

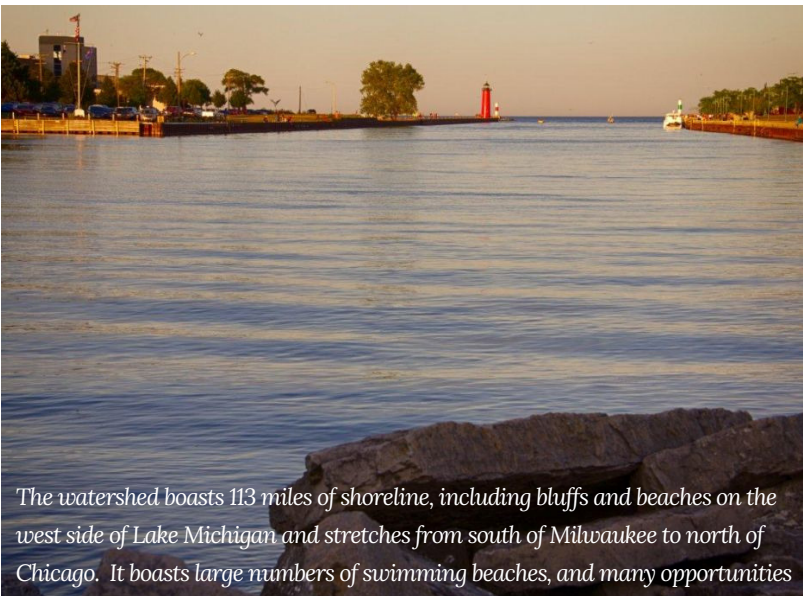
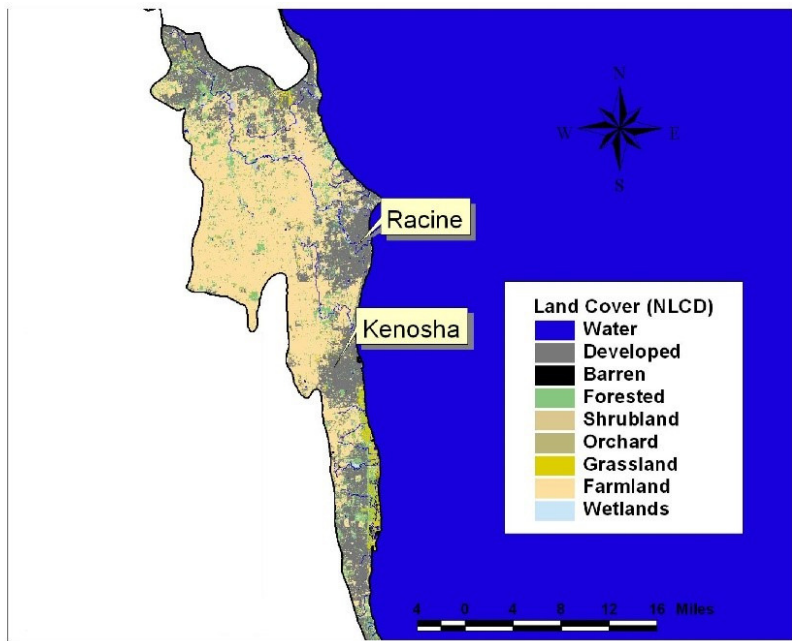
# PIKE-ROOT WATERSHED

Hydrologic Unit Code 04040002

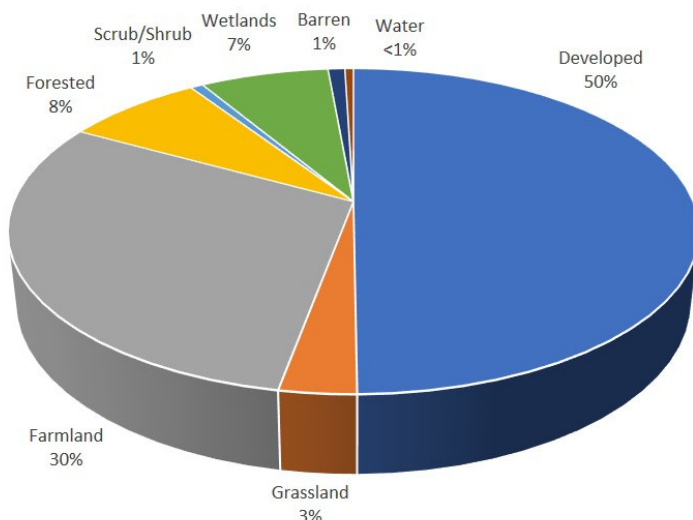
The Pike-Root watershed is one of 33 8-digit hydrologic unit code (HUC) watersheds that flow to Lake Michigan. A hydrologic unit code is a sequence of numbers or letters that identify a features like a river, river reach, lake, or area like a drainage basin (also called watershed or catchment). The smaller the number, the larger the watershed.

## OVERVIEW

- The watershed is approximately 410 square miles and drains to streams and rivers that flow to Lake Michigan
- Major subwatersheds include the Pike River, the Root River, Oak Creek, Racine Harbor, the Waukegan River, and Waxdale Creek
- The watershed boasts 113 miles of shoreline, including bluffs and beaches on the west side of Lake Michigan and stretches from south of Milwaukee to north of Chicago
- It Includes portions of Milwaukee, Waukesha, Racine, Kenosha (Wisconsin) and Lake (Illinois) Counties
- Larger cities of include Racine and Kenosha, Wisconsin, and Waukegan, Illinois
- The watershed has seen increased urbanization over the last 20 years as farmland and grassland decreases
- Some watershed groups working basin issues include:
  - League of Women Voters of Wisconsin  
<http://www.lwvwi.org/>
  - 1000 Friends of Wisconsin  
<http://www.1kfriends.org/>
  - Root-Pike Watershed Initiative Network  
<http://www.rootpikewin.org/>
  - Waukegan Harbor Citizens' Advisory Group  
<http://www.waukeganharborcag.com/>



Land Cover: Pike-Root Watershed



Half of the 410 square miles of the Pike-Root watershed is developed land, with growth seen over that last several decades coming farmland and forests being sold for development. Land use data source: NOAA



<https://www.lwvlmr.org/> <https://my.lwv.org/wisconsin>

# KEY CHALLENGES

- Agricultural practices can be associated with fertilizer/pesticides runoff, excessive sedimentation of streams resulting in low levels of dissolved oxygen that contributes to algal growth and can cause dead zones.
- Development in urban areas and farmland expansions drained historic wetlands, destroyed habitat, straightened streams, which reduced stormwater holding opportunities for water infiltration that impacts groundwater levels.
- Waste from farm animals and pets increases eColi and other pathogens in streams, lakes and beaches.
- Beach closures resulting from higher eColi levels have been an ongoing problem, but have seen reductions in numbers as sources are addressed.
- Increased severe storms cause stream bank and bluff erosion sending sediment downstream impacting water quality and aquatic life.
- Increases in invasive/non-native plant species pushes out native species which support native wildlife and pollinators.
- Road salt in street runoff increases chloride pollution on nearby habitat and receiving streams and lakes impacting aquatic life.
- Loss of natural areas and habitats impact wildlife populations that rely on natural land and water migration corridors and recreational open space.
- Pumping from deep confined aquifers lowered groundwater levels, resulting in higher radium and other contaminant concentrations.
- Waukegan Harbor, an Area of Concern, is being cleaned up and restored from its previously contaminated state. See (Area of Concern section)
- Several waterways are on the 303d impaired waters list, meaning they have higher levels of contaminants requiring special remediation. Contaminants found include eColi, metals, sediments, and total suspended solids.



Runoff from farms and developed areas can lead to algal growth in streams and Lake Michigan



Stream buffers prevent fertilizers and other pollutants from entering waterways



The Forked Astor is an important species found in the watershed



Erosion along stream banks and coastal bluffs increases sediment loads

# NEEDED ACTIONS

This list implies separate items, but they interact in the watershed. Many items represent a legacy of industrial and agricultural activities prior to the 1972 Clean Water Act framework to meet the goal of fishable, swimmable, and drinkable water.

- Support use of technology and weather awareness for better targeting application levels of nutrients and pesticides to prevent loss of applied products into runoff for farms, golf courses and other large areas,
- Improve habitat and water quality by constructing stream buffers, restoring wetlands and other practices on streams for both farms and developed areas.
- Review Wisconsin Department of Natural Resources streams status reports to target areas where action is needed.  
Identify areas where sediments are entering and how they are moving as a result of streambank erosion to prevent and repair erosion.
- Study the impacts of dams on sediments and fish and other aquatic organisms above and below dams on the Pike and Root Rivers.
- Factor changing climate and intensive storms into storm water management using stream buffers, wetland restoration and naturalized detention areas practices to prevent flooding, polluted runoff and to aid ground water recharge and possible recreational open space opportunities
- Collaborate to gather or support research on the movement of sediments and beach sand due to changing storm intensity
- Maintain and leverage the momentum of the Clean Water Act's framework of State Water Quality Standards and Section #319 Watershed Planning.
- Maintain and leverage the momentum of the recent watershed projects of the federal Great Lakes Restoration Initiative.



# SIGNIFICANT NATURAL FEATURES

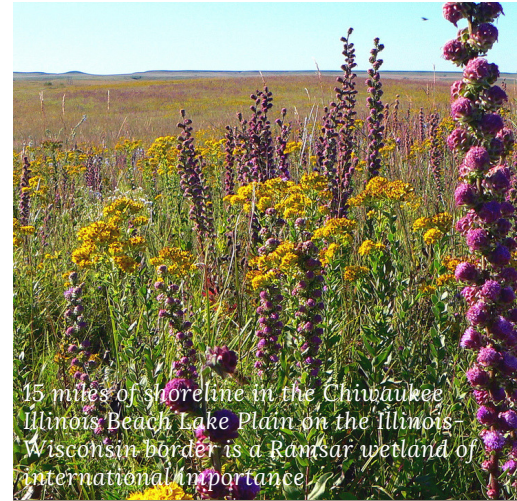
The Chiwaukee Illinois Beach Lake Plain on the Illinois-Wisconsin border is a Ramsar wetland of international importance as recognized by the International Ramsar Convention for the conservation and sustainable use of wetlands. These are important landbird and raptor stopover sites that include important habitats:

- Lakeplain Wet Mesic Prairie
- Mesic Sand Tallgrass Prairie
- Interdunal Wetland
- Black Oak / Lupine Barrens
- Midwest Dry-Mesic Sand Prairie

The Nature Conservancy identified important other habitat types in the watershed including:

- Central Cordgrass Wet Prairie
- Central Cordgrass Wet Sand Prairie
- Central Mesic Tallgrass Prairie
- Central Water Lily Aquatic Wetland
- Cinquefoil - Sedge Prairie Fen
- Great Lakes Beach
- Great Lakes Beachgrass Dune
- Midwest Mixed Emergent Deep Marsh
- Skunk Cabbage Seepage Meadow
- Tussock Sedge Wet Meadow

Important plant species in the watershed include the Pale False Foxglove, Forked Aster, and Prairie White-fringed Orchid.



15 miles of shoreline in the Chiwaukee Illinois Beach Lake Plain on the Illinois-Wisconsin border is a Ramsar wetland of international importance.



The Chiwaukee Illinois Beach area is an important raptor and bird stopover site.

## DRINKING WATER

- The source of drinking water is either surface water (Lake Michigan) or groundwater (wells).
- The majority of the population in these counties receive their drinking water from community water utilities that treat and distribute water using Lake Michigan as the source.
- These utilities report no contaminant levels exceeding U.S. E.P.A. quality standards for regulated contaminants.
- Lead is increasingly being seen as a problem in some of the older systems. The majority of water treatment utilities add phosphate to decrease the potential of lead leaching from eroding lead pipes in service lines to homes and facilities.
- Contaminants exceeding quality standards are reported most frequently from groundwater utilities and consist of bacteria, lead, copper, and nitrates. Deep confined aquifers have increasing levels of radium as this slowly recharging groundwater source is drawn down further.
- Wastewater utilities treat wastewater to water quality standards and discharge treated effluent in streams and the Lake.
- The City of Waukesha to the west of the Lake Michigan basin, recently had a Lake Michigan supply approved by the Great Lakes Governors due to its confined aquifer source seeing lower water levels and higher radium levels. It will return treated wastewater to the Root River through a series of treatment wetlands.



Illinois Beach State Park has important sand dunes



Lake Michigan supplies most residents with their drinking water, although groundwater is an important source for many smaller communities

# WAUKEGAN HARBOR AREA OF CONCERN (AOC)

Waukegan Harbor in Illinois one of 43 Great Lakes areas in Canada and the US designated as having significant environmental problems. Its restoration is funded through Superfund and the Great Lakes Restoration Initiative. The harbor consists of approximately 1.2 square kilometers of industrial, commercial, municipal and open/vacant lands. In 1975, polychlorinated biphenyls (PCBs) were discovered in Waukegan Harbor sediments. Bioaccumulation of PCBs found in the heavily contaminated harbor sediments lead to contamination of fish in Waukegan Harbor. It was identified for having six AOC impairments, three of which have been removed since 2011 due to restoration activities undertaken by AOC partners.

- Restrictions on fish and wildlife consumption
- Degradation of phytoplankton and zooplankton populations
- Degradation of benthos
- Beach closings (Removed 2011)
- Loss of fish and wildlife habitat (Removed 2013)
- Restriction on dredging activities (Removed 2014)

More information can be found at the following webpage:

<https://www.epa.gov/waukegan-harbor-aoc/about-waukegan-harbor-aoc>

## TO READ MORE ABOUT IT

General Overviews

Wisconsin DNR Overview:

<http://dnr.wi.gov/topic/Watersheds/basins/rootpike/>

USEPA

[https://cfpub.epa.gov/surf/huc.cfm?huc\\_code=04040002](https://cfpub.epa.gov/surf/huc.cfm?huc_code=04040002)

Watershed Central wiki:

[https://wiki.epa.gov/watershed2/index.php/Pike-Root\\_Watershed](https://wiki.epa.gov/watershed2/index.php/Pike-Root_Watershed)

Watershed Plans

Pike and Root River Watersheds

<http://www.rootpikewin.org/plans/>

Pike River Watershed Plan

<http://www.rootpikewin.org/pike-river-plan>

Root River Watershed Plan

<http://www.rootpikewin.org/root-river-plan>

Wind Point Watershed Plan

<http://www.rootpikewin.org/wind-point-plan>

Oak Creek Watershed Plan

<http://www.rootpikewin.org/oak-creek-plan>

Waukegan River Watershed Plan

<https://www.lakecountyil.gov/DocumentCenter/View/10904>

Kellogg Creek Watershed Plan

<https://www.lakecountyil.gov/DocumentCenter/View/10571>

Dead River Watershed Plan

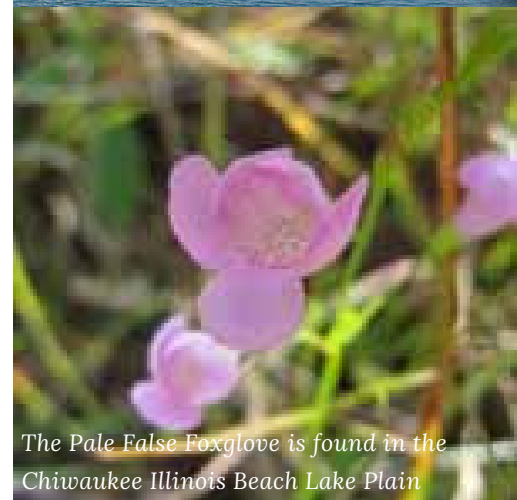
<https://www.lakecountyil.gov/DocumentCenter/Home/View/10891>

Great Lakes Restoration Initiative

<http://www.glri.us> and [glrimap.glc.org](http://glrimap.glc.org)



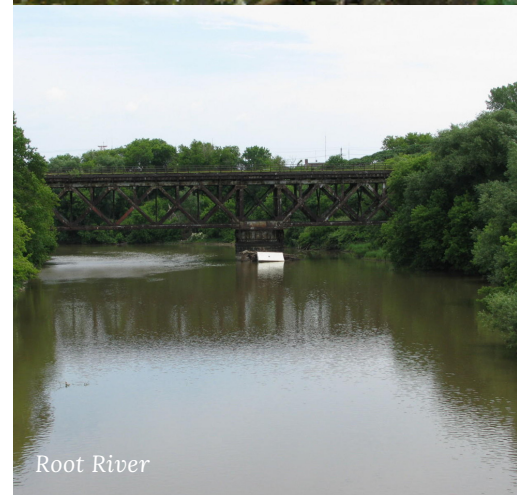
Waukegan Harbor



The Pale False Foxglove is found in the Chiwaukee Illinois Beach Lake Plain



Lake County Ravines are an important part of the drainage system, but are at risk for erosion



Root River