

This Guide was the result of the Regional Niagara River/ Lake Erie Watershed Management Plan Phase 2 project, a community-based initiative that built off of Phase 1 (Healthy Niagara). These projects address the current conditions, trends, and major contributors to water quality conditions in the Watershed in order to develop action steps to protect and restore watershed health in our community.

Buffalo Niagara Waterkeeper and LEWPA have worked together with Erie County to create this plan to protect our finite water resources. The full report can be found at www.erie.gov/wmp. Check it out to learn more about our Watershed and recommended actions moving forward!

Impaired Waters (605 Miles)	Waterbodies with well documented water quality problems.
Waters with Minor Impacts (1,015 Miles)	Waterbodies where less severe water quality impacts are apparent, but classification uses are considered fully supported.
Threatened Waters (102 Miles)	Waterbodies for which uses are not restricted and no water quality problems currently exist, but where data suggests declining water quality trends or specific land uses or other changes in the surrounding watershed are known to be threatening water quality.
Waters having no Known Impacts (2,501 Miles)	Waterbodies where monitoring data and information indicate that there are no use restrictions or other water quality impacts, threats or issues.
Waters with Impacts Needing Verification (626 Miles)	Waterbodies that are thought to have water quality problems, but for which there is not sufficient or definitive documentation. These waterbodies need additional monitoring to determine whether uses are restricted or threatened.
Unassessed Waters (481 Miles)	Waterbodies where there is no available water quality information to assess the support of designated uses.



Be Aware & Get Involved!

- Get involved with the many water quality committees such as the Tonawanda Creek Watershed Committee and County Water Quality Coordinating Committees.
- Participate in your municipality’s Environmental Conservation Commission meetings and talk to your municipal representatives about what they are doing to protect water quality.
- Plan or participate in a clean-up at a local waterway.
- Don’t flush or dump chemicals down the drain (such as fertilizers, pesticides, or medications). Contact your municipality or county for proper disposal information.
- Learn about and use Best Management Practices for water quality on your property (such as using chemicals only when necessary, disposing of pet waste properly, or planting trees or stream buffers).
- Volunteer your time for water quality sampling or invasive species management events by an environmental organization.
- Reduce the amount of impervious surfaces on your property and/or utilize rain barrels, rain gardens, and other green stormwater infrastructure.
- Sign up to stay informed on environmental issues via organizations, such as the WNY Environmental Alliance, Buffalo Niagara Waterkeeper, and others.
- Enjoy our clean waters through various activities such as kayaking, canoeing, swimming, fishing, boating, and paddle boarding!

This document was prepared for the New York State Department of State with funds provided under Title 11 of the Environmental Protection Fund.

Working Together for a Healthy Watershed

A Citizen’s Guide to the Niagara River/Lake Erie Watershed

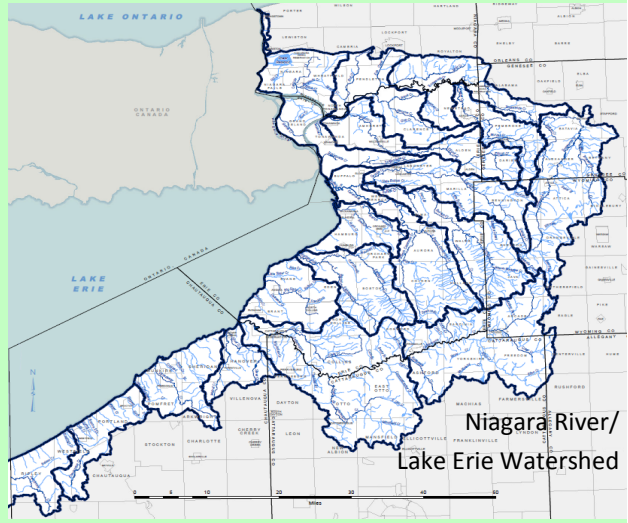
Water is essential to life. It is connected to everything from drinking, cooking, bathing, farming, industrial processes, shipping, and fishing, to our recreational enjoyment through boating, swimming, and more. The Great Lakes provide about 21% of the world’s freshwater supply, right in our backyard! We are lucky to have this amazing freshwater resource at our doorstep, but it is important to plan and manage it in order to safeguard this vital resource from factors that can have negative impacts.



Water quality improvements along the Buffalo River are transforming the Buffalo Niagara Region. This has caused a resurgence of interest in our waterways and has brought economic development to once-forgotten areas. This focus on clean water has created a **Blue Economy** and we need to protect our water assets for future generations.

The Niagara River/Lake Erie Watershed (Watershed) lies in the westernmost portion of New York State. It encompasses lands in New York State that drain into the Niagara River and Lake Erie.

This Watershed consists of 18 smaller units, called **sub-watersheds**, that drain to smaller waterways, all of which eventually drain to the Niagara River or Lake Erie. Our Watershed drains 1,523,515 acres of land (or over 2,300 square miles) and has 5,543 linear miles of watercourses. In that area lies Erie County along with portions of 7 other counties.



Throughout the watershed there are a variety of types of **topography**; from the southern portion with the Chautauqua Ridge and the Allegheny Plateau, which consists of rolling hills , to the north where the Erie-Ontario Lake Plain and Huron Plain are located. The Plains are very flat areas. The flat lands paired with hydric (wet) soils create expanses of wetlands. In between these are a series of escarpment step-downs also known as long, steep slopes. The most prominent feature of our watershed, Niagara Falls, lies along an escarpment and separates the Niagara River into upper and lower portions. You might also recognize Glen Falls or Akron Falls, as these lie along escarpments too.

Today, the Great Lakes provide drinking water to 34 million people in the U.S. and Canada, and support more than 1.5 million U.S. jobs that generate \$62 billion in wages!

Land Use and Pollution Causes



The diagram above depicts a watershed. Notice how all of the land drains to a particular waterway. Everything that happens on that land can impact that waterway. Understanding development of the land and how it is used is important for determining current and future watershed health.

Land Use and Land Cover

Land use involves the management and modification of the natural environment into built environments and semi natural environments, such as farm fields or managed woods. Land use zoning assigns a single, top use to each property. The top uses in the Watershed are residential (36%) and agriculture (23%).

Land cover affects how water moves throughout the watershed. This influences whether development supports or threatens water quality, quantity, and ecosystem function. Land use and land cover are different. Residential land use may be considered forested or developed depending on the property cover. The top land cover categories are forested (37.8%), agriculture (36%), and developed (13.5%). Developed lands can alter waterways and increase impermeable cover, creating limited opportunities for stormwater and snowmelt to filter into the ground, leading to flooding and pollution of our waterways.

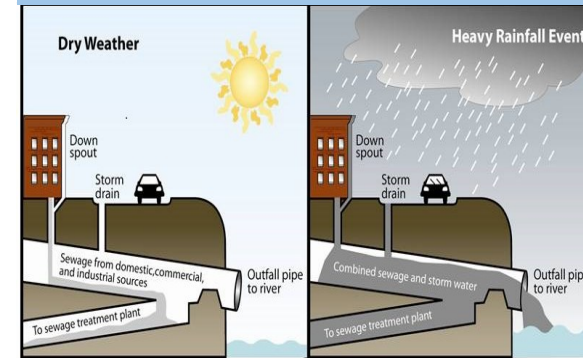
Impairment Causes & Contributors

- **Permitted Discharges are point sources:** National and State Pollution Discharge Elimination System Permits are issued to allow regulated discharge of wastewaters to area waterways. Permitted facilities include industrial operations, sanitary sewer systems, and large farm complexes.
- **Stormwater Run-off is a non-point source:** Two primary causes of stormwater pollution are Municipal Separate Storm Sewer Systems (MS4s) and agricultural operations. MS4s are a network of pipes, culverts, and ditches that move stormwater into retention ponds or waterways. Things like fertilizers, pesticides, pet waste, and auto fluids run-off impermeable surfaces into MS4s.
- **Emerging Contaminants:** Many new contaminants like micro plastics, micro fibers, and flame-retardants are showing up in the Great Lakes and are making their way into waterways and drinking water systems. We have yet to discover what their impacts will be.



A watershed, or a drainage basin, is an area of land within which water collects and drains to a common body of water. In this case, the watershed drains to the Niagara River and Lake Erie

Pollution Causes and Successes!



- **Combined Sewer Overflows:** Combined Sewer Systems are transport systems that collect stormwater runoff, domestic sewage, and industrial wastewater in the same pipe and transport it to a sewage treatment plant where it is treated before being discharged to local waters. Heavy rainfall or snowmelt can cause the total sewer volume to exceed treatment plant capacity, which overflows into waterways without treatment.
- **Historic Contamination:** Past industrial uses have turned into water quality issues. Ground and surface waters can pick up toxic substances that are present in soils. These toxins are carried through waterbodies in our ecosystem. High concentrations of contamination exist along our waterways, especially in urban areas like Buffalo, Dunkirk, Lackawanna, and Niagara Falls.
- **Erosion & Sedimentation:** Many erosion and sediment problems are caused by topographical and geological conditions such as steep slopes and highly erodible soils, as well as manmade conditions, such as the loss of riparian (streamside) vegetated buffers due to mowing along the edge.
- **Thermal Pollution:** Increases in temperature of the water can negatively affect aquatic life and the ecosystem. Many species are sensitive to environmental changes and will not survive under these new conditions.
- **Invasive Species:** Invasive species threaten the health of the watershed and can contribute to water quality degradation, infrastructure issues, and/or harmful algae blooms.

Successes in the Watershed

Area of Concern:

- In 2014-2015 the Legacy Act dredging of the Buffalo River was completed, resulting in the removal of approx. 480,000 yards³ of contaminated sediment. The U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, Erie County, and Buffalo Niagara Waterkeeper have implemented several habitat restoration projects along the Buffalo River as well.

Lake Erie Watershed Protection Alliance (LEWPA):

- LEWPA is an intermunicipal organization created to foster collaboration and partnerships to address water quality and quantity concerns in our region to restore the Watershed. LEWPA has implemented water quality projects in three counties preventing 4,789 lbs of nutrients and 1,562 tons of sediment from entering waterways among other successes.



Some invasive species in the Lake Erie Watershed include Zebra and Quagga Mussels, Giant Hogweed, Hydrilla, Water Chestnut, Japanese Knotweed, and Emerald Ash Borer.