



Save Maumee Grassroots Organization (SMGO)

What YOU need to know about the Maumee River

The **Maumee River is the largest and longest contributing stream to the Great Lakes in the U.S.**

traveling from Fort Wayne into Lake Erie through the Maumee Bay.
The headwaters, where 80% of a stream's water quality is inherited, is located in downtown Fort Wayne ~

at the confluence of the St. Joe and St. Marys' Rivers.

Both of these rivers are on the 303(d) List for Impaired Waters, sending all of their pollutants into the Maumee River and its Watershed.

The management and care of the Maumee River here in Fort Wayne directly affects the condition of Lake Erie, just as the management and care of the St. Mary's and St. Joe Rivers directly affect the quality of the Maumee.

The Great Lakes Basin is home to 34 million stakeholders who recognize the economic, aesthetic, and recreational value of clean, potable water.



2,882 waterways in Indiana are classified as "impaired" and fail to comply with water quality standards for mercury and PCB's (toxic compounds) from industrial pollution, E. coli bacteria from human and animal waste, nutrients, and impaired biotic communities. -IDEM_Draft 2010 303(d) List of Impairments

- Allen County, Indiana consists of approximately 429,000 acres of land of which just over 12,000 acres are wetlands, or 2.9%.
 - 53% of those acres are crop fields: corn, soybean, and grain.
 - 78 facilities that include the sewage treatment plant, factories, and schools are permitted to discharge into Allen County waterways.
 - 40,000 tons of fertilizer are sold annually in the county.
- <https://engineering.purdue.edu/SafeWater/watershed/Allen.pdf>

2010 303d List of Impaired Waterways

- St. Joseph River: E. coli, PCB's (polychlorinated biphenyls), and Total Mercury
- St. Marys' River: Nutrients, E. coli, impaired biotic communities, PCB's, and Total Mercury
- Maumee River: Nutrients, PCB's, Total Mercury, and Free Cyanide

**Water is the driving force
of all nature ~ da Vinci**

- The picture (right) is the **mouth of the Maumee River**, showing **sediment flowing from the bay into Lake Erie**
According to the EPA
(http://cfpub.epa.gov/npstbx/files/ksmo_sediment.pdf):

- Sediment is the **#1 pollutant in the Great Lakes region and waterways of the U.S.**
- Accelerated erosion in waterways is a result of human use of land, accounting for 70% of erosion.
 - Construction activities release the most concentrated sediment.
- Sediment pollution causes \$16 billion of damage annually to the environment, its remediation funded by tax dollars.
- Native plants slow runoff and erosion, because their deep and complex root systems hold the soil in place much more effectively than turf grass.



<http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2264/BAE-1514web.pdf>

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Now that we know some of the issues, what can we do to help?

In our lawns and gardens...

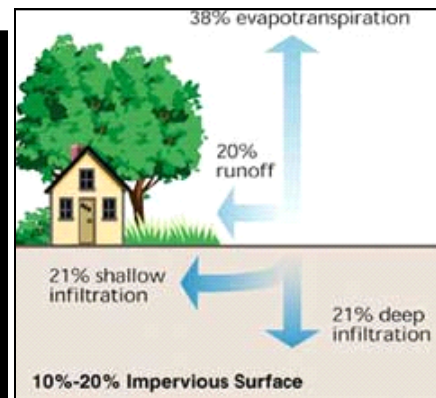
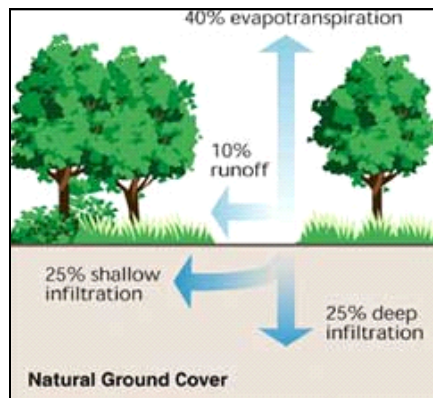


1. Using **native plants** in home and business landscaping require less water and maintenance, decrease the amount of runoff and pollutants that end up in the waterways, and add beauty to your gardens. Native plants provide food for caterpillar species such as the Monarch, seed for birds, nectar for the bees, and deep roots to help soak up excess water.
2. Installing **Rain Barrels** to capture rainwater from your rooftops to keep the sewers from overflowing into the rivers during rainfall and snowmelt. If 100 houses install one 55 gallon barrel, that is 5500 gallons of water diverted from the rivers during any rain event. Your local gardening centers and many online gardening shops sell stylish rain barrels that will compliment your home and gardens.
3. Pull unwanted weeds or plants or use **plant-based products** to keep them at bay, such as 20% Vinegar or even White Vinegar. Spray when the temperatures are warmer and the sun is out and watch them burn up almost before your very eyes. It's not recommended to be used if it's going to rain, it may spread to your native plants and brown them up too.
4. Instead of using petroleum based fertilizers that are blue- ew!- choose **plant and fish based fertilizers** to feed your soil. Some of the local nurseries sell brands that are composed of kelp, bat guano, and fish bones ~ a great mix for the billions of microbes in your soil and compost. Feeding the soil will feed the plant.
5. **Composting unwanted food waste** is like *black gold* for your gardens and plants. Turn your kitchen waste into nutrient-rich compost, your tomatoes will love you for it!



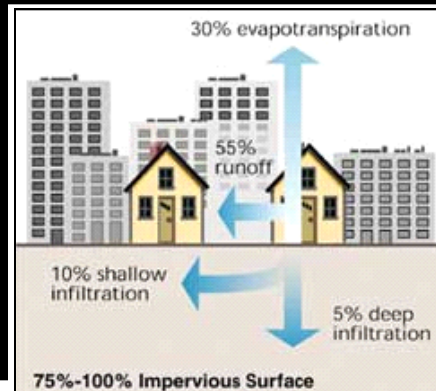
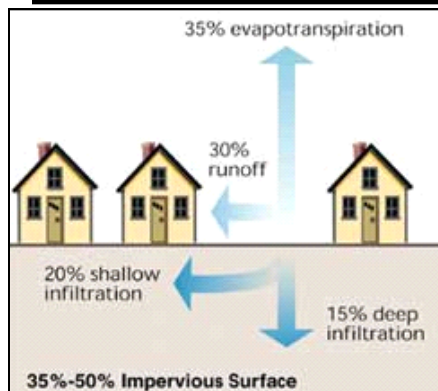
What impact does vegetation (or lack of it) have on runoff from rain & snowmelt?

During a normal phase of the Hydrologic Cycle, 50% of the rainwater infiltrates into the ground, 40% evaporates or is taken up by plants and only about 10% runs off the surface.



Increasing the impervious rate by 10 to 20% and the amount of runoff doubles and the amount of water infiltrating the ground is reduced.

Areas where the impervious surface rate is 30– 50%, runoff is tripled, and the amount infiltration is again reduced.



In areas where impervious surfaces cover 75– 100% of the land, the majority of rainfall becomes runoff, and infiltration is less than 1/3 of what it was prior to development.

What is a rain garden?

The purpose of a rain garden is to use natural systems to improve water quality in the **watershed** and nearby bodies of water. A rain garden is a planted depression that allows water runoff from impervious surfaces like roofs, driveways, walkways, parking lots, and compacted lawns the opportunity to be filtered and absorbed into the ground. This reduces the negative impacts of stormwater runoff by creating a designated area on-site where the stormwater can soak into the ground over time.

RESIDENTIAL RAIN GARDEN

(Keep 10 feet away from house or any building foundations)

source: <http://www.eaglecreekwatershed.org>

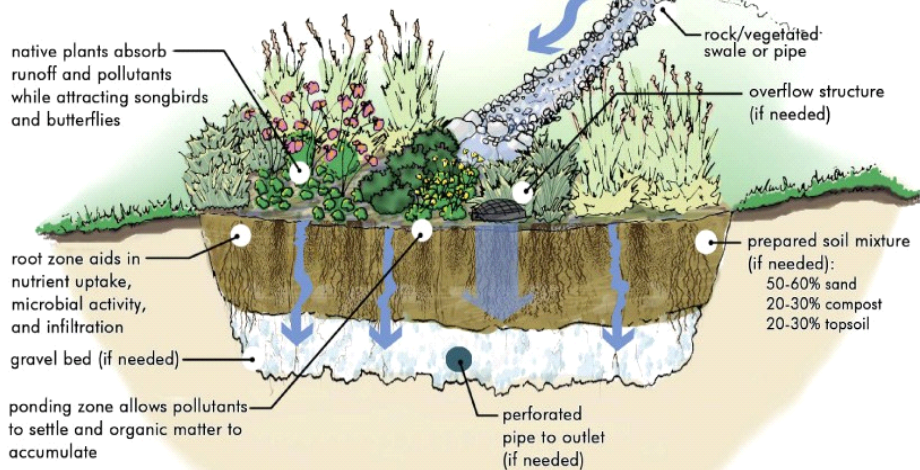


Image From Urban Patch and Indy Rain Gardens Project

- The first one inch of runoff is known as the “first flush” which often carries pollutants such as heavy metals, paint and paint thinner, motor oil, pesticides to the storm sewers and rivers (<http://www.cityoffortwayne.org/utilities/faqs.html>). Rain gardens can assist in diverting those materials into the gardens and allowing microbes to break them down before reaching the waterways.
- Between 2007 and 2011, Indiana had 6 federally declared flood disasters. In 2008 alone, \$175 million dollars in disaster assistance as result of flooding that occurred in May and June. (https://www.floodsmart.gov/floodsmart/pdfs/Indiana+Flood+Fact+Sheet_2011_02_21.pdf).
- Nationally, the U.S. spends approximately \$2 billion each year on flood damage (<http://water.epa.gov/type/wetlands/upload/wetlands-economic-benefits.pdf>).
- Pesticide contamination of groundwater costs U.S. taxpayers’ ~ \$1.8 billion for clean up and monitoring. Erosion costs over \$5 billion each year. (Dodds, Walter K. Freshwater Ecology: Concepts and Environmental Applications 2002)

What’s the 411 on the Rain Gardens?

According to the EPA, one acre of wetland has the potential to hold 330,000 gallons of water (<https://www.extension.purdue.edu/extmedia/WQ/WQ-10.html>)

- After crunching some numbers, the math reveals that :
 - One **3 ft² x 5 ft² rain garden** (which functions similarly to a small wetland) could hold and drain **100 gallons of water**. A rain garden that measures **15 ft² x 9 ft** could hold and drain **1,000 gallons of water**. That is **1,000 gallons of surface runoff diverted** from running directly into the storm sewers and rivers.
 - Multiply that by **5 households** and that equals **5,000 gallons of water**.
 - Add one 55 gallon rain barrel to those five homes and that number just increased by 275 gallons, per rain event ~ 5,275 gallons of water reducing the risk of flood, watering our gardens, breaking down pollutants, holding the soil in place, and so much more in just 5 gardens. Think of 20.. or 200!

The activist is not the one who says that the river is dirty, but the one who cleans it up— Ross Perot

What impact does gardening have on water and resources?



A 10 year study of two side by side gardens (**garden\garden**) in Santa Monica has shown that **gardens planted with native plants** (on the left) **use 83% less water, generate 56% less yard waste, and require 68% less maintenance** than gardens with traditional fertilizer and irrigated lawns with smaller landscaped areas (www.smgov.net).

Did you know... the **city of Fort Wayne** has a **rain garden program** that offers up to **\$250** for the purchase of native plants to put in a rain garden on your property? Visit www.catchingrainfw.org or call 260.427.1381 for details!



Why Use Native Plants?

As described by the EPA: “Native plants (also called indigenous plants) are plants that have evolved over thousands of years in a particular region.

They have adapted to the geography, hydrology, and climate of that region.

Native plants occur in communities, that is, they have evolved together with other plants.

As a result, a community of native plants provides habitat for a variety of native wildlife species such as songbirds and butterflies.”

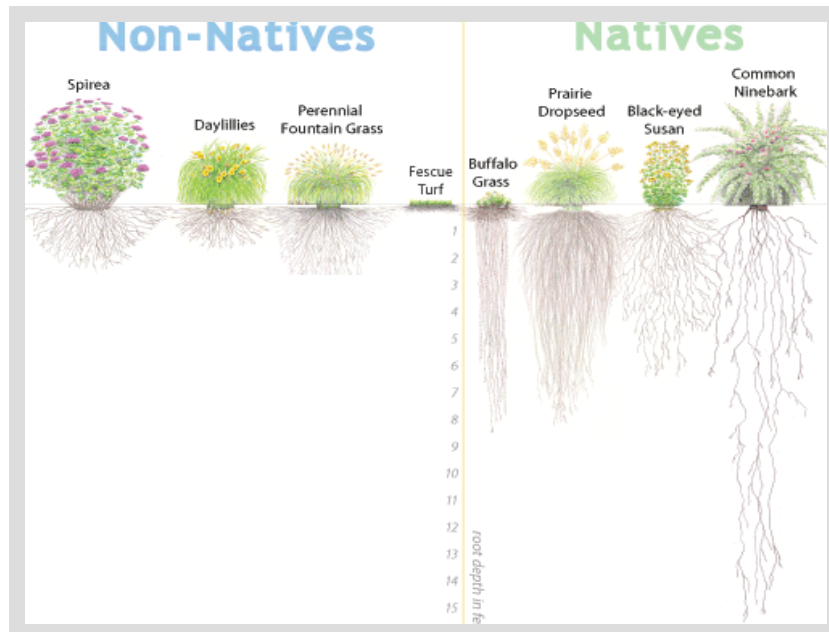
- Urban trees in NYC intercept approximately 890 million gallons of water, saving \$35 million in storm water management costs.
- Rain gardens and other urban capture areas would decrease the burden on the water filtration plant, virtually decreasing the cost to maintain it.
- Yard & landscape trimmings account for ~ 13% of all municipal waste in the U.S. ~ reuse it!
- Lawn care experts recommend keeping lawns watered at approximately 1" per week to keep grass green & lush. This equals around 7 billion gallons of water per week and up to 9,000 gallons per 1/3 acre .
- It has been estimated by the EPA that the amount of gas that is used each week to mow lawns could fuel nearly 1.2 million new cars for one year.
- The scientific journal "Nature" has estimated that the economic contribution of the worldwide environment is... \$33 trillion!



- 62,500 mi² of suburban lawns cover the U.S., which provide little to no function to our ecosystems. Japanese beetle larvae develop on turf grass roots. With so much lawn on the landscape, there is no shortage of food for their voracious appetites of over 400 plants ~ especially Asian ornamentals like Rose of Sharon (*Hibiscus syriacus*) which are commonly found in gardens around Fort Wayne.
- 50,000 species of "alien" plants and animals have become inhabitants of North America
- More than 5,000 imported plants have become invasive species in North America.
- Careful planning when restoring habitats can increase the likelihood that wildlife (insects, birds, fish, etc.) will survive.
- A "sterile" garden is one that depends upon the gardener alone for increasing inputs (fertilizer, water, etc.) for survival.

Bringing Nature Home, Dr. Douglas Tallamy (2007)

The New American Landscape: Leading Voices on the Future of Sustainable Gardening. (2011)



Never doubt that a small group of thoughtful dedicated people can change the world. Indeed, it is the only thing that ever has.

~Margaret Mead



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