

2012



# Old Woman Creek Report Card



# Firelands Coastal Tributaries Watersheds

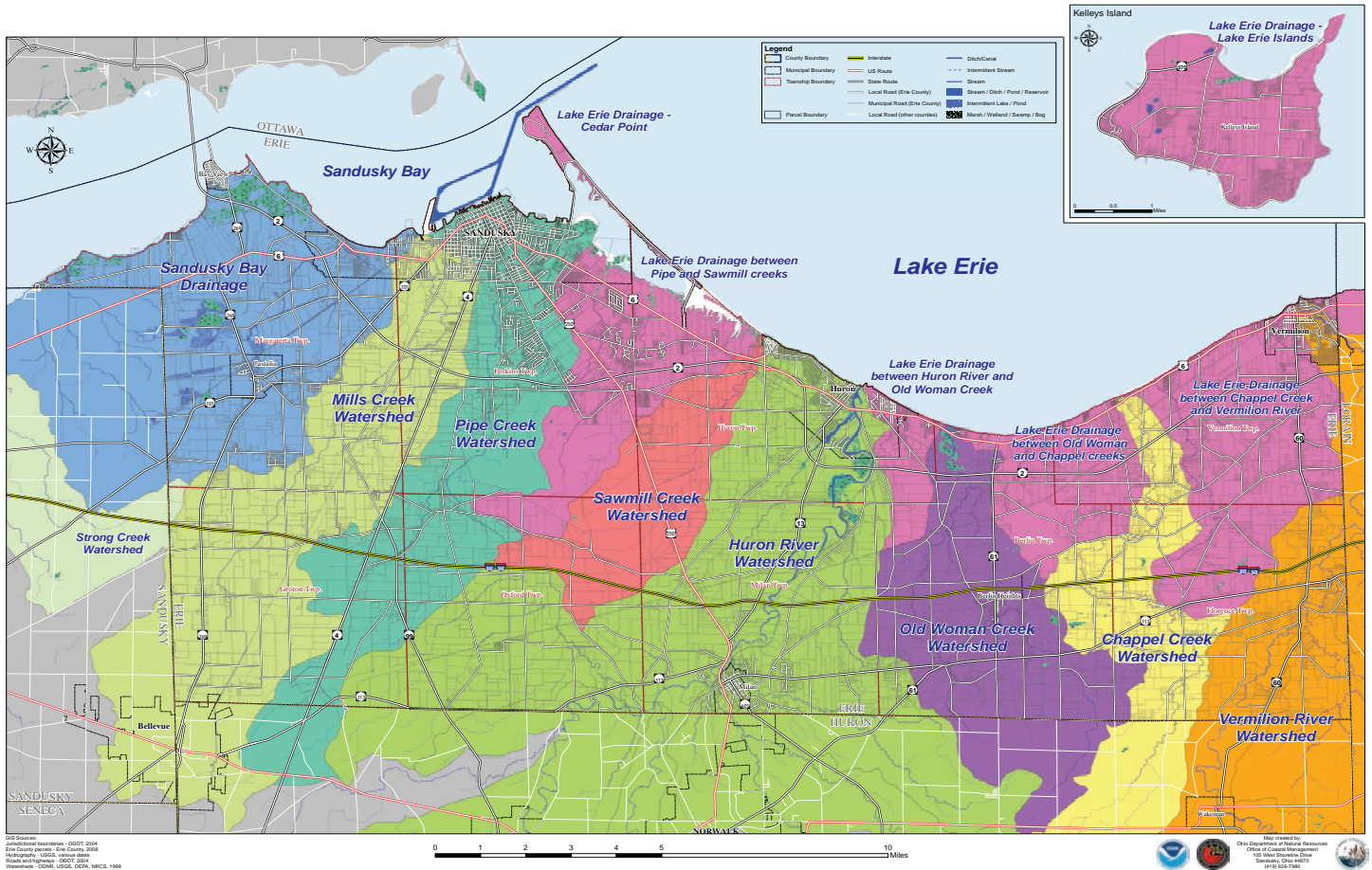
Erie County is unique because most of its drainage includes small streams that empty directly into the Sandusky Bay and Lake Erie. As you travel across the county, you will cross small drainage areas called “watersheds” that define where rainfall and snow melt will flow to a stream or tributary. Many of us don’t think about where our water came from or where it is going as it passes under a road bridge, but

understanding watershed systems helps us make decisions that keep water clean and keep Lake Erie healthy.

The Firelands Area coastal tributaries are made up primarily of small creek systems: Cold Creek, Mills Creek, Pipe Creek, Sawmill Creek, Old Woman Creek, and Chappel Creek. These creeks differ greatly in the geology, soil type, water sources, natural habitats, and land use which make the

Firelands an area of great diversity for our residents, tourists, as well as native and migratory wildlife.

The Firelands coastal tributaries are important to the overall health of Lake Erie. Much of the pollutants affecting the Lake come from the watersheds that drain to it. Monitoring helps identify what streams need the most attention to reduce polluted run-off.



USGS Source: National Hydrography Dataset - 08/01/2004  
 Erie County Jurisdiction - Erie County, 2008  
 Map Symbols: USGS, 1982-2008  
 State and Federal: 10/07/2004  
 Watersheds: USGS, USGS, ODFW, NHD, 1986

Map created by:  
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## What does a watershed program do?

The Firelands Coastal Tributaries Watershed Program is a partnership of local, state, and federal agencies, local businesses and volunteer groups that work together to improve the small streams within the Firelands area.

The partners of this program understand that each small watershed in our area is unique and needs special attention for effective management. Because our tributaries do not combine into larger river systems, they must be managed separately, using a “ground up” approach. We currently

have a state endorsed management plan for the Old Woman Creek Watershed and hope to plan for additional streams in the area to reduce non-point source pollution entering Lake Erie.

This program engages our local community in watershed stewardship activities such as stream monitoring, rain barrel building, restoration projects and in-field agricultural conservation. Clean water means healthy communities. Together we can improve our streams and Lake Erie.

# A storm-driven system

When it rains, it drains; and these storm events move pollutants through the watershed. When Old Woman Creek's flow is low to normal, we often find little nutrient and sediment pollution. However, during and after a storm, the creek will turn light brown from being laden with sediment and often carries excess nutrients that contribute to algal blooms in Lake Erie. Storms are more intense and frequent in the spring and fall, leading to higher pollutant concentrations than in the summer.

## What makes up Old Woman Creek?

Old Woman Creek is a 27-square-mile watershed consisting of east and west branches. These branches meet upstream of a natural estuary that flows into Lake Erie just east of the City of Huron. Located on the southernmost shore of the Great Lakes, a unique microclimate in this watershed supports diverse agriculture including row-crops, orchards, and vineyards. The watershed is made up of over 66% agricultural land, predominantly in the upper (southern) reaches followed by 20% natural areas in the lower (northern) reaches. At the center of the watershed is a small community, the Village of Berlin Heights.



Great Lakes freshwater estuaries are partially enclosed coastal wetlands found where creeks or rivers meet, mix, and interact with the lakes. A unique feature of Old Woman Creek is the estuary mouth, which can be open or closed.



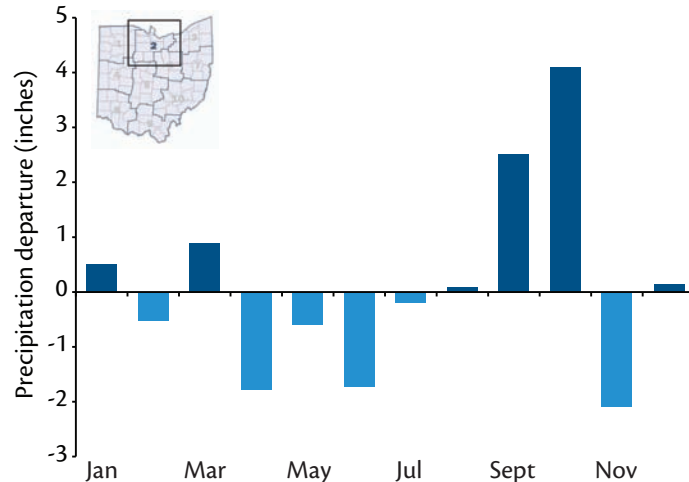
## Key drivers

Old Woman Creek estuary is isolated from the lake by a barrier beach that opens and closes according to stream flow and lake wave action. When the mouth is closed, water accumulates in the estuary, allowing wetland processes to filter out pollutants. The Old Woman Creek estuary is one of the best examples of an intact coastal wetland in the Lake Erie watershed. However, like the lake, the estuary is impacted by natural

and human factors. Storms in the upper reaches of the watershed during spring planting and fall harvest cause sediment to move downstream. Nutrients from field runoff, animal waste, and failing septic systems also enter the Creek during storms. Habitat quality influences water quality and the Creek's response to storms. Intact natural habitats are more resilient, filtering out pollutants and supporting improved water quality, than those that are degraded.

# Warm temperatures, but average rain in 2012

In 2012, Old Woman Creek experienced drought-like conditions in summer; however, precipitation totals were near normal by the end of the year. Throughout the year, there was a mix of months with either above or below normal precipitation (figure). Drought conditions began to develop in north-central Ohio in early summer, according to the U.S. Drought Monitor, and reached peak intensity in July and early August. Above normal precipitation from August to October helped eradicate drought conditions by the end of the year. October precipitation was especially above normal, with north-central Ohio averaging 6.5 inches during the month (4.09 inches above normal), mainly due to the effects of Hurricane Sandy.



In 2012, rainfall was low or below normal for the first half of the year in north-central Ohio (inset map), then increased dramatically due to the effects of Hurricane Sandy.

**How does this affect the water quality of Old Woman Creek?** Overall, Old Woman Creek scored a 54%, C, and is considered in moderate health. The headwaters, which received the most intense rainfall, scored poorer in 2012 than the downstream sites. The best sites were in the Lower Estuary sub-region where sites scored B+ or A-. This could be attributed to cleansing effects

of the wetland or dilution of the polluted stream water with Lake Erie water.

For the entire watershed, both nitrate and soluble reactive phosphorus scored C+, a moderate score. Nitrate exceeded the threshold at every site, while soluble reactive phosphorus levels failed most often at headwater sites. Turbidity scored

the worst out of all water quality indicators, with an overall poor score of D+. The poor and mediocre scores are due to drought conditions punctuated by strong storms, during which, runoff increases nutrients and sediments flowing into the creeks.



Nitrate



Soluble reactive phosphorus



Turbidity



Bacteria



Benthic community



Vital Signs Indicators

## Monitoring in Old Woman Creek

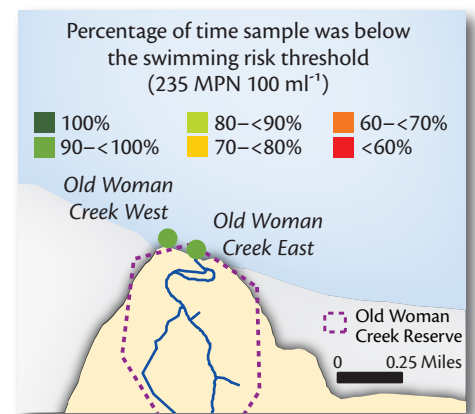
Monthly water samples are analyzed by volunteer stream monitors and Old Woman Creek Reserve Staff from April through November. Future monitoring will include benthic macroinvertebrates (aquatic worms and insect larvae) and an increase in the frequency and number of samples.

The aim of this report card is to provide a transparent, timely, and geographically detailed assessment of water quality for Old Woman Creek in 2012. Scores are determined by comparing three indicators (nitrate, soluble reactive phosphorus, and turbidity) to scientifically derived ecological thresholds or goals. These three indicators are then combined into one overarching Water Quality Index, which is presented as the sub-region or watershed grade. Vital Signs Indicators (dissolved oxygen, water temperature, pH, and ammonia) are considered basic diagnostic indicators that are not included in the Water Quality Index. If one or more of the vital signs do not score well it is an indication of a serious problem in the creek.

## Bacteria, an indicator of human safety

The water quality indicators measured in Old Woman Creek provide an overview of the ecological health of the watershed. Determining if recreational areas are safe for swimming is accomplished by measuring certain bacteria as an indicator. These bacteria serve as a surrogate for the presence of pathogens which may cause illness in humans. Bacteria in the water come from a variety of sources, including failing septic systems, pet waste, and livestock, often after heavy rainfall.

In Old Woman Creek, there are two lake sites located on the public and private barrier beach (see map) where bacteria are measured by the Erie County Health Department. In 2012, both sites scored very well. This means that there was a very small amount of time when there was a risk of getting sick while swimming. Note that the bacteria scoring scale is more stringent than water quality indicators because of the high variability and importance of human health and safety.



# Old Woman Creek 2012 Report Card

## A Lower Estuary

The lower estuary scored an 80%, which is considered good, for 2012. This reflects the very good phosphorus score and the moderately good nitrate score. Turbidity was not scored in 2012 because estuary thresholds have not been developed.

## C Mainstem

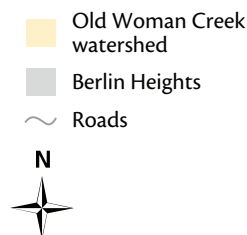
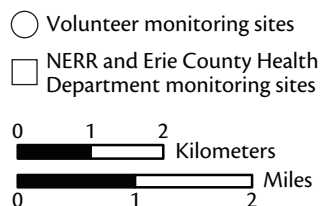
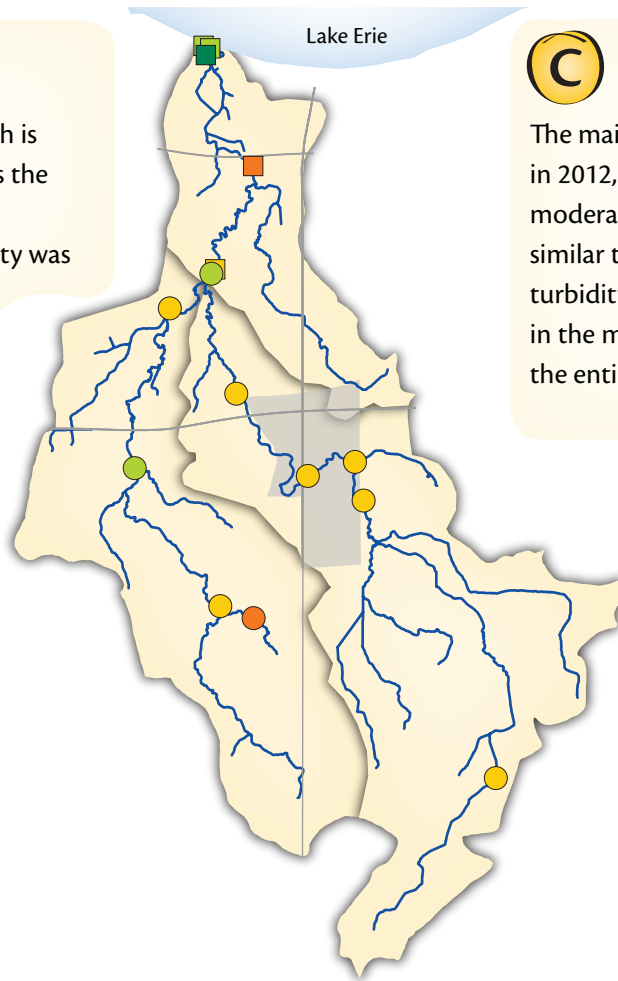
The mainstem scored a 51% overall in 2012, which is considered moderate. The mainstem scored similar to the West Branch, with turbidity scoring the worst. Turbidity in the mainstem was the worst for the entire watershed.

## C West Branch

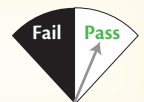
The West Branch scored a 48% overall in 2012, which is considered moderate. This reflects the moderate and poor scores of the individual indicators. Turbidity scored the worst out of the three indicators, but nitrate and phosphorus are also a problem.

## C East Branch

The East Branch scored a 50% overall in 2012, which is considered moderate. In contrast to the West Branch, turbidity scored moderately good, while phosphorus scored poorly, with the worst score in the entire watershed.



Vital Signs Indicators



## What do these grades mean?

- A** 80–100%: All water quality indicators meet desired levels. Quality of water in these locations tends to be very good, most often leading to preferred habitat conditions for aquatic life.
- B** 60–80%: Most water quality indicators meet desired levels. Quality of water in these locations tends to be good, often leading to acceptable habitat conditions for aquatic life.
- C** 40–60%: There is a mix of good and poor levels of water quality indicators. Quality of water in these locations tends to be fair, leading to sufficient habitat conditions for aquatic life.

- D** 20–40%: Some or few water quality indicators meet desired levels. Quality of water in these locations tends to be poor, often leading to degraded habitat conditions for aquatic life.
- F** 0–20%: Very few or no water quality indicators meet desired levels. Quality of water in these locations tends to be very poor, most often leading to unacceptable habitat conditions for aquatic life.

# People working together for clean water

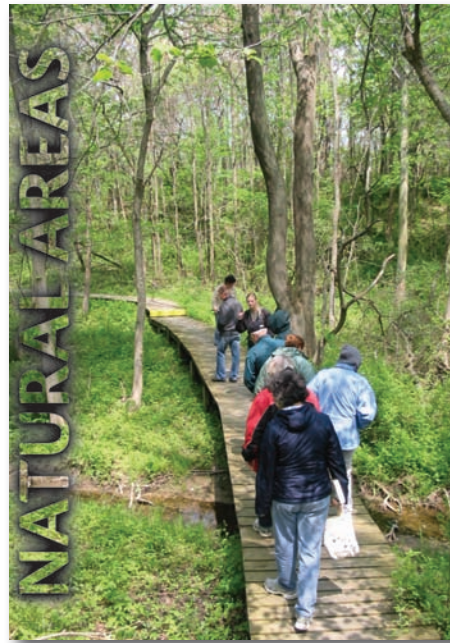
We all need clean water. As a coastal community, the health of our water greatly affects our quality of life and our economy. Sediment and nutrients carried by runoff from urban and agricultural areas pollute our waterways, causing murky water conditions and algal blooms which can be harmful to animals and humans. When our water is polluted, we lose recreational opportunities like swimming, sport fishing, and birding and may incur increased costs for drinking water treatment and dredging to keep boating channels open. To reduce the greatest stressors on Old Woman Creek (nutrient and sediment pollution, and habitat loss), we as a community need to work together. Whether you live in the city or on a farm of tens to thousands of acres, we all can help reduce polluted runoff. We thank many of our Firelands Area residents and landowners who are already working to improve our soil and water and encourage others to restore and protect Lake Erie. To find out how you can help, see the back page of this report card.

*Old Woman Creek is a popular canoeing area for locals and tourists alike.*



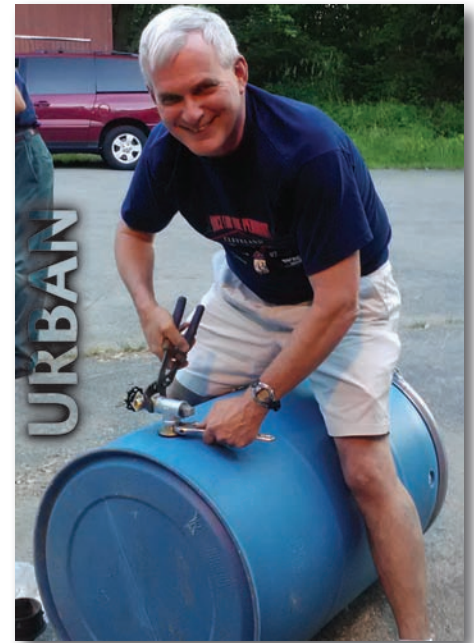
*Best management practices, such as no-till farming, are being used within the watershed.*

Local farmers work with the Erie Soil and Water Conservation District and the Natural Resource Conservation Service to address nutrient and sediment loss impacting our local streams. Many Old Woman Creek farmers have adopted conservation practices such as “no-till” to reduce field erosion. In addition, some farmers also maintain natural wooded buffers between the stream and farm fields. These buffers help prevent polluted runoff from entering the stream and improve stream function to remove pollutants entering upstream. Good soil health is essential for growing healthy crops and preventing water quality issues. As farmers continue to improve the soil on their farms, water quality will also improve in our streams and Lake.



*Old Woman Creek has a variety of natural habitats, including this upland forest area, which is great for wildflower viewing.*


The Old Woman Creek watershed differs from many other watersheds in the Lake Erie basin in that natural areas (wetlands, woods, water, and other open space) are the second largest land cover in the watershed. Edison Woods, Hoffman Forest Preserve, and Old Woman Creek Reserve are all natural areas that have been set aside to preserve valuable ecosystem services. These services help prevent flooding, improve water quality, and provide a place for wildlife and public enjoyment. However, conserving land is not the only way to safeguard our ecologically sensitive areas. Maintaining a natural stream with buffers can increase home or property value and safeguard our aquatic environment.








*Rain barrels can be installed to gather and store rainwater, which can then be used to water gardens.*

Old Woman Creek Research Reserve is a watershed model of sustainability that educates others about stormwater management. In 2009, the Reserve planted a rain garden at its visitor center, the first demonstration of low impact development in Erie County. The rain garden helped address flooding issues and provides an educational opportunity for visitors. Public officials, professionals, and watershed groups have benefited from Reserve training and research that helps them effectively manage runoff. Rain barrel workshops offered in partnership with the Firelands Coastal Tributaries Watershed Program have educated residents on the importance of rainwater collection and assisted them in building over 400 rain barrels that capture 20,000 gallons of water during each storm.

# You can help!

**N** = nitrogen  
**P** = phosphorus  
 = sediment

WHAT YOU CAN DO	WHO BENEFITS	WHAT'S REDUCED
Leave a natural area along a stream or ditch	Grass or wooded buffers help filter pollutants and reduce flood damage	<b>N</b> <b>P</b> 
Remember to inspect and pump out your septic system every 3–5 years	A properly maintained septic system prevents costly repairs and untreated sewage discharge in our streams	<b>N</b> <b>P</b> 
Help your community develop a plan that supports low impact development	Smart development fosters growth and protects the local resources and character of a community	<b>N</b> <b>P</b> 
Follow the “4Rs” of fertilizer use: <b>R</b> ight source, <b>R</b> ight amount, <b>R</b> ight place, <b>R</b> ight time	The “4Rs” approach promotes the wise use of fertilizer by farmers, residents, and landscapers to reduce costly nutrient loss that pollutes our streams	<b>N</b> <b>P</b>
Plant cover crops	Cover crops build healthy soils that help hold back nutrients and water and increase crop yields	<b>N</b> <b>P</b> 
Plant a rain garden or install a rain barrel	Rain gardens and rain barrels help reduce stormwater runoff and can cut down on landscaping costs	<b>N</b> <b>P</b> 
Install a drainage management system	Managing field drainage reduces nutrient loss while saving water for when your crops need it the most	<b>N</b> <b>P</b>
Properly manage animal waste	Storing and disposing of animal waste properly reduces nutrients and prevents harmful bacteria from fouling beaches	<b>N</b> <b>P</b>

## Learn more

If you would like to learn more about the development of this report card or watersheds in the Firelands Area, visit the following websites:

[eriecleanwater.org](http://eriecleanwater.org)   [oldwomancreek.org](http://oldwomancreek.org)  
[ian.umces.edu](http://ian.umces.edu)   [eriecohealthohio.org](http://eriecohealthohio.org)



Community members help plant a rain garden.

## Get involved

We could use your help to improve our watershed. If you are interested in being a volunteer contact Breann Hohman, watershed coordinator for the Erie Soil and Water Conservation District at 419-626-5211 or [bhohman@eriecounty.oh.gov](mailto:bhohman@eriecounty.oh.gov)

Available Opportunities:

- Stream monitoring
- Invasive plant removal
- Habitat restoration
- Litter clean-ups



Volunteer water quality monitoring training in Old Woman Creek.



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