

What is a Watershed? John Wesley Powell, who discovered and explored the Grand Canyon, said that a watershed is: *"that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."*

More scientifically, a watershed is defined by natural geographic and geologic created boundaries both on and below the surface that convey the ground and surface water within that area to drain completely to a single source.

Watersheds can be quite large like the Rouge or smaller like the Ecorse creek, and can be divided up into sub-watersheds or expanded to greater regional divisions. The largest division in this country is called the Continental Divide, along which either side drains entirely to the Atlantic or the Pacific Oceans.

Jurisdictional boundaries of communities like Northville don't abide by these divisions and frequently exist in multiple watersheds, or at least multiple sub-watersheds.

All of Northville Public Schools 13 facilities located within the boundaries of the "Detroit Urbanized Area" discharge into either the Middle 1 or Middle 2 sub-watershed of the Rouge River. The Rouge drains to the Detroit River which discharges into Lake Erie, so are considered part of the sub-region of the Great Lakes Watershed. Recognizing this increases opportunities for participation in multiple watershed groups and related activities.

There's nothing better than a cold glass of water on a hot summer day...or how about going for a swim, going boating or fishing? We're very lucky that we live in an area where there is such a vast resource of water that adds to our enjoyment and quality of life.

But what would it be like if we were to lose that resource or if it was no longer safe for us to play in it or drink it?

Each and every one of us has a responsibility to help keep our water clean. But we need to understand what it is we do that makes a difference, for better or worse.

Northville Public School District is dedicated to teaching the community what choices can make a difference.



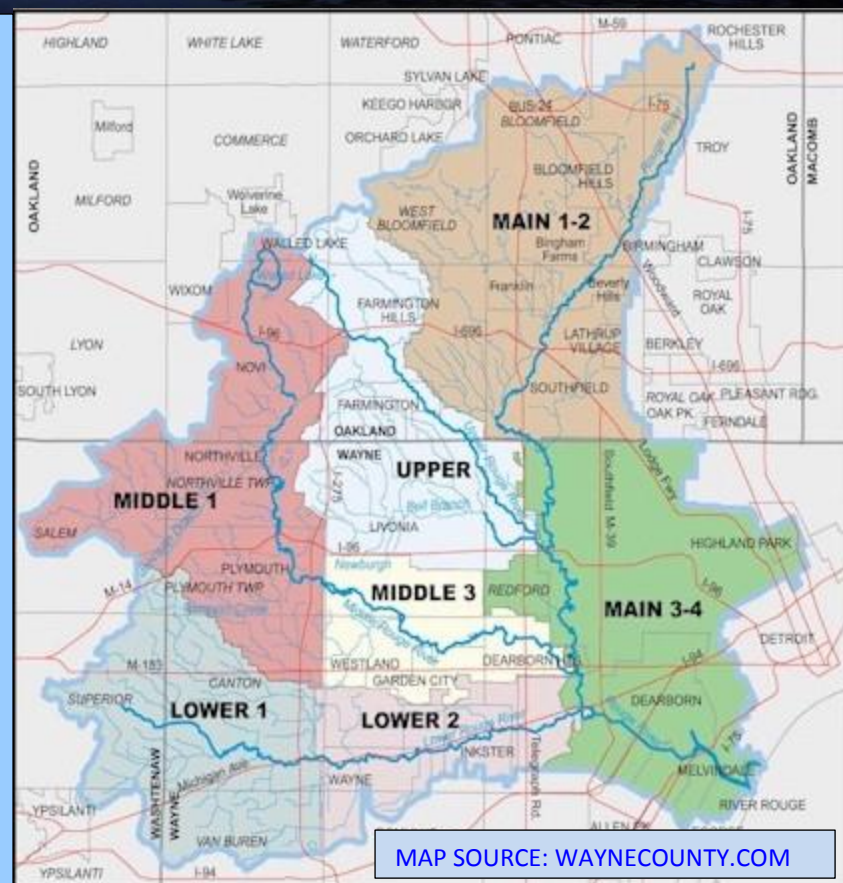
Watershed Legislation started with the Clean Water Act when it was first established in 1948 under the name "The Federal Water Pollution Control Act". Reorganized in 1972 as the "Clean Water Act", it was expanded further with the addition of amendments in 1977 that would lead to the implementation of pollution controls for waste water plants and industry, and water quality standards for all contaminants in surface waters.

Out of this came the National Pollution Discharge Elimination System (NPDES). This program under the CWA made it unlawful to discharge pollutants from a discrete conveyance into navigable waters known as a point source, without obtaining a permit. The success of this program improved many water quality issues, but was not inclusive of the main source of watershed degradation, non-point source pollution. Whereas limiting contaminants from a discrete source is rather straight forward to manage, the same cannot be said of non- point source impacts. The nature of these types of contaminants is revealed in their name, non-point source; meaning originating from a variety of sources, which may not all be traced or well defined. These contaminants are a result of all of us and our daily activities, our public policies, our individual and community practices. This is why watershed outreach and education is so very important in the ultimate success of the stormwater program.

Getting it right has been a challenge. We've implemented some good ideas, like creating watershed alliances. The entire Stormwater Permitting process nationwide arose from the polluted state of the Rouge River Watershed. But challenges have remained and the approach continues to go through modifications as our understanding of the issues expands.

Proper pollution and watershed management is expensive. It's a common argument that attempts to enact legislation that limit impact are power grabs by extremists. But the truth of the matter is prevention is significantly less expensive than the cost of cleaning up, no matter the pollutant, no matter the specifics. Proper pollution control also puts the responsibility of associated costs on the source of the pollution. When this is not the case, tax payers ultimately foot the bill.

The bottom line is that it's better for everyone's health, (including the watersheds), and better for everyone's wallet when we recognize the source of impact and take steps to reduce or eliminate it, at the source. By becoming familiar with and supporting pending legislation, everybody wins.



MAP SOURCE: WAYNECOUNTY.COM

The Rouge River is 127 miles long and drains 467 square miles before emptying into the Detroit River. This complex system has four main branches, but many smaller tributaries that run through 3 counties, 48 municipalities that serve 1.5 million people. This highly stressed river system is in the midst of the most densely populated and heavily urbanized area of the state, and South East Michigan is the fastest urbanizing area of the country!

Despite this, much of the river is highly accessible to the public through adjacent parklands. Although its state designated uses include water contact recreation and warm water fisheries, it is also designated for industrial and agricultural water supplies and commercial/recreational navigation. Unfortunately, the Rouge is not meeting the water quality requirements to meet many of these designated uses in various locations, and so has been identified as an Area of Concern (AOC). This includes fish consumption advisories, while Wayne County Health department has prohibited total body contact.

This is why STORMWATER PERMITTING is so important. Every public entity must develop and implement a pollution prevention plan. And when a watershed fails to meet its designated use, the DEQ along with the EPA develops a TMDL for the watershed for the pollutants of concern. A TMDL is the total maximum daily load that the watershed can take from all its combined sources and still meet its water quality standards.



Photo source: tjeazlit

The contrast between the Huron and Rouge Rivers is dramatic, and is the perfect teaching tool for helping us understand the importance of stewardship. While the Huron remains the highest quality watershed in the state, the result of early conservation efforts by the HRWC as early as 1965, the Rouge represents the opposite. Absent of environmental controls, the Rouge degraded to historically bad watershed health.



Water Resource management is about water quality and water quantity. These are complicated issues that reach into the depths of our infrastructure and the base of our society. Legislative responsibility exists in the domain of not just Federal and State Government, but of Local Government as well.

Local Government is an especially important player in this equation, as it is their decisions about land use and willingness to support proactive measures that can have far reaching effects on long term watershed health, not to mention local budget health.

The role of local managers directly affects water resources and citizen participation that is crucial for improving decision making processes. Future issues and management are defined by current capital improvements, zoning ordinances, and proper planning. Federal, State, and County laws, Township ordinances and Village by laws, control the political and legal jurisdictions for our rivers, tributaries, wetlands and riparian zones. So having well informed individuals in pivotal positions is key.

Unfortunately, historically, this has not been the case....

This is why watershed councils are such an essential resource.

Working as the voice of our watersheds, watershed councils are purveyors of indispensable information. They collect data and prepare reports, offer guidance and resources for citizens and government alike. They help to build relationships and alliances that lead to greater appreciation for the value of our resources, .

To get involved go to: www.hrwc.org or <http://www.therouge.org/>

Our rivers are more than just a source of drinking water or commerce; our rivers are a great source of recreation. Communities with recreational value draw the best and brightest for their workforce, and can be a source of economic growth.

Data collected by the MiSeagrant reports the following; Michigan has over 1500 miles of kayaking and canoeing rivers, and 4.6million folks participate in the great lakes region. The kayak industry brings in \$396 million of taxable income, and creates 35,000 jobs.

Michigan's great lakes also provide inexpensive means for transportation of import commodities with an efficiency rating 3x greater than transport by trains and 10x greater than by trucking.

We are 5th in the nation for resident and non-resident anglers, 3rd for registered boats. Jobs arising from our water resources are estimated at 804,381, a 25% decrease from a decade ago. Still Lakes related income is in excess of \$2billion annually.

<http://www.miseagrant.umich.edu/downloads/coastal/economy/09-101-Jobs-Report.pdf>

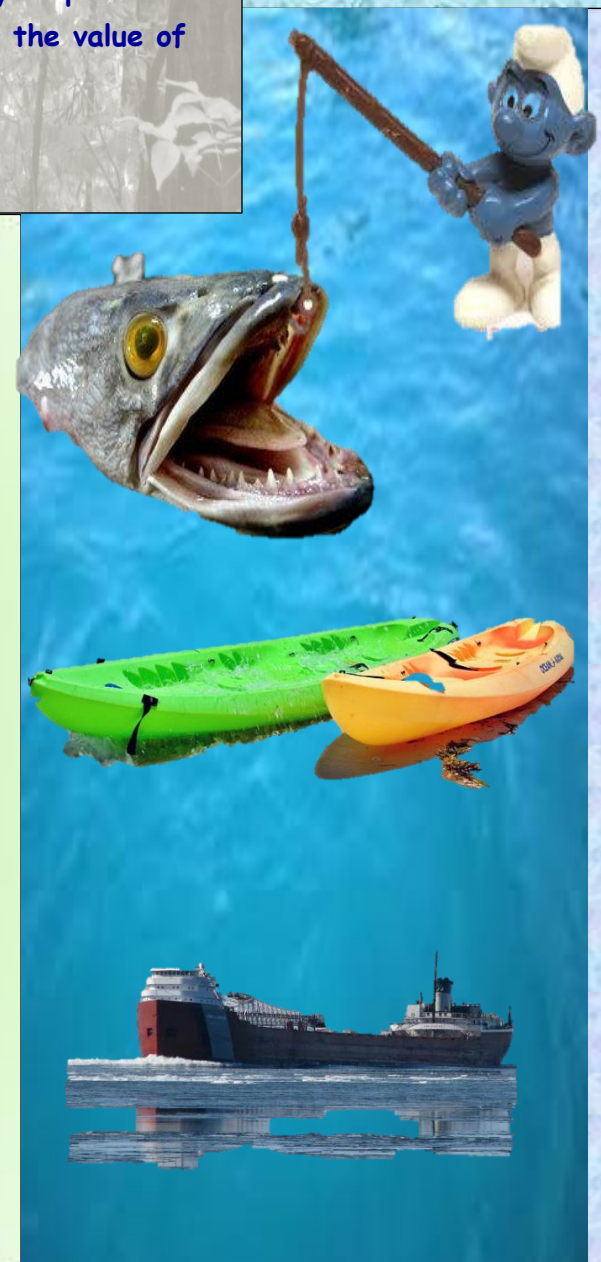
<http://www.miseagrant.umich.edu/downloads/research/projects/11-716-Kayak-Lake-Huron.pdf>

When you protect your watershed, you're protecting jobs and our economy!

Watersheds and climate are very closely related. Practices that protect our watershed also help to reduce the heat signature of a place and help to reduce carbon emissions. This is because more than 13% of our energy goes to heat, treat, and pump our water supplies. On top of this, our nation's electrical supplies represent whopping 49% of withdrawals from our rivers, lakes and wetlands. It takes vast amounts of water to cool the power plants that generate electricity. And for every incandescent bulb that burns for 12 hours a day, we use 3000 -6000 gallons of water. Count up how many bulbs you have in your house, your neighborhood, your school, or the local mall and add it all together; you start to understand how we emit 290 million metric tons of carbon annually, 5% of our total carbon use, related to water usage. This is the same amount of annual greenhouse gas emitted by 53 million vehicles or 40 million homes!

To help us out, the EPA has certified water sense fixtures; toilets and faucets that reduce our water usage. For the price of a Water Sense Aerator faucet, you could save enough electricity to dry your hair with a hair dryer every day for a year. And if only one percent of all households in America replaced their old toilet replaced theirs with a new Water Sense toilet, the U.S would save enough money to power the electricity needs for 40,000 homes for a full year.

To learn more about products that meet this labling, or to learn more about the Water Sense program, visit <http://www.epa.gov/WaterSense/>



Michigan has a rich water resource. We don't just sport the longest coastline on the contiguous United States (Alaska's coast is longer) in SE Michigan alone we have in excess of 10,000 inland lakes. In some cases these lakes are linked naturally, but also through man-made structures such as dams, that have created impoundments. Because they are connected, their shared hydrology makes them a sub-watershed within the greater watershed.

The ecosystem in lakes is different than in rivers, however, although the same pollutants and conditions impact them negatively. Because the water moves differently in rivers and lakes, so do the pollutants. For pollutants like phosphorus or other fertilizer, the impact is an increase in plant growth and a reduction of available oxygen for aquatic life. This means the impact is quite similar. But for a pollutant like sediment, the impact may not become apparent in a lake until the problem has reached a very costly stage.

To understand how storm water impacts lakes involves a specific type of specialized hydrogeology of the study of lakes. This study is called Limnology. To learn more, please visit the following links;

<http://www.epa.gov/owow/watershed/wacademy/acad2000/pdf/limnology.pdf>

http://cfpub.epa.gov/ols/catalog/advanced_records_found.cfm?&FIELD1=SUBJECT&INPUT1=Limnology--Michigan.&TYPE1=EXACT&LOGIC1=AND

Want to learn more about watersheds?

Here are some useful links that will take you on a learning adventure

EPA Watershed Surf: <http://cfpub.epa.gov/surf/state.cfm?statepostal=MI>

DEQ Watershed Map: http://www.michigan.gov/documents/deq/lwm-mi-watersheds_202767_7.pdf

USGS Water Science Monitoring Center info on Ecorse Creek:

http://waterdata.usgs.gov/mi/nwis/uv/?site_no=04168580&PARAMeter_cd=00065_00060

Michigan Hydrologic Summary: <http://mi.water.usgs.gov/hydrosum.php>

DEQ approved watershed plans:

http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3714_4012-95955--,00.html

MSU Michigan watershed links page: <https://www.msu.edu/~habrong/miwrshd.htm>

Center for watershed protection: <http://www.cwp.org/>



map source: miseagrant.umich.edu 1