

Let's make one thing
Perfectly Clear.
our water

Genesee County Community Water Quality Consortium



The Water's Edge

Simple actions for healthy, clean water



Protecting and improving the watersheds within and around Genesee County



This informational booklet was written for the Genesee County *Our Water* Campaign, the public education effort of the Genesee County Water Quality Consortium. The Genesee County Water Quality Consortium is a collection of municipalities, school districts, county organizations, and non-profits. These committed people work to bring awareness, to educate, and to promote stewardship on ways to prevent stormwater pollution and keep our water clean. Funding for this manual was provided by _____.

If you have questions about the information in this manual, contact Danielle Gartner, Natural Resource Analyst at the University of Michigan-Flint's Center for Applied Environmental Research, at (810) 424-5456 or danyg@umflint.edu.

The information in this booklet is designed to assist Genesee County riparian landowners in protecting local surface water resources including lakes, rivers, and creeks. Clean and healthy water resources in Genesee County are a critical component in achieving prosperous communities and economies. You, a landowner on lake or river property, have the opportunity and responsibility to positively influence the quality of our local water resources by taking the useful, simple actions described in the following pages. Small efforts on your property can have large, lasting impacts downriver.

Riparian – (Ri*pa”ri*an) Of, on, or relating to the banks of a river or stream.

Riparian Zone (Riparian Land) – The land directly adjacent to (or surrounding) a river or stream; land that connects freshwater to other land such as farmland, forests, or urban/suburban/residential development.

When we think of water pollution we often think of the pollution caused by business and industry, not the pollution caused by average citizens. Every resident of Genesee County has an impact on water quality. Because you live on or near a water body or storm drain, you have a responsibility to protect the quality of our water for future generations.

What can you do?
 Become an aware and informed riparian land owner by taking the useful, simple actions described in the following pages.



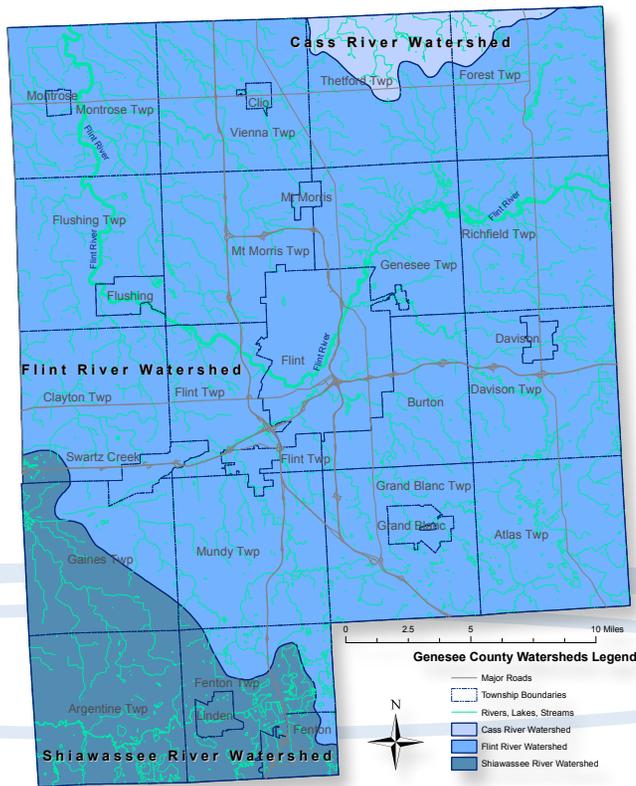


Do You Live in a Watershed?

A watershed is an area of land that drains into a particular lake, river, or wetland. Watersheds catch rain and snowfall and channel it into brooks, creeks, springs, streams, rivers, and eventually lakes and oceans. Everybody lives in a watershed. Just like we are residents of a county or town in the State of Michigan, we are also residents of a watershed, or two or three. Here in Genesee County, we are part of the Great Lakes Basin, the Saginaw Bay Watershed, and either the Flint River, Cass River, or Shiawassee River Watersheds.

We all live downstream from other water bodies and people. This means that the quality of water available to us is determined by our upstream neighbors. It is vital that we serve as environmental stewards of our

watersheds, protecting water quality for those who live downstream and for future generations.



Riparian Areas: Why Should We Care?

As a riparian landowner, you reap the benefits of your lake or stream almost daily. Not only is your property value enhanced, but issues important to everybody including water quality, wildlife and fish habitat, and recreation use depend on your healthy, maintained riparian zone.

Riparian lands benefit us because they...

Provide valuable wildlife habitat

- ◆ Riparian land provides access to food, water and shelter for a wide variety of plants and animals.
- ◆ Riparian land links freshwater to other land uses (i.e. farmland, residential land, etc.) and serves as a pathway for species movement between different habitats, which helps support diverse wildlife.

Save us money

- ◆ Healthy riparian land serves many functions including water filtration, storage of stormwater, flood control, protection of water quality, nutrient cycling, and protection of shorelines and streambanks. When these zones are compromised, expensive engineering solutions may be required, costing you more money in the future.

- ◆ Properties that are well-planned and have well-maintained or -managed riparian land may sell for more than average market value.

- ◆ Businesses that rely on healthy freshwater (ex: fisheries and liveries) will continue to be able to boost the local economy when riparian zones are healthy.

Improve human health

- ◆ Healthy riparian zones provide many opportunities for physical activity including hiking, biking, kayaking, and canoeing.
- ◆ With the provision of wildlife habitat, riparian zones can provide a peaceful location to relax, connect with nature, or bird watch.

To protect our water, follow these six suggestions:

1. Properly Manage Yard, Home, and Animal Waste
2. Stabilize the Streambank and Shoreline
3. Adopt Water Friendly Lawn Care
4. Maintain Boats and Other Vehicles
5. Minimize Storm Water Runoff from Your Property
6. Consider Your Septic Tank

1. Properly Manage Yard, Home, and Animal Waste

Chemicals, nutrients, and animal wastes that enter our lakes and rivers can degrade our water quality and harm animal life. Remember, storm drains and roadside ditches empty into our lakes and streams without going through a water treatment process. There are a number of habits you can adopt to improve the quality of our water. To keep our water clean...

Watch instead of feeding.

♦ Watch and enjoy the ducks and geese, but avoid feeding them. Feeding ducks and geese may seem harmless, but can actually be harmful to our water. Feeding waterfowl causes them to become more dependent on humans and creates high populations and more animal waste. This waste contains bacteria that pollute our lakes and streams. Waterfowl can also carry with them the parasite that causes "swimmers itch."

Pick up after your pooch.

♦ Promptly dispose of your pet's waste in the trash or down the toilet where it will be properly treated. When pet waste is left behind, it washes into storm drains and local water bodies taking harmful bacteria with it.



Avoid dumping.

- ♦ Storm drains and roadside ditches empty into our lakes and streams without going through any water treatment process. Refrain from dumping oil, transmission fluid, chemicals, cleaners, leaves, grass clippings, and other hazardous materials down storm drains or into ditches. Instead, take these materials to your local household hazardous waste disposal center.
- ♦ Don't let grass clippings or raked leaves reach the water. If you use chemicals on your lawn, this is like pouring them directly into nearby water!

Compost and mulch.

- ♦ Compost piles are easy to build and maintain and can help you create your own chemical-free fertilizer
- ♦ If you don't compost, follow your community's leaf pick-up guidelines. Avoid raking leaves into storm drains, roadside ditches, or local water bodies.
- ♦ Try mowing leaves into your lawn – they also make a good fertilizer!





2. Stabilize the Streambank and Shoreline

The continued wearing away of soil and sediment from a streambank or shoreline is called erosion. This process can be accelerated or slowed by the practices you adopt. While erosion is a natural process, too much erosion is not good – the sediment going into your local lake or river can be a pollutant because excess sediment in water makes it difficult for aquatic plants and animals to survive. Try these techniques to create a naturalized streambank or shoreline...

Build buffers.

◆ Before your property was developed, the river or stream there was surrounded by native plants, trees and shrubs that acted as natural filters and held soil in place. A good buffer strip is wide (30 feet), continuous, and dense with shorter plants nearer the water and taller plants and trees planted further away.

◆ Rooted plants such as wildflowers, shrubs and trees can stabilize eroding or sensitive slopes. Engineered structures like seawalls can reduce animal and plant habitat and are only recommended in erosion-prone locations.

Minimize disturbance.

◆ If you have swimming area, try to make it as small as possible. Avoid pulling out aquatic plants, they provide many benefits to local water bodies.

Keep it legal! Make sure to obtain the proper permits to avoid excessive soil erosion. If you are changing the landscape in an area greater than one acre or within 500 feet of a streambank or shoreline, you may need a permit.



Cover bare spots.

◆ Establish vegetation on all bare areas. Temporarily stabilize with mulch to minimize erosion.

Remove invasive plants.

◆ Invasive plants should be removed and replaced with native vegetation. But first, make sure to know about the invasive plants you pull out – you might actually make the problem worse if you don't remove invasive plants properly.

5 Common Southeast Michigan Invasive Plants:

- Purple Loosestrife (*Lythrum salicaria*)
- Common Reed or Phragmites (*Phragmites australis*)
- Frogbit (*Hydrocharis morsus-ranae*)
- Eurasian Watermilfoil (*Myriophyllum spicatum*)
- Curly Leaf Pondweed (*Potamogeton crispus*)



◆ For more information visit the Stewardship Network's website at www.stewardshipnetwork.org.

Leave woody debris.

◆ Consider leaving tree trunks, large logs, and stumps on streambanks and shorelines. They stabilize the soil and provide aquatic habitat.



3. Adopt Water Friendly Lawn Care

The materials and practices we use to care for our lawn have impacts on our lakes and streams. Chemicals you apply to your lawn can eventually end up in our local water bodies. While fertilizer is good for lawns, it is bad for our water. Fertilizer in our lakes and streams cause algae to grow. When algae, grass clippings, or leaves decompose in water bodies, they use up the oxygen that fish need to survive. Next time you work on your lawn...

Don't guess, soil test.

- ◆ A soil test will tell you what, if any, fertilizer is needed in your yard. Contact your local Michigan State University Extension office for more information at (810) 244-8547.

Buy low, organic, or slow.

- ◆ Use fertilizer that contains low or no phosphorus. Unabsorbed phosphorus can wash off of lawns and farms and contribute to harmful algal growth in our lakes.
- ◆ Or, select an organic or slow-release fertilizer. A slow-release fertilizer is one with at least half of the nitrogen in "water insoluble" form. Slow-release fertilizers provide a steady supply of plant nutrients over an extended period of time.

The numbers on a fertilizer bag show the percent nutrients (nitrogen, phosphorus, potash/potassium), by weight, in the bag. For example, a bag reading "15-7-15" indicates 15% nitrogen, 7% phosphorus, 15% potash/potassium.

Fertilize sparingly and carefully.

- ◆ Regardless of the type, make sure fertilizers or pesticides are not applied too close to or directly into water, or on impervious areas where they can be easily washed away. Keep fertilizer applications at least 20 feet away from the edge of lakes, streams, or storm drains.
- ◆ Follow directions on labels. In the case of fertilizers, more is not always better.
- ◆ Spot treat problem areas with pesticides instead of blanket treating your whole lawn.

Mow better.

- ◆ Leave grass clippings on your lawn – they make great fertilizer. Leaving them will also save you bagging time!
- ◆ Keep your grass cut high - set your lawnmower cutting height to 3" to hide clippings, help the grass develop deeper root systems, and defend against weeds and droughts.

Hire smart.

- ◆ Select a lawn service that uses organic fertilizers, offers slow-release nitrogen or low/no phosphorus options. Request a soil test to ensure the right amount is applied.

Water wisely.

- ◆ Lawns need about one inch of water per week. Use a rain gauge and water only when necessary, instead of on a fixed schedule.





4. Maintain Boats and Other Vehicles

Oils and other vehicle liquids can pollute our water and harm plant and animal life if they enter lakes and rivers. When oil or other vehicle liquids are leaked onto your driveway or road, rainwater washes it into local water bodies. Awareness and close inspection of your vehicles can ensure the quality of our water. The next time you maintain your boat or car...

Make a date.

- ◆ Keep up-to-date on your vehicle's tuning and maintenance schedule.

Find the leaks.

- ◆ Check your boats and cars for leaky parts. If motor oil or other liquids leak out, use kitty litter to soak up the puddle.

Use your lawn.

- ◆ If you wash your boat or car at home, try washing it on the lawn. This will give the dirty water and soap time to soak through the soil instead of potentially traveling overland to local water bodies.



Clean green.

- ◆ Try using green cleaning products or minimizing the amount of soap you use.

Leave hitchhikers.

- ◆ To help reduce the spread of invasive species, ensure there are no animals, plants, or water in the hull, trailer, or propeller when you move your watercraft to other water bodies.

5. Minimize Storm Water Runoff from Your Property

The landscaping choices you make can improve nearby water quality. Property with many impervious surfaces (ex: pavement) leads to storm water runoff that quickly carries pollutants to lakes and rivers. There are a number of visually-appealing landscaping possibilities that also contribute to improved water quality. To reduce storm water runoff from your property...

Go native.

- ◆ Use native, low maintenance plants like grasses, wildflowers, shrubs, and trees on your property. Native plants are better able to tolerate Michigan's climate, require less fertilizer and water, are more disease resistant, and will attract wildlife.

What is a "native" or "non-native" plant?

Michigan "native" plants are plants that grew in this area prior to European settlement. Conversely, "non-native" plants are plants from other areas that were brought to Michigan.

Build rain gardens.

- ◆ Planted with flowers and native vegetation, rain gardens fill with water, and allow it to slowly filter into the ground. Rain gardens allow about 30 percent more water to soak into the ground when compared to a patch of conventional lawn.

What are rain gardens? Just what they sound like – gardens that soak up rain water.

Use mulch.

Place a thick layer of mulch (e.g. 4 inches) around trees and plants. This helps retain water, reduce weeds, and minimizes the need for pesticides.

Create porous walkways.

- ◆ Design paths that follow natural contours to reduce risk and create a more visually interesting landscape.
- ◆ Use paving material such as wood decking, bricks, or interlocking stones instead of asphalt or concrete.

6. Consider Your Septic Tank

Households that are not served by public sewers usually depend on septic systems to treat and dispose of wastewater. Degraded septic systems in riparian areas can potentially lead to decreased water quality and disease outbreak by allowing excess nutrients and bacteria to reach local water bodies. Nutrients, especially phosphorus, from leaky septic systems play a major role in causing excessive weed and algae growth in lakes and ponds. To maintain your septic system...

Go low flow.

- ◆ Excessive water use is the most common cause of septic failure, so reduce water used for bathing, laundry, and flushing the toilet.
- ◆ Install low-volume toilets and low-flow showerheads.
- ◆ Identify and repair leaking pipes, sticking float valves in toilets, and dripping faucets to reduce water wastes.

Pump often.

- ◆ Pump your septic tank regularly, usually once every one to two years.

Think about the drainfield too.

- ◆ Discharge all sewage waste from the house into the septic tank. Never allow solids or scum to leave the septic tank and enter the drainfield.
- ◆ Avoid impermeable or compacted surfaces over the drainfield such as concrete, asphalt, plastic or compacted soil.
- ◆ Keep the surface of your drainfield properly drained by slightly mounding the soil over the drainfield, redirecting downspouts and sump pump outflow, and not stockpiling snow over the area.

In some situations, effluent from a septic tank will not be dispersed to a drainfield. Alternative systems in use today include sand filters, mounds, wetlands, gravel-less drainfields, pressure dosing, and aerobic units. Servicing requirements for these systems vary and should be obtained from your local sanitation or septic system contractor.

Avoid dumping.

- ◆ Keep from flushing non-biodegradable materials like facial tissue, diapers, tampons, plastic, cooking fats or oils. They do not decompose easily and may cause unwanted build-up in your storage tank.
- ◆ Never dispose of toxic chemicals by dumping them down your drains.

Go natural.

- ◆ Stay away from additives and “starters”. Some may actually harm your system and contaminate groundwater.

Bypass the disposal.

- ◆ Stay away from using your garbage disposal unit. Make compost out of vegetable wastes, coffee grounds, eggshells, and other compostable kitchen wastes.

Plant grass and shallow roots.

- ◆ Landscape over your drainage field with dense grass cover and other shallow-rooted plants.

Signs of septic system failure:

- ◆ Odors, surfacing sewage, wet spots, or lush vegetation on or near the drainfield
- ◆ Plumbing or septic tank backups
- ◆ Slow-draining fixtures and toilets
- ◆ Gurgling sounds in the plumbing system
- ◆ Presence of nitrates or bacteria in your drinking water well
- ◆ Buildup of aquatic weeds or algae in lakes or ponds adjacent to your home

If you notice any of these signs, contact the Environmental Health Division of the Genesee County Health Department.



Are you being the best riparian land steward you can be?

Check off the practices that you already do and see where you can improve.

Do you

Properly Manage Household, Yard, and Animal Waste

- Refrain from feeding waterfowl such as geese.
- Dispose of your pet's waste in the trash or down the toilet
- Rake leaves and vegetative debris away from the water and storm drains
- Carefully follow label instructions for use and storage of all household products
- Take hazardous household products such as paint, solvents, mercury-containing products to a designated collection site

Stabilize Your Shoreline to Prevent Erosion

- Establish vegetation on all bare areas of your property
- Leave tree trunks, large logs, and stumps to stabilize your streambank or shoreline
- Develop a beach site with minimal shoreline alteration
- Plant native trees and shrubs
- Retain a natural vegetation buffer of grass, trees, and shrubs next to your streambank or shoreline
- Learn about invasive plants before removing and replacing them with native plants

Adopt Water Friendly Lawn Care

- Test soil to determine plant nutrients needed before applying fertilizer to lawn and garden
- Use compost or manure in recommended amounts instead of chemical fertilizer
- Use caution when spreading fertilizer near surface water; do not spread within 20 feet of water
- Follow directions on fertilizer and pesticide labels
- Use low phosphorus fertilizer
- Use slow-release form of nitrogen in fertilizing
- Keep your grass cut high
- Use a rain gauge to monitor how much you water your lawn

Maintain Your Boats and Cars

- Inspect boats and equipment before taking them to another water body
- Wash your car/boat on your lawn
- Tune and maintain your car regularly

Minimize Storm Water Runoff from Your Property

- Reduce paved or covered areas; use gravel instead of paving driveways/walkways
- Install rain gardens to collect and filter rainwater.
- Use rainwater to water trees, shrubs, and lawn
- Use mulch around trees and plants
- Consider existing natural characteristics of property before designing shoreland development
- Use a variety of native species in new plantings

(Optional) Consider Your Septic System

- Repair leaking pipes and dripping faucets
- Install low-flow showerheads/low-flush toilets
- Eliminate use of your garbage disposal
- Wash only full loads—dishes and laundry
- Use liquid laundry detergent
- Pump septic tank at least once every two years
- Avoid planting deep-rooted plants over your septic drainfield

Are you a good riparian land steward?

If you do have a septic system:		If you don't have a septic system:	
If you checked off...	You're...	If you checked off...	You're...
More than 26	Fantastic	More than 20	Fantastic
Between 21-25	Doing a great job	Between 16-19	Doing a great job
Between 16-20	On your way	Between 12-15	On your way
Between 11-15	Starting off well	Between 8-11	Starting off well
Between 6-10	Behind the times	Between 4-7	Behind the times
Less than 5	Get started!	Less than 3	Get started!



Reporting

Report illegal dumping of hazardous materials to 911 or the local police.

If you would like to report a flooding ditch not caused by a roadway, contact the Genesee County Drain Commission, Office of Surface Water Management at (810) 732-1590.

If you would like to report flooding caused by a culvert under a road or flooding on a road, contact the Genesee County Road Commission, at (810) 767-4920.

Consider supporting a local environmental group.

Many local organizations work to protect Genesee County's watersheds. These groups are primarily non-profit and therefore depend on volunteers and donations to continue their work. Consider getting involved with one of these groups to improve our water!

- ♦ Flint River Watershed Coalition: www.flintriver.org
- ♦ Genesee County Conservation District: <http://www.geneseecconservation.org/>

More Information

Genesee County Drain Commissioner's Office: <http://www.gcdcwws.com/>

University of Michigan-Flint's Center for Applied Environmental Research: <http://www.umflint.edu/caer>

Genesee County Health Department: <http://www.gchd.us/>

Michigan State University Extension – Genesee County: http://www.msue.msu.edu/portal/default.cfm?pageset_id=27254

Center for Watershed Protection: www.cwp.org

For a list of Michigan native plants visit www.mnppa.org or contact your local Michigan State University Extension office.

Information for this riparian landowner's booklet was gathered from the following resources and was adapted for the needs of the Genesee County Our Water Campaign.

Huron River Watershed Council, Get Buff! Shorelines need muscle to keep our water clean. Informational Handout.

Lake County Stormwater Management Commission, Riparian Area Management: A Citizen's Guide. Informational Booklet, 2002.

Michigan State University Extension, Home*A*Syst: Managing Shoreline Property to Protect Water Quality. Informational Booklet WQ-52, May 1999.

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Michigan State University Extension, Turf Tips for the Homeowner: Fertilizing Home Lawns to Preserve Water Quality. Informational Bulletin E05TURF, May 2002.

Michigan State University Extension, Turf Tips for the Homeowner: Managing Yard Waste to Preserve Water Quality. Informational Bulletin E12TURF, May 2002.

Michigan State University Extension, Turf Tips for the Homeowner: Maintaining Waterfront Turf to Preserve Water Quality. Informational Bulletin E11TURF, May 2002.

Oakland County Drain Commission, Waterfront Wisdom: Healthy Habits for Clean Water. Informational Booklet.

Oakland County Planning & Economic Development Services, Discovering your Community's Natural Asset. Informational Poster.

Oakland County Planning & Economic Development Services, Planning for Green River Corridors: A Resource Guide for Maximizing Community Assets Related to Rivers. Resource Guide, May 2007.

University of Michigan-Flint, Center for Applied Environmental Research, Moving Waters? A Guide to Help You Protect, Restore and Promote Local Waterways. Resource Guide, in press.

University of Michigan-Flint, Center for Applied Environmental Research, Seven Simple Steps to Clean Water. Informational Brochure, 2008.

University of Minnesota Extension Service, Protecting our Waters: Understanding Shoreline BMPs. Factsheets.

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