

**Oakland County's 24-Hour Pollution Hotline: 248-858-0931**  
Call if you witness contamination in lakes, rivers or streams, discharges from pipes, sewage on the ground or in surface water, or a large number of dead fish in waterways.

# WATERFRONT WISDOM

## HEALTHY HABITS FOR CLEAN WATER

*Graphics and photos provided by: Oakland County Water Resources Commissioner's Office, Michigan Sea Grant, MSU Extension, U. S. Fish and Wildlife Service, Macomb County Public Works Office Rain Garden Project, Wayne County Department of Environment, Huron River Watershed Council, City of Troy, Bloomfield Township and Environmental Consulting & Technology, Inc.*

*A special thank you to Judy Graham of Orchard Lake for the use of her yard for the cover photo and other photos throughout this publication.*

*This publication has been provided to you by:*



*For additional information, contact the WRC Environmental Team at 248-858-0958*

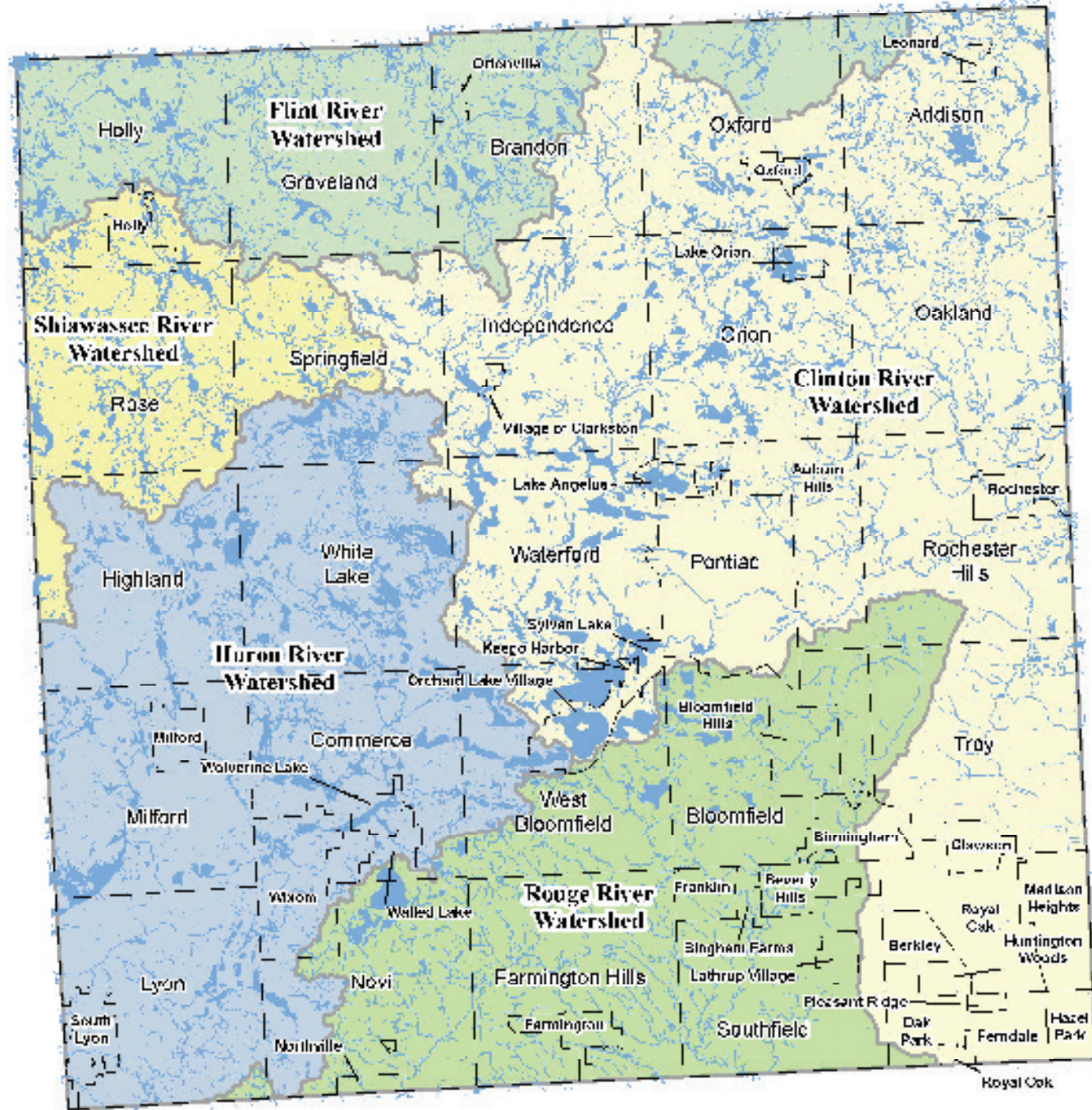
*This publication has been edited by The Clinton River Watershed Council*



*Funding for this project was provided by the Rouge River National Wet Weather Demonstration Project (funded, in part, by U. S. Environmental Protection Agency Grants #XP995743-08) Publication design by Environmental Consulting & Technology, Inc.*



## WATERSHEDS WITHIN OAKLAND COUNTY



We all live in a watershed—an area of land that drains to a common body of water, such as a lake, river or stream (and even groundwater). Movement of pollutants in a watershed travel from upstream to downstream areas, or at the junction between groundwater and surface water. Understanding the watershed concept is important because it allows us to comprehend that we can have an impact on water quality far beyond our own back door. As more and more land becomes altered or developed, especially along shorelines and streambanks, the amount of storm water runoff in the watershed increases, as well as the potential amount of pollutants that are contained in that runoff.

As a responsible waterfront property owner, practicing these Healthy Habits for Clean Water are especially important because you are directly at the water's edge where runoff doesn't have far to travel before reaching the water. Oakland County is home to the headwaters of five major river systems—the Clinton, Flint, Huron, Rouge and Shiawassee. With more than 1,400 lakes and five major river systems in Oakland County (encompassing a total of more than 900 miles of shoreline), riparian landowners have a significant opportunity to make a big difference in protecting our water quality!

## WATERFRONT WISDOM — HEALTHY HABIT #7: PROPERLY MAINTAIN YOUR BOATS AND OTHER RECREATIONAL VEHICLES

**CHALLENGE:** 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 could end up in storm drains if washed on paved surfaces. Aquatic invasive species negatively impact habitat and recreation.

**SOLUTION:** CAREFUL SELECTION AND USE OF NON-TOXIC CLEANERS ON BOATS AND VEHICLES WILL PROTECT WATER QUALITY. CLOSE INSPECTION OF BOATS AND TRAILERS PRIOR TO MOVING THEM TO OTHER WATERBODIES IS CRUCIAL TO PREVENT THE SPREAD OF AQUATIC INVASIVE SPECIES.

### WHAT YOU CAN DO

**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:** Wash boats and recreational vehicles with phosphate-free soaps and avoid solvent-based cleaners. The best and most natural cleaner is plain old water. Wash boats with water, elbow grease 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 stations or household hazardous waste drop-off site.

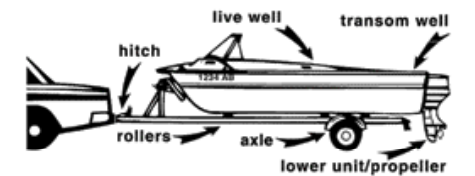
**CHECK FOR LEAKS:** Use appropriate containers for gas, oil or other fluids and ensure proper maintenance. Clean up leaks onto pavement promptly with an appropriate absorbent material, such as kitty litter. Dispose of properly.

**CLEAN AND DRY:** Anything that comes into contact with the water such as equipment, clothing, dogs, etc. should 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.

## CLEAN BOATS CLEAN WATERS

### WATERCRAFT CHECK POINTS



- |                                       |  |   |
|---------------------------------------|--|---|
| <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          |   |

WORKING TOGETHER WITH BOATERS  
TO PROTECT OUR WATERS

[www.miseagrant.umich.edu/cbcw](http://www.miseagrant.umich.edu/cbcw)



**STOP AQUATIC  
HITCHHIKERS!**

Be A Good Steward. Clean. Drain. Dry.  
[StopAquaticHitchhikers.org](http://StopAquaticHitchhikers.org)

**DON'T PICK UP HITCHHIKERS:** Prior to moving your watercraft to other bodies of water, ensure that the boat's hull, propeller and trailer are completely free of water and plants that could easily be transported to other area waterways that you may visit. Dispose of unused bait into the trash. Never dump it into the water.





# WATERFRONT WISDOM — HEALTHY HABIT #6: PROPERLY MAINTAIN YOUR SEPTIC SYSTEM

**CHALLENGE:** Excess nutrients and harmful pathogens entering surface water and shallow groundwater supplies that can make us sick and degrade water quality.

**CAUSE:** Improperly maintained or failing septic systems. 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.

**SOLUTION:** HOMEOWNERS SHOULD PROPERLY OPERATE AND MAINTAIN THEIR SEPTIC SYSTEM TO AVOID FAILURES. REGULAR PUMPING OF THE SEPTIC TANK IS THE SINGLE MOST IMPORTANT MAINTENANCE REQUIREMENT OF A SEPTIC SYSTEM.

# AS A WATERFRONT HOMEOWNER, YOU HAVE A UNIQUE OPPORTUNITY TO CONTRIBUTE TO THE HEALTH OF YOUR LOCAL WATERWAY

**LOOK AROUND YOU:** How does your waterfront look? Is the streambank or shoreline eroded? Are tree roots exposed? What about the water itself? Are there algal blooms? Does the water look murky?

Do you store compost or mulch near the water? Do you mow your lawn down to the water's edge? Do you use the correct type of fertilizer in the appropriate quantity?

Many activities we conduct near the waterfront, in our lawns and gardens and around our home, impact water quality. These activities are even more critical to riparian homeowners because runoff doesn't have far to travel before reaching the water.

**ri-par-i-an:** relating to or living or located on the bank of a natural watercourse, such as a river or lake.

When it rains or the snow melts, the water runs off streets, driveways, rooftops and lawns across the landscape and picks up various pollutants like oils, greases, nutrients, fertilizers and sediment. Impervious surfaces speed up the flow of runoff from the landscape and prevent water from soaking into the ground where it can be naturally cleansed by microorganisms that live in the soil. Many pollutants also can reach our waterways from soil erosion because many chemicals readily attach themselves to soil particles.

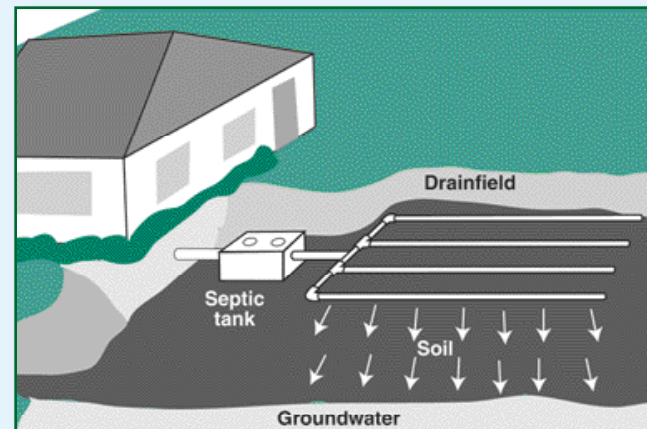
This contaminated runoff, known as non-point source pollution, flows without treatment into the nearest storm water drainage system. This may consist of simple drainage ditches and swales, or infrastructure such as enclosed pipes, catch basins and detention ponds. If you live on a river, lake or stream, this runoff travels directly into the adjacent waterway much more quickly.

Non-point source pollution comes from many different sources and is difficult to trace back to one source on the landscape. Groundwater resources also can be impacted if toxins in runoff leach through the soil. Groundwater is water that is stored underground in the spaces between soil particles and fractured rocks. Groundwater is a source of drinking water for approximately 35 percent of residents in Oakland County. Contaminants also can pass through surface water and into groundwater because these systems are interconnected. Pollutants can impact water quality by harming fish and wildlife, impairing recreation (fishing, boating and swimming) and contaminating drinking water supplies.

So, how do we prevent non-point source pollution from getting into the water? We can start by being aware that our actions DO impact water quality, especially if we live along the water's edge. We can all make a difference by practicing Healthy Habits for Clean Water.

## COMMON SOURCES OF POLLUTION IN STORM WATER RUNOFF:

- Sediment - eroded soil from unprotected construction sites, eroding streambanks and shorelines and runoff from agricultural lands;
- Nutrients from natural sources (organic debris), fertilizers (either by leaching or through soil erosion, as well as runoff from product left on impervious surfaces), animal waste (pets, wildlife, and livestock) and sewage sources (failing septic systems or illegal discharges of sewage);
- Pesticides from residential and agricultural lands;
- Bacteria from animal waste or human sewage sources; and
- Grease, oil and other hazardous materials from motor vehicles, illegal dumping, or careless spills.



## WHAT YOU CAN DO

**GET PUMPED!** Have your system inspected every 2-3 years by a reputable septic tank service contractor. When necessary, have your tank pumped out. Septic tanks should be pumped every 3-5 years, at a minimum.

**CONSERVE WATER:** Minimize water inputs into your system by installing water-saving fixtures such as low-flow toilets, faucets and showerheads.

**REDIRECT:** Point downspouts away from the drainfield.

**MINIMIZE:** 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 break down of the wastes entering your system.

**PITCH IN!** 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 USING A GARBAGE DISPOSAL:** Try composting kitchen scraps such as egg shells, coffee grounds, vegetable wastes and other organic kitchen wastes.

**SITE RIGHT!** 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.

**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 YOUR STUFF!** Learn about your system and how it works. Ask for Water Quality Bulletin, "WQ-39: Managing Your Septic System" from your local MSU Extension office.





# WATERFRONT WISDOM — HEALTHY HABIT #1: MINIMIZE STORM WATER RUNOFF FROM YOUR PROPERTY

**CHALLENGE:** 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 surface water runoff and reduce infiltration of water into the ground.

**SOLUTION:** ADDRESS RUNOFF BEFORE IT LEAVES YOUR PROPERTY. BETTER YET, KEEP WATER ON YOUR PROPERTY FOR USE IN AREAS SUCH AS YOUR GARDEN.

# WATERFRONT WISDOM — HEALTHY HABIT #5: PROPERLY MANAGE HOME, YARD AND ANIMAL WASTE

**CHALLENGE:** Excess nutrients, chemicals and pathogens degrade water quality and harm wildlife, aquatic and human life!

**CAUSE:** Organic matter, such as leaves and grass, animal waste and harmful chemicals in runoff or seepage into groundwater from spills or improper disposal.

**SOLUTION:** CAREFULLY STORE AND DISPOSE OF HARMFUL CHEMICALS. CLEAN UP PROMPTLY AFTER PETS, AND MAKE SURE YARD AND GARDEN WASTE IS PROPERLY COMPOSTED OR BAGGED FOR PICKUP BY YOUR MUNICIPALITY.

## WHAT YOU CAN DO

**LET IT RAIN!** Redirect downspouts away from hard, paved surfaces into vegetated areas, such as a rain garden, or into a rain barrel for later use in the garden. Rain gardens are growing in popularity because they look great and filter pollutants out of runoff allowing clean water to infiltrate and replenish groundwater supplies.



## WHAT YOU CAN DO

**MULCH PLEASE:** Collect or mulch leaves soon after they fall to ensure that they don't get carried into lakes and streams through storm drains or by getting blown directly into the water. Leaves add excess nutrients and use up valuable oxygen in the water as they decompose. Rather than spend the extra time and energy raking leaves into compost bags or to the street for curbside pickup, mulch the leaves into your lawn—it's free fertilizer and adds organic matter to the soil!

**NO SMOKING!** Don't burn yard waste adjacent to waterways—the ash contains phosphorus which can degrade water quality.

**BAG IT!** Pick up pet waste promptly and dispose of it in the trash.

**CLEAN GREEN!** Utilize non-toxic cleaning alternatives whenever possible. Common household items such as white vinegar, baking soda and hydrogen peroxide can serve a multitude of cleaning functions.

**RECYCLE!** Take unused items to your local household hazardous waste (HHW) drop-off site. Information on HHW or recycling programs can be found at: [www.oakgov.com/advantageoakland/planning/wasteandrecycling/Pages/nohaz.aspx](http://www.oakgov.com/advantageoakland/planning/wasteandrecycling/Pages/nohaz.aspx) or call the Oakland County Waste Resource Management Division at 248-858-1352.

## PROPERLY SITE COMPOST PILES:

Keep compost piles away from the water's edge to eliminate the chance of runoff from these piles contributing excess nutrients to the water.



## DON'T FEED WATERFOWL:

They become dependent on the food from humans and tend to congregate in one place expecting more food. This can lead to the concentration of droppings which adds excess nutrients and harmful bacteria to waterways. Deter nuisance species, such as Canada Geese, from your property by maintaining a vegetative buffer planting of adequate height (at least 12 to 24 inches) between the water and your lawn.

## NO DUMPING ALLOWED!

Never dump items such as used motor oil, cleaners, paint or other hazardous materials down a storm drain, on the ground, or into your septic system. Storm drains lead directly to our waterways. Materials dumped on the ground or washed into septic systems could seep into soils and contaminate the groundwater supply.



## HARVEST THE RAIN

**WATER:** Install a rain barrel which will collect runoff from rooftops when it rains or direct downspouts into garden areas. It's free water for use in the garden!

## MINIMIZE 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.

## BE NATURAL:

Plant and maintain a buffer of taller vegetation (preferably Michigan native plant species) around the perimeter of your property and especially near the water to help slow runoff and provide added filtration. Native plant species are adapted to local soils, climate and environmental conditions. Native plants have extensive root systems that cut down watering needs, help infiltrate water back into the ground, minimize soil erosion and filter pollutants from runoff before leaving your property.





## WATERFRONT WISDOM — HEALTHY HABIT #4: PLANT AND MAINTAIN A NATURALIZED SHORELINE OR STREAMBANK BUFFER

**CHALLENGE:** Storm water 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 attract 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.

**SOLUTION:** MAINTAIN A VEGETATIVE BARRIER OF TREES, SHRUBS, TALLER GRASSES AND WILDFLOWERS BETWEEN THE SHORELINE AND UPLAND AREA.

## WATERFRONT WISDOM — HEALTHY HABIT #2: PREVENT SOIL EROSION AND SEDIMENTATION

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

**CAUSE:** Eroded soils are by volume the greatest pollutant of waterways in the United States. 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 runoff into waterways.

**SOLUTION:** CONTROL UPLAND, SHORELINE AND STREAMBANK EROSION THROUGH PREVENTATIVE MEASURES.

### WHAT YOU CAN DO

**START SIMPLE:** Stop mowing to the water's edge and allow a strip of grass, called 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 valuable native plants will start to grow on their own.

**GO NATIVE:** Landscaping with Michigan native plants is economical because they are adapted to local soil and climate conditions and once established will require less watering and fertilizing. Native plants also naturally resist pests and diseases, eliminating the need for harmful pesticides.

- Native plants will attract wildlife, such as butterflies, dragonflies and hummingbirds, and will discourage nuisance species, like Canada Geese.
- Native plants have extensive root systems that travel far into the ground which help to stabilize soils against erosion. They also promote infiltration of water, and filter pollutants and sediment from runoff. Native aquatic plants provide optimum feeding and spawning habitat for aquatic species.

- Plant a diversity of native plant species for optimum wildlife habitat. Beneficial native plantings include wildflowers, prairie grasses, sedges and shrubs. For a complete list of Michigan native plants, go to [www.mnppa.org](http://www.mnppa.org) or contact your local MSU Extension office.



Black-eyed Susan

Bee Balm

Liatris

New England Aster

### REDUCE TURF GRASS ON YOUR PROPERTY:

Cut as small a path as possible through your buffer to access your waterfront. This will save both money and time that otherwise would be spent on maintaining your lawn!

**KNOW YOUR STUFF:** Be aware of Michigan's most common invasive plants and the most appropriate methods to control or eliminate them. Make sure you don't start pulling out areas infested with invasive aquatic plant species—it can actually make the problem worse by producing plant fragments which can root, or cause their seeds to disperse to other areas.

#### Common Southeast Michigan Invasives:

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



### WHAT YOU CAN DO

**GO NATURAL!** Utilize natural materials, such as wildflowers, grasses and shrubs, to stabilize shorelines and streambanks. Engineered structures, such as seawalls, greatly reduce or eliminate riparian habitat and can cause erosion problems for neighboring properties that do not have similar structures. These types of structures are recommended only in the case of extremely erosion-prone areas with excessive wave action and swift moving water.

- If you have an existing seawall, try supplementing the area in front of the structure with native aquatic vegetation to help restore lost aquatic habitat.
- Look into a method of stabilization called bioengineering. It accomplishes stabilization of the shoreline by using living plant materials. It also improves wildlife and aquatic habitat.



Before



After

**LESS IS MORE:** Minimize disturbance to ground cover when doing any type of land clearing work. Avoid mass-grading large areas which will allow more disturbed soil to be exposed and vulnerable to erosion from runoff after it rains or when snow melts. At the waterfront, leave as many aquatic plants in place as possible—they will hold bottom sediments in place and protect the shoreline from the erosive forces of wind and ice action.

**KEEP IT LEGAL:** Obtain required permits and install necessary soil erosion controls. Any earth-changing activity that will impact more than one acre of land, or is within 500 feet of a lake, stream or wetland requires a soil erosion control permit.

**COVER YOUR BALD SPOTS:** Vegetate bare soil as quickly as possible with an appropriate vegetative cover, such as sod or seed. Be sure to mulch the area with straw or other appropriate cover to prevent erosion until the seeds germinate.

**DON'T BE STUMPED:** Incorporate large woody structure, such as stumps, logs and tree trunks, as a management option for protecting streambanks and shorelines. Woody structure provides essential aquatic habitat and stabilizes shorelines and streambanks from erosion.





# WATERFRONT WISDOM — HEALTHY HABIT #3: MAINTAIN A HEALTHY LAWN AND GARDEN

**CHALLENGE:** 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 activities can enter waterways in storm water runoff and from soil erosion.

**SOLUTION:** *PROPER FERTILIZING, MOWING AND WATERING PRACTICES WILL RESULT IN A HIGH-QUALITY TURF THAT PROTECTS WATER QUALITY BY REDUCING STORM WATER RUNOFF, MINIMIZING SOIL EROSION AND IMPROVING WATER INFILTRATION INTO THE SOIL.*

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.

- 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.

- Keep mower blades sharp—dull blades will tear the grass blade which provides opportunities for turf diseases.
- Sweep excess grass clippings off hard or paved surfaces and back onto the lawn to prevent them from getting washed into waterways.



## WHAT YOU CAN DO

**GET A SOIL TEST:** Have your soil tested to find out which nutrients it may be lacking. Most soils tested throughout Southeast Michigan show that high levels of phosphorus are already present in the soil. Soil test kits are available through your local MSU Extension office. Soil testing should be performed about every 2-3 years, or at any site where the topsoil has been disturbed and landscape renovation is under way.

**FERTILIZE PROPERLY:** The key to minimizing off-site movement of fertilizers is to apply them at the proper rates, times and locations.

- To protect water quality, choose a fertilizer that meet these criteria:
  - 1) Slow-release nitrogen: Natural organic fertilizer or synthetic fertilizer with 40 percent or more water-insoluble nitrogen (WIN).
  - 2) Understand fertilizer labels: The numbers on a bag of fertilizer refer to the percentage of primary nutrients found inside. Primary nutrients are: nitrogen (N), phosphorous (P) and potassium (K). The first number represents the percentage of nitrogen. The second number indicates the percentage of phosphorous. The last number represents the percentage of potassium. Fertilizers that protect water quality will have a middle number that is at, or close to, zero, or a formula where the N to P ratio is 5:1 or greater. For example, a fertilizer with an N-P-K ratio of 21-0-4 would qualify as an earth-friendly fertilizer.
  - 3) Avoid weed and feed products: Choose fertilizers free of all pesticides, including herbicides.



- Calculate the area of turf to fertilize so you'll know how much product to purchase. Check the package to make sure it has the setting listed for your spreader.
- Apply the right kind of fertilizers based on whether you're fertilizing your garden or your lawn.
- Sweep excess fertilizer particles off of paved surfaces and back onto the lawn.
- Never fertilize when heavy rain is predicted.
- Lightly water after a fertilizer application (about 0.2") to move the nutrients into the root zone of the soil, but be sure not to over-water and cause runoff! To conserve water from irrigation, fertilize shortly before a light rain is forecasted (no more than 0.2").
- If you choose to fertilize only once per year—early fall is best since this is the time when the turf roots store nutrients over the winter months for future use in the spring growth season. Avoid early spring applications or when the ground is still frozen.
- Use screened compost as a top-dressing on the lawn. Compost contributes organic matter and gradually releases nutrients to the soil. The added organic matter also allows the soil to hold more moisture.
- Keep fertilizers at least 25 feet or more away from waterways.

- Mulch grass clippings back onto the lawn where they'll quickly break down and provide free nutrients and organic matter to the soil. Clippings that are returned to the lawn all season

**WATER WISELY:** Excess watering not only wastes money, but can create runoff from your property allowing more pollutants to get into area waterways through leaching or by soil erosion.

- Only give your lawn the amount of water it can actually use—which is the area limited to the root zone of the turf. Actively growing turf only needs about 0.5 to 1.5 inches of water per week. Use a rain gauge to help determine how much water your irrigation system distributes.
- Light, frequent watering supports healthy grass which naturally resists pests and disease. The consistent moisture in the soil will keep beneficial microorganisms active and minimize stress to the grass. Watering deeply and infrequently actually wastes water because the water will soak into the soil beyond the root zone of

the plant and the saturated soil will cause runoff from your property!

- The best time to water is between noon and 4 p.m. during the heat of the day when the turf is under the most stress. At times when there are water use restrictions in place, it is acceptable to water between midnight and 6 a.m.
- Learn to adapt in hot weather. Turf in hot, dry weather will have shorter roots, so modify your watering plan accordingly. Remember, water that infiltrates beyond the plant's root zone does not go to the plant and wastes precious water resources.
- Direct sprinklers away from impervious surfaces (driveways, patios, sidewalks) as this will waste water and cause runoff.

## PESTICIDE USE RECOMMENDATIONS:

- Practice Integrated Pest Management (IPM). This approach utilizes a system of strategies to keep pests, including insects, weeds and diseases to acceptable levels (since you can't realistically eliminate all pests). This approach minimizes disruption to the environment and promotes the reduced input of pesticides. Fundamental to IPM is the concept of "Know what the problem is before you apply pesticides."

- Make sure that you pick a product that matches your specific pest problem and apply it according to the label's instructions.
- When possible, limit pesticide use by spot-treating problem areas rather than using blanket treatments.
- Keep products off of hard or paved surfaces, such as driveways and sidewalks.

**MULCH IT:** 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.

**DIVERSIFY:** Incorporating a diversity of plants into your landscape will naturally inhibit disease and pests, and greatly improves habitat for wildlife. Try using a variety of native plant species—they attract beneficial insects that will keep away pests.



**CORE AERATE:** Aeration with a coring machine will promote a healthy, dense lawn by improving the ability for air, water and nutrients to reach the root zone of the turf. This will result in increased root growth and improved drainage. The fall is a great time to aerate given soil conditions at that time of year. This aerating schedule will minimize damage to your turf that may otherwise occur if aerating is done in the spring.

