

# Freshwater Tool Kit

## Milwaukee Waters Map Facts & History



### Grades: 5 - 12

The facts below can be used with the Milwaukee's Waters map to acquaint students with a simple map and connect them to their local waterways. We're so lucky to live in a water-rich region! These waterways have a rich history, are an extremely important economic and recreational resource and home to a wide variety of wildlife and humans. You can use this map with the 2017 Milwaukee River Basin Report Card from the Milwaukee Riverkeeper to look at the health of each of the rivers along with many other interesting facts.

As you discuss the information below, point out locations you mention.

#### General Facts:

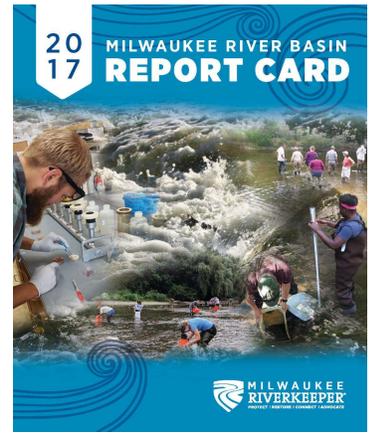
- The Milwaukee River Basin is an 882 square mile area located in Southeastern Wisconsin. There are approximately 500 miles of perennial streams (water all year long), over 400 miles of intermittent streams (water only part of the year), 35 miles of Lake Michigan shoreline, 57 named lakes, and over 1.3 million people. [Data from the 2017 Milwaukee River Basin Report Card].
- Milwaukee is on the shore of one of the 5 Great Lakes and has 3 rivers: The Milwaukee, Menomonee and Kinnickinnic rivers.
- These rivers run through Milwaukee from the north, west and south and all meet near Summerfest and flow into Lake Michigan.
- The Milwaukee River begins (the headwaters) in Fond du Lac County. The river is 704 miles long with many tributaries and contains many open and agricultural lands before it reaches Milwaukee.
- The Menomonee River begins in Germantown. The river is 134 miles long, runs through the Menomonee Valley, past the home of the Brewers, Miller Park, and is the most industrialized river.
- The Kinnickinnic River, also known as the "KK" begins near General Mitchell Airport. This river is 37 miles long and is the most urban and polluted of the 3 rivers.
- Lake Michigan is the 5<sup>th</sup> largest lake in the world, has a maximum depth of 922 ft. and provides over 10 million people with drinking water. It is considered the most dangerous of the 5 Great Lakes due to its unpredictable currents.



There is another river that flows in Milwaukee County – the Root River. The Root River rises in the Waukesha County suburb of New Berlin and flows through the Milwaukee suburbs of West Allis, Greenfield, Greendale and Franklin and flows south to Racine where it enters Lake Michigan.

## Environmental Facts

- Check-out the 2017 Milwaukee Riverkeeper's Milwaukee River Basin Report Card to look at the health of each of the rivers along with many other interesting facts.
- **Why is the health of these waterways so important?** Because Lake Michigan is the source of our drinking water and all 3 rivers flow into Lake Michigan. Our water's health is also important because they are home to a variety of fish, birds and mammals and their health **reflects the health of our community**. See the fascinating history of Milwaukee's waters below.



## Rating Of Milwaukee's Rivers:

- In December 2018 the Milwaukee River Basin Report gave Milwaukee's water a grade of C minus. Although this doesn't seem that good, it's actually an improvement over the past.
- Since the 1970's Milwaukee's rivers transformed from stinky, toxic open sewers and are now becoming healthier, teeming with wildlife and more fun to be around. We owe this evolution to the efforts made by the MMSD, the DNR, the City of Milwaukee, industry, environmental organizations and individuals.
- **1st Place:** The Milwaukee River is in the best shape in most places than the other 2 rivers. The variety of fish and wildlife has increased dramatically which is a sign of healthy waters.
- **2nd Place:** The Menomonee is the 2<sup>nd</sup> healthiest river in Milwaukee. This river was the most polluted river because of all the manufacturing in the valley since the late 1800's. There is more work to do but these groups are tackling the issues every day.
- **3<sup>rd</sup> – Last Place:** The Kinnickinnic River is in the worst shape of all the rivers. In 2007 the KK was listed as the 7<sup>th</sup> worst river in the US., but recent efforts have begun to help bring this river back to health by removing the concrete walls that were put in place in the 1960's creating healthy natural habitats.

### **Today: Stormwater is the #1 source of pollution to all our waterways.**

- To understand how to protect these waterways it is important to understand stormwater.
- **What is stormwater?** When it rains or snow melts this water washes over the land and collects all the litter, chemicals and animal poo on the land. This dirty mix is stormwater.
- Stormwater flows over streets, parking lots, parks and playgrounds and picks up everything in its path and then flows directly into storm drains or the nearest river or lake.
- **Where do the storm drains go?** Most often they flow right into a local river or Lake Michigan! In some areas downtown, the storm drains combine with sanitary drains from our homes and schools and flow to the Milwaukee Metropolitan Sewerage District (MMSD) where the water is filtered and treated and then directed back to Lake Michigan.
- **How can we keep stormwater and our waterways clean? It's easy!**  
KEEP THE LAND CLEAN AND THE WATERS WILL BE CLEAN! Don't litter. Pick-up garbage. Don't throw cigarette butts in the street. Pick up your dog's poo! Don't use lots of chemicals in your gardens and on your lawns.... Check-out the inside poster in the **Simple Solutions to Great Lakes Health Guide** for more easy ways to protect our waters and drinking water supply.

## Historical Milwaukee Water Facts: Milwaukee is Innovative!

- **Before 1800:** Native Americans lived along Milwaukee's rivers and Lake Michigan for hundreds of years before the Europeans came to this area. They used these waterways as highways to travel via canoe and as a rich source of food – wild rice in wetlands, fish and water fowl.
- Milwaukee was a gathering place for many different Native American tribes because of these waterways and many settled on the either side of the Menomonee Valley were Wauwatosa, Miller Brewing and Potawatomi Casino are currently located. [MAP]
- **1800's:** Europeans also began settling along Lake Michigan and its rivers. Milwaukee became a city in 1846 when three settlements merged where the Milwaukee and Menomonee rivers came together. Growth continued along both rivers with warehouses, factories, and other businesses. They had easy access to Lake Michigan via the rivers to ship goods, wheat and people all over the Great Lakes and beyond using schooners and steamers.
- In the mid to late 1800's you would have seen hundreds of ships in the rivers and Lake Michigan's harbor like Milwaukee's S/V *Denis Sullivan*, a replica of a 3-masted schooner. The *Sullivan* was built in 2000 and docks and sails out of Discovery World.
- Back then ships didn't have lighting or high-tech navigational systems, so hundreds sank in the dark and fog. Today you can see a sunken ship in 20 feet of water off Atwater Beach - the *Appomattox*. This 319-foot steamer was the largest wooden vessel ever built on the Great Lakes. She launched in 1896 and sunk in heavy fog in 1905.
- At the end of the century Milwaukee was becoming a world leader in saddle making and other leather goods (tanning), brewing beer, making sausage, metal working machine shops and manufacturing engines, parts and railroad rails.
- The lower Milwaukee, Menomonee and KK rivers served the needs of these industries; however, Milwaukee's waterways became dumping grounds for all their waste in addition to the raw sewage from homes that drained directly into the rivers.
- In 1888 the Milwaukee Flushing Station was installed at the current Collective Café on Lincoln Memorial Drive, to flush the smelly and polluted Milwaukee River with clean Lake Michigan water. This was one of the earliest water pollution-control systems with the largest water pump in the world built at Edward Allis Co. (Allis-Chalmers). Another flushing station was installed for the KK River in 1907.
- **1900's:** A dam was built by North Ave. in 1891 to control flooding. After the turn of the century, the waters behind the dam became a place of leisure and recreation with swimming and rowing schools, beaches, beer gardens, passenger ferries and commercial icehouses. There were even amusement parks located in today's Hubbard Park in Shorewood. The Milwaukee River was much warmer than the frigid waters of Lake Michigan.



**Jones Island  
Workers  
1923**



**WW2  
Harley  
Motorcycle**

- The City was forced to address a growing concern from increasing illnesses from contaminated waters, like diarrhea and typhoid. They closed beaches, created the Metropolitan Sewerage District and erected Jones Island treatment plant in 1926. This state-of-the-art facility was the only plant in the world to use biological treatment processes.
- **World War 2:** Milwaukee was known as the “Machine Shop of the World”, and when World War 2 broke-out factories quickly retooled to support the war. Women were needed to help fill the factories and replace men that went off to war and made up about 25% of the workforce. Harley-Davidson made thousands of motorcycles; Allis-Chalmers made ship steam engines, steam turbines, generators, electric motors and artillery tractors; A.O. Smith made bombs, landing gear and propellers and Falk Corporation made gears that turned the propellers.
- The boom in manufacturing needed for the war effort unfortunately had a major negative impact on the water quality of waterways nationwide.
- **1950 & 1960’s:** Milwaukeeans turned their back on the rivers after the war. Population grew, people started moving out to the suburbs and public parks and buildings along the rivers fell into disuse and disrepair after many businesses closed.
- Milwaukee’s sewers were also challenged and not able to manage the volume of sewage and stormwater and Jones Island quickly outgrow its capacity to treat water. During this time there were many combined sewer overflows (CSO’s) with untreated sewage overflowing directly into rivers and Lake Michigan.
- **1970’s:** Milwaukee’s rivers, like many nationwide, continued to be in bad shape. Thankfully, in 1972 the Clean Water Act came into effect and began to help improve water quality by restricting companies from dumping industrial waste into waterways.
- In 1972 the State of Illinois sued Milwaukee for being a public nuisance for sewer overflows polluting Lake Michigan. Milwaukee was never charged despite lawsuits continuing into the late 1980’s. However, because of the new laws and lawsuits Milwaukee and the sewerage district created a plan to repair and expand sewers and treatment to improve water quality in Milwaukee.
- Just one year later UW-Milwaukee opened the Great Lakes WATER Institute that will become the largest academic research facility on the Great Lakes.
- **1980’s:** Milwaukee environmental groups and the Milwaukee Metropolitan Sewerage District (MMSD) began serious efforts to cleanup Milwaukee’s waterways. The first section of the deep tunnel, at a cost over \$1 billion, was installed to reduce sewage overflows into Lake Michigan during heavy storms.

**Women Help  
the War Effort**



➤ **1990's:** In 1993 the deep tunnel became functional, however, that same year Milwaukee experienced the worst water quality catastrophe in U.S. history. A tiny bug called Cryptosporidium got in Milwaukee's drinking water and caused over 400,000 residents, about 25% of the population, to get very sick and 69 people died. However, there was a good end to this tragic story when Milwaukee Water Works installed a state-of-the-art ozone treatment system and moved the south intake pipes 2 miles out into the lake. Now Milwaukee has some of the best drinking water in the world.



➤ In the 1990's there were a series of projects to remove dams on the Milwaukee River and tributaries which had a large impact on improving water and habitat quality of the river. There was a total of seven dams removed in several communities including the largest dam on the river, North Avenue Dam in Milwaukee.



➤ **2000's – We've Come A Long Way Milwaukee!** The MMSD and partners launched the Greenseams program in 2000 to purchase tracts of open land to help manage stormwater. Area municipalities, businesses, environmental groups and the MMSD are working together to install green infrastructure features in the Milwaukee-area to help keep water where it falls and reduce flooding and toxic stormwater runoff. These features include porous pavement, bioswales, rain gardens, rain barrels, green roofs, and over a half dozen large-scale water catchment areas that the MMSD has installed around the city to manage stormwater. The MMSD also created the Green Luminaries project to highlight the green contributions of local businesses.



➤ In 2009 the **Water Council** was created in Milwaukee to drive economic, technology and talent development to support the global water industry. They opened a new Global Water Center in 2013 to attract and create new businesses, and to address local and global water-quality technology and policy issues. The center is a convergence of industry, academia and governmental resources to provide innovative technology and solutions.

➤ **Milwaukee is a Global Freshwater Technology Hub!** Milwaukee is now home to a cluster of water-focused businesses and is becoming one of the most powerful water technology hubs in the world. In 2009 Milwaukee also became one of thirteen cities in the UN Global Compact Cities Programme, to focus on creating solutions to the world-wide water crisis.

➤ Around this time the Great Lakes WATER Institute became the **UWM School of Freshwater Sciences** and in 2014 opened a State of WI funded \$53 million addition. The school now operates in a beautiful, state-of-the-art facility right on the water and offers innovative teaching and research facilities and equipment and a rare combination of microbiology, robotics, aquaculture (fish farming) and toxicology. This facility also contains meeting spaces and the Great Lakes Genomic and Aquaculture Centers and the Center for Water Policy.

## TODAY:

- The rivers and lakefront are viewed as Milwaukee’s best assets. New condos and office buildings line the banks of the rivers downtown and in the harbor district. This new real estate attracts people to Milwaukee and helps support the local economy.
- The rivers are cleaner and lined with beautiful parks as they wind through many neighborhoods. Fish and wildlife are coming back in record numbers. Beaver have even been recently sighted.
- People are now using the rivers daily. Party boats and rental boats share the rivers with canoes, kayaks and fishing boats. People stroll the downtown Riverwalk that features art displays, boat launches and restaurants. The lands surrounding our rivers, like the Milwaukee River Greenway, are improving and expanding through efforts of Milwaukee Riverkeeper, River Revitalization Foundation, Urban Ecology Center, Groundwork Milwaukee, Keep Greater Milwaukee Beautiful and other organizations and armies of volunteers each year. Every year there are many cleanups and celebrations along the rivers.
- There’s even fly fishing on the Milwaukee River near Shorewood and Capitol Drive and further north. The salmon now run upstream in fall. If you’re canoeing or kayaking on the Milwaukee River in this area you wouldn’t even know you’re in the city -- you’d think you’re up north!

It’s been a tough journey for Milwaukee’s waterways, however, these waters and surrounding habitat have rebounded beautifully with the help and love of the community. There’s still work to be done, but now we know we can achieve even cleaner water together.

## FUTURE THREATS:

The future is only bright for these waterways if we all remain diligent and protect them from future threats, such as:

1. Development – more homes, businesses, parking lots and roads mean less water gets into the ground and leads to more runoff
2. Pharmaceuticals – from the medicine we take and expel from our bodies
3. Damage to headwater streams – water diversions and lowering water tables
4. Pulling back or removing regulations that protect water
5. Climate change – droughts and severe rain events that cause flooding

It’s not a given that our waterways will continue to improve. We need to keep up the fight, ensure regulations stay in place and become even more precise to protect our water from future threats.

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Resources: John Gurda’s *Making of Milwaukee* and *Milwaukee: A City Built on Water*, the *Encyclopedia of Milwaukee* online - <https://emke.uwm.edu/>, MMSD website, Milwaukee Riverkeeper’s Milwaukee River Basin Report Card, Wisconsin Department of Natural Resources Magazine, Wisconsin Historical Society, Meg Jones’s *World War 2 Milwaukee* and *Urban Milwaukee* online.

Photos courtesy of: Google, Milwaukee Journal Sentinel, the MMSD and Wisconsin Historical Society.  
Questions? Contact XXXX at XXX-XXX-XXXX