved, especially along shorelines and streambanks, the amount of stormwater runoff in the watershed increases, as well as the potential amount of pollutants that are contained in that runoff.

THE BEST WAY TO REDUCE NONPOINT SOURCE POLLUTION IS TO TRAP AND INFILTRATE RUNOFF ON LAND.

Healthy wetlands, permanent vegetated buffers between lawns, fields or roads and adjacent waterways, sustainably managed woodlots, limited and low impact development all provide opportunities to keep polluted runoff from getting into our waterways.

ask

MANY HOMEOWNERS ASK:

HOW CAN I HELP IMPROVE WATER QUALITY?

AS A MEMBER OF THE ASSOCIATION

you have a unique opportunity to contribute to the health of your local waterway. There are many ways you can protect water quality right at home. Start here with these tips.



Illustration by
Amelia Hansen

8 waterfront tips:

- [1] Minimize runoff from your property, page 4
- [2] Lake Front Owners plant and maintain a shoreline buffer, page 5
- [3] Prevent soil erosion and sedimentation, page 6
- [4] Properly manage home, yard and animal waste, page 7
- [5] Grow a healthy lawn and garden with care, page 8
- [6] Phosphorus and Water Quality, page 9
- [7] Keep your septic system working, page 10
- [8] Properly maintain boats and recreational vehicles, page 11

Minimize runoff from your property

Use rain gardens, rain barrels, porous surfaces and native plants to keep rain water on your property where it can infiltrate into the ground.

PLANT A RAIN GARDEN

Rain gardens are attractive landscaping features that capture, hold and soak in runoff from storms. They are specifically designed for areas where rain water habitually pools or to which it is deliberately channeled. Their loose, deep soils and deep-rooted native plants absorb water and filter pollutants.



HARVEST RAIN WATER:

Install a rain barrel which will collect runoff from rooftops when it rains or direct downspouts into garden areas.

MINIMIZE PAVEMENT:

Instead of impervious surfaces, use porous landscaping materials, such as brick paving stones, sand or gravel beds and mulched areas, allowing spaces where water can infiltrate around and through the materials.

USE DEEP-ROOTED MICHIGAN NATIVE PLANTS:

There are many benefits to landscaping ANYWHERE IN YOUR YARD with native plants.

They are adapted to local soil and climate conditions and once established will require less watering and fertilizing. They naturally resist pests and diseases, eliminating the need for harmful pesticides.

Their deep extensive root systems help stabilize soils against erosion, promote infiltration of water, and filter pollutants and sediment from runoff. They attract wildlife, such as butterflies, dragonflies and humming birds and will discourage nuisance species like Canada Geese.

RESOURCES:
www.shorelinepartnership.org/find-native-plants.html

PROBLEM: Excessive aquatic plant growth and algal blooms, decreased water clarity, low stream flows and flashy flows, degraded habitat and shoreline erosion.

CAUSE: Impervious surfaces (driveways, sidewalks and rooftops) and loss of natural vegetation increase polluted runoff and reduce infiltration of water into the ground.

INVASIVE PLANTS:

Learn Michigan's most common invasive plants and the most appropriate methods to control or eliminate them. **DO NOT PULL INVASIVE AQUATIC PLANT SPECIES out of infested areas**—it can actually make the problem worse by producing plant fragments which can root, or it can cause their seeds to disperse to other areas.

RESOURCES:

The Michigan Department of Environmental Quality posts fact sheets and guides on aquatic invasive species at its website. mi.gov/aquaticinvasives Michigan State University Extension offers "A Michigan Boater's Guide to Selected Invasive Plants" a waterproof booklet with plant descriptions and information on reporting and controlling the listed species. msue.anr.msu.edu

The Midwest Invasive Plant Network has print publications and on-line tools for identifying and controlling invasive plants. mipn.org

RESOURCES:

The Michigan Native Plant Producers Association lists nurseries that grow and sell Michigan native plants and seeds, including trees, shrubs, wildflowers, grasses, and ferns. mnppa.org The Washtenaw County Water Resources Commissioner's Office offers free rain garden design and implementation help. For the do-it-yourselfer, its website is loaded with photos, site designs and plant lists. washtenaw.org/raingardens



Bergamot



Black-eyed Susan



New England Aster



Purple Coneflower

These native plants are a great choice to minimize runoff.

Plant and maintain a shoreline buffer

Plant or maintain a vegetated buffer of trees, shrubs, taller grasses and wildflowers between the shoreline and upland areas.

PLANT A SHORELINE

BUFFER. A shoreline buffer is a wide band of trees, shrubs and other MICHIGAN NATIVE PLANTS (see tip #1) along creeks, lakes and rivers that trap runoff before it gets into the waterways. As polluted runoff seeps through the buffer area, the plants filter out pollutants and sediment, reduce and regulate the water flow, and moderate water temperatures. Select areas can be cleared for visual and pedestrian access, using winding paths and stepped levels of plantings.

Start simple: Stop mowing to the water's edge and allow a no-mow zone to grow between the yard and the shoreline or streambank. Native plant seeds that have been dormant in the soil will germinate and start to grow on their own.

RESOURCES:

The Michigan Shoreline Partnership has more information on shoreline buffers.
www.shorelinepartnership.org

Limit the turf grass: Cut as small a path as possible through your buffer to access your waterfront. Save both money and time that otherwise would be spent on maintaining a lawn!

On the waterfront side: Minimize disturbance of existing submerged and emergent aquatic vegetation and try to keep cleared swimming areas as small as possible. Aquatic vegetation clarifies water, soaks up excess nutrients, helps stabilize the shoreline with its dense root systems and provides habitat for fish and other aquatic life.

PROBLEM: Runoff pollution, soil erosion and degraded habitat and water quality. Concentrated goose droppings along the shoreline.

CAUSE: Turf grass mowed to the water's edge provides a conduit for pollutants to enter waterways and attracts nuisance waterfowl, like Canada Geese. The lack of deeper root systems in turf grass and removal of the natural shoreline can lead to erosion at the water's edge.

Shoreline buffers — bad, better, and best



Above: The deep roots of native plants absorb more pollutants than turf grass and help prevent shoreline erosion. Small areas of lawn upland of the buffer provide places for recreation. Photo by Jim Brueck



Above: Even though this property has a seawall instead of a natural shoreline (see tip #3), the homeowner is trapping runoff with a vegetated buffer. Photo by Victor Banta Photography

Prevent soil erosion and sedimentation

Control upland, shoreline and streambank erosion through preventative measures.

MINIMIZE EXPOSURE:

Avoid grading large areas that could allow more soil to be exposed and vulnerable to erosion from runoff. At the waterfront, leave as many aquatic plants in place as possible to hold bottom sediments and protect the shoreline from wind and ice.

GET PERMITS:

Obtain required permits and install necessary soil erosion controls. Any earth-changing activity within 500 feet of a lake, stream or wetland requires a soil erosion control permit. Activities below the ordinary high water mark require an Inland Lakes and Stream Permit.

PROBLEM: Murky water, reduced oxygen levels for aquatic life, loss of aquatic habitat, sedimentation and loss of valuable waterfront property.

CAUSE: Most sediment comes from overland erosion, but shoreline and streambank erosion also contribute to the problem. Erosion is also a major pathway for sediment filled with nutrients and pesticides to run off into waterways.

Michigan's Natural Shoreline Partnership provides resources on natural shorelines and landscaping including design ideas, native plant lists, homeowner workshops and a listing of Michigan Natural Shoreline Certified Professionals.
mishorelinepartnership.org

INVASIVE PLANTS:

Know your invasive plants and be ready to control them (see tip #1). Native shorelines are vulnerable to seeds coming in on the water.

COVER BARE SOIL: Plant bare lawn areas as quickly as possible with sod or seed. Mulch the area with straw to prevent erosion until the seeds germinate.

WOODY DEBRIS: Allow downed wood such as stumps, logs and tree trunks to remain for essential aquatic habitat.

ADD PLANTS: If you have an existing structural seawall and aren't ready to try a completely natural shoreline, supplement the area on the waterfront side with native aquatic vegetation to help restore lost habitat (may not be advisable in the face of waves and boat wakes). Be sure to get the required permit. On the upland side incorporate a plant buffer (see tip #2).

CONSIDER A NATURAL SHORELINE: Natural shorelines are buffers that may include bioengineered erosion-control,

native vegetation, and sometimes rocks at the water's edge that protect the property from waves and erosion while improving shoreline habitat. Natural shorelines are an alternative to engineered structures like seawall.

Natural shorelines offer many benefits. They:

- Prevent pesticides and fertilizers from running directly into the water.
- Withstand flooding or standing water better than turf grass or seawalls.
- Usually cost less than structural seawalls.
- May be installed by homeowners and are lower maintenance once established.
- Provide an attractive privacy screen while maintaining views of the lake.
- Absorb wave energy, keeping soils and sands settled and water clear.
- Can act as a deterrent for Canada geese.
- Are attractive and environmentally healthy.



A natural shoreline in its second growing season. Notice wave-breaking coir logs at the far end of the project. Photo: J. Herbert, MSU Extension

Properly manage home, yard and animal waste

Carefully store and dispose of household chemicals. Clean up promptly after pets, and mulch or compost yard and garden waste.

PROBLEM: Excess nutrients, chemicals and pathogens that degrade water quality and harm wildlife, aquatic and human life enter surface water through runoff or seep into groundwater.

CAUSE: Organic matter, such as leaves and grass, animal waste and harmful chemicals spill or are not disposed of properly.

MULCH GRASS CLIPPINGS AND LEAVES: Leaves and grass that get into waterbodies add excess nutrients and use up valuable oxygen as they decompose. Never dump them into lakes or rivers. Instead of raking and bagging clippings and leaves, mulch them into your lawn. If mulching is not an option, compost your yard waste for next season or follow your community's plan for curbside collection.



BURN AWAY FROM THE WATERFRONT: Don't burn yard waste adjacent to waterways—the ash contains phosphorus which can degrade water quality.

SITE COMPOST PILES: Keep compost piles away from the water's edge to eliminate the chance of runoff carrying their excess nutrients to the water.

TRASH PET WASTE: Pick up pet waste promptly and dispose of it in the trash.

PREVENT GOOSE DROPPINGS: Deter nuisance species, such as Canada Geese, from your property by maintaining a vegetated buffer planting of adequate height (at least 12 to 24 inches) between the water and your lawn. (See tip #2). And don't feed the geese. Waterfowl become dependent on food from humans and tend to congregate in one place expecting more. This can lead to a concentration of droppings which adds excess nutrients and harmful bacteria to waterways.



HOUSEHOLD HAZARDOUS WASTE

No dumping: Never dump products or materials such as used motor oil, cleaners, paint or other home toxics down a storm drain, on the ground, or into household drains.

Use your community's collection program: Take unused products or materials to your local household hazardous waste drop-off site.

Buy only what you need: Plan ahead to purchase only the amount you'll need for the task at hand. Save time and money and avoid the jumbo-sized container that you'll have to store for the long-term or take to the drop off for disposal.

RESOURCES

To report a hazardous spill, call your local fire department **9-1-1**

To report illegal dumping or other environmental pollution concerns, call the MDEQ Pollution Emergency Alert System **800-292-4706**

Store hazardous materials carefully: Properly store unused hazardous materials in a cool, dry area away from children, pets and the water. Keep products in their original container or ensure they are properly labeled if placed in another container.

Maintain a healthy lawn and garden

Healthy lawns and gardens, thoughtfully maintained, protect water quality by reducing stormwater runoff, minimizing soil erosion and improving water infiltration into the soil.

mowing

MOW HIGH AND LET IT LIE: 3 inches or more left on grass blades promotes root growth and shades out weeds.

MULCH YOUR CLIPPINGS: Clippings that are mulched and returned to the lawn all season can contribute up to 25 percent of a lawn's seasonal fertilizer needs. The additional organic matter in the soil also will help it to retain moisture.

LEAVE A BUFFER ZONE: Avoid mowing directly to the edge of lakes and streams. Grass clippings can get into the water and add excess nutrients as they break down. Having turf grass directly at the edge of a lake or stream also can exacerbate erosion problems. Long grass or other vegetation at the water's edge will help to filter pollutants in runoff, prevent erosion and improve habitat for wildlife (see tip #2).

watering

WATER WISELY

How much: A green lawn in Michigan only needs 0.5 to 1.5 inches of water per week. If possible, water from the lake, it contains many of the nutrients your lawn needs.

How often: Light, frequent watering is recommended. The zone of the plant and consistent moisture in the soil will keep beneficial.

Water efficiently: Consider smart watering systems like climate microorganisms active and minimize stress to the grass. or soil moisture based controllers that evaluate weather or soil Watering deeply and infrequently actually wastes water conditions to calculate and adjust watering. Also prevent waste and because the water will soak into the soil beyond the root runoff by directing sprinklers away from impervious surfaces the saturated soil will cause runoff (driveways, patios, sidewalks). from your property.

About droughts: Learn to adapt in hot weather. Lawn dormancy is a natural response to drought. However, some water may be necessary during an extended drought of more than a month.

PROBLEM: Excessive aquatic plant growth, nuisance algal blooms, decreased oxygen levels, decreased aesthetics and impacts to recreation.

CAUSE: Excess nutrients from fertilizers and yard waste and pesticides from home lawn and garden maintenance can enter waterways with stormwater runoff and eroding soil.

SWEEP: Sweep excess grass clippings off hard or paved surfaces and back onto the lawn to prevent them from getting washed into waterways.

CORE AERATE: Aerating compacted soil with a coring machine will promote a healthy, dense lawn by improving drainage and allowing water and oxygen to reach grass roots.



MULCH AROUND PLANTS: Spread mulch, such as compost, wood chips, shredded leaves, or shredded bark around trees and plants. Mulch helps to retain moisture in the soil by reducing evaporation. It also cuts down on weeds and moderates the temperature of the soil.

Only Fertilize after you have tested your soil

Have your soil tested every 2 - 3 years or when renovating your landscape to find out which nutrients and organic matter your lawn actually needs. If you need to fertilize, leave a buffer of at least 25 feet.

Michigan State University Extension Bookstore has soil test kits available for purchase. https://www.canr.msu.edu/resources/soil_test_kit_self-mailer

Green and Gross

Excess phosphorus can lead to an explosion of algae growth in the Lake

Fertilizing Your Lawn - 1 lb. of phosphorus can produce up to 500 pounds of wet algae!

Firepits - Burning 1/2 cord of firewood throughout the season can produce up to .8 of a pound of phosphorus, which can produce up to 400 lbs. of wet algae!



If your firepit was built before April 1, 2022 and is closer than 20' to the shoreline please consider relocating to a setback of 20'.

New Fire Pits or Bonfires cannot be closer than 20' to the shoreline.

Firepits must be contained in a fireproof receptacle or enclosure made of brick, stone, masonry, steel, or earthen base, so ashes are contained and can be collected and properly disposed of when cool.

The most important aspect of managing wood ash and charcoal ash is to keep it away from water.

[7]

Keep your septic system working

Have your septic system regularly inspected and pump out your tank every 3-5 years. (LLPOA requires pumping your tank at least once every 5 years.)

GET IT PUMPED: Have your system inspected every 2-3 years by a reputable septic tank service contractor and have your tank pumped out as recommended. Tanks should be routinely pumped out every 3-5 years at a minimum. Don't wait until there is a problem!

LIMIT FLUIDS GOING IN: Minimize the amount of water going into your system by installing efficient fixtures such as low-flow toilets, faucets and showerheads. Fix plumbing leaks.

KEEP EXCESS WATER AWAY: Keep sprinklers and excess water off the drainfield. Point downspouts away from it.

NO MEDICINES, CHEMICALS OR HOME TOXICS: Reduce the use of harsh chemicals that get washed down the drain and into your septic system. The chemicals can actually kill the beneficial bacteria necessary for the breakdown of the wastes entering your system.

USE THE TRASH: Dispose of non-degradable items such as fat, grease and oil, hair, tampons and disposable diapers in the trash. These materials will not break down and can cause clogging and premature failure of your system.

AVOID THE GARBAGE DISPOSAL: Try composting kitchen scraps such as egg shells, coffee grounds, vegetable wastes and other organic kitchen wastes.

KEEP ROOTS AWAY: Plant shrubs and trees an adequate distance from the drainfield and septic tank. The root systems could interfere with the infrastructure which can lead to premature system failures. Plant only grass over and near your septic system.

KEEP IT ALL NATURAL: Supplements and additives do not improve operation of your system. Some may actually harm your system by causing solids to be carried into the drainfield, which causes premature clogging. In addition, supplements containing organic solvents can cause groundwater contamination.

NO PARKING: Don't drive or park vehicles on any part of your septic system. Doing so can compact the soil in your drainfield or damage the pipes, tank or other septic system components.

KNOW THE SIGNS OF TROUBLE: Learn about your system and how it works. Signs of a failing septic system are odors, surfacing sewage, wet spots or lush vegetation on or near the drainfield, plumbing or septic tank backups, or gurgling sounds in the plumbing system.

PROBLEM: Excess nutrients and harmful pathogens that make people sick and degrade water quality enter surface water and shallow groundwater supplies.

CAUSE: Improperly maintained or failing septic systems.

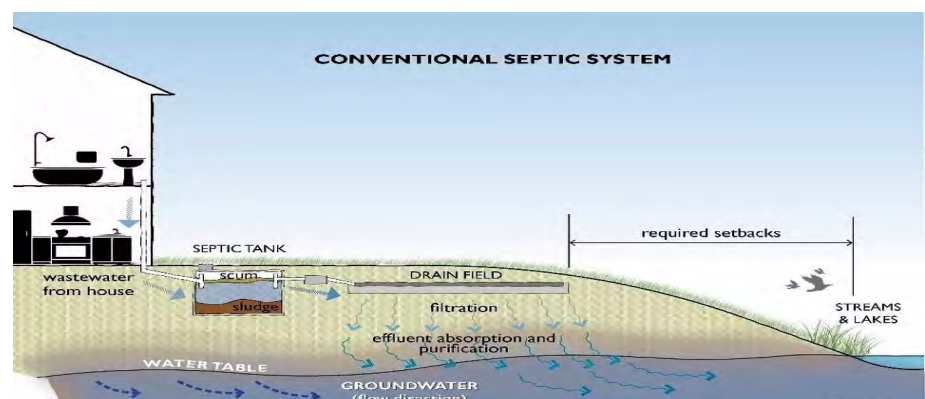
IF THERE IS A PROBLEM: Call your county health department, a licensed septic tank pumper or a certified septic installer for help.

RESOURCES:

SepticSmart has homeowner resources on proper septic system maintenance. epa.gov/septicmart

WaterSense has water efficiency tools and calculators. epa.gov/watersense

Your County's Environmental Health Department can provide expertise and information including local regulations and guidelines and recommendations on septic care and maintenance.



Properly maintain your boats and other recreational vehicles

Clean, drain and dry boats and trailers before moving them to other waterbodies to prevent the spread of aquatic invasive species.



WASH BOATS AND VEHICLES:

Wash boats and vehicles on the grass or at a manual car washing facility to avoid runoff of chemicals and detergents into lakes and streams.

USE NON-TOXIC CLEANERS:

Choose phosphate-free soaps and avoid solvent-based cleaners. The best and most natural way to clean is to use plain water and a coarse cloth. Other natural cleaners include baking soda, borax and lemon or lime juice.

DUMP NO WASTE: Do not put waste, such as used motor oil, down a storm drain. Storm drains lead directly to our lakes and streams. Properly dispose of used fluids at your local service station or household hazardous waste drop-off site.

CHECK FOR LEAKS: Use appropriate containers for gas, oil or other fluids. Avoid leaks by keeping boats and recreational vehicles properly maintained. Clean up leaks or spills on pavement promptly with an appropriate absorbent material, such as kitty litter and dispose of it properly.

CLEAN, DRAIN AND DRY:

It is illegal to launch a boat in Michigan that has aquatic plant material attached to the boat or trailer. Prior to moving your watercraft to other bodies of water, ensure that the hull, propeller and trailer are completely free of plants and mud that could easily be transported to other area waterways. Anything that comes into contact with the water such as bilges, live wells, bait buckets, fishing and sporting equipment, clothing, dogs, etc. should also be thoroughly cleaned and dried.

RETURN TO SENDER:

Do not release plants, fish or animals into a body of water unless they came out of that body of water.

PROBLEM: Harmful chemicals, excess nutrients and aquatic invasive species that harm native aquatic life and degrade water quality.

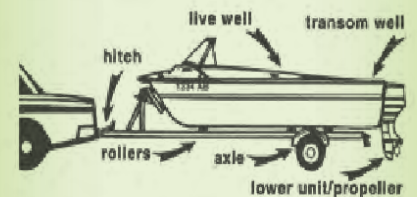
CAUSE: Oil and gasoline from boats and other recreational vehicles can contaminate water supplies and harm aquatic life. Detergents and chemicals that may be used to wash boats and vehicles can end up in storm drains if washed on paved surfaces. Aquatic invasive species can be spread to other waterbodies, negatively impacting habitat and recreation.

CLEAN BOATS CLEAN WATERS



WATERCRAFT CHECK POINTS

Stop Aquatic Invasive Species From Spreading!
Check Your Boat Each Time You Leave The Water



- | | | |
|---------------------------------------|--|---|
| <input type="checkbox"/> Anchor | <input type="checkbox"/> Ladder | <input type="checkbox"/> Spare tire |
| <input type="checkbox"/> Axle | <input type="checkbox"/> Landing net | <input type="checkbox"/> Tackle |
| <input type="checkbox"/> Bait bucket | <input type="checkbox"/> License plate | <input type="checkbox"/> Tow rope |
| <input type="checkbox"/> Bunks | <input type="checkbox"/> Motor | <input type="checkbox"/> Trailer |
| <input type="checkbox"/> Bow line | <input type="checkbox"/> Wheels | <input type="checkbox"/> Transducer |
| <input type="checkbox"/> Fishing line | <input type="checkbox"/> Live well | <input type="checkbox"/> Transom well |
| <input type="checkbox"/> Floor | <input type="checkbox"/> Lights/wiring | <input type="checkbox"/> Trolling motor |
| <input type="checkbox"/> Hull | <input type="checkbox"/> Rollers | |
| <input type="checkbox"/> Intake pipe | <input type="checkbox"/> Prop | |

Clean It. Drain It. Dry It.

www.miseagrant.umich.edu/cbcw



**Lake LeAnn
Property
Owners
Association**

11701 E. Chicago
Jerome, MI 49249



Tips and information adapted from "Waterfront Wisdom" published by the Huron River Watershed Council, www.hrwc.org.

Graphics and photos provided by: Marc Akemann, Victor Banta Photography, Jim Brueck, Christianson Design, Amelia Hansen, Jane Herbert, Michigan Sea Grant, Wayne County Department of Public Service, Glenn Wolf and David Zinn.



This booklet was funded in part through the Michigan Nonpoint Source Program by the US Environmental Protection Agency under the Clean Water Act, assistance agreement C995474-12. Its contents do not necessarily reflect the views and policies of the Michigan Department of Environmental Quality, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.