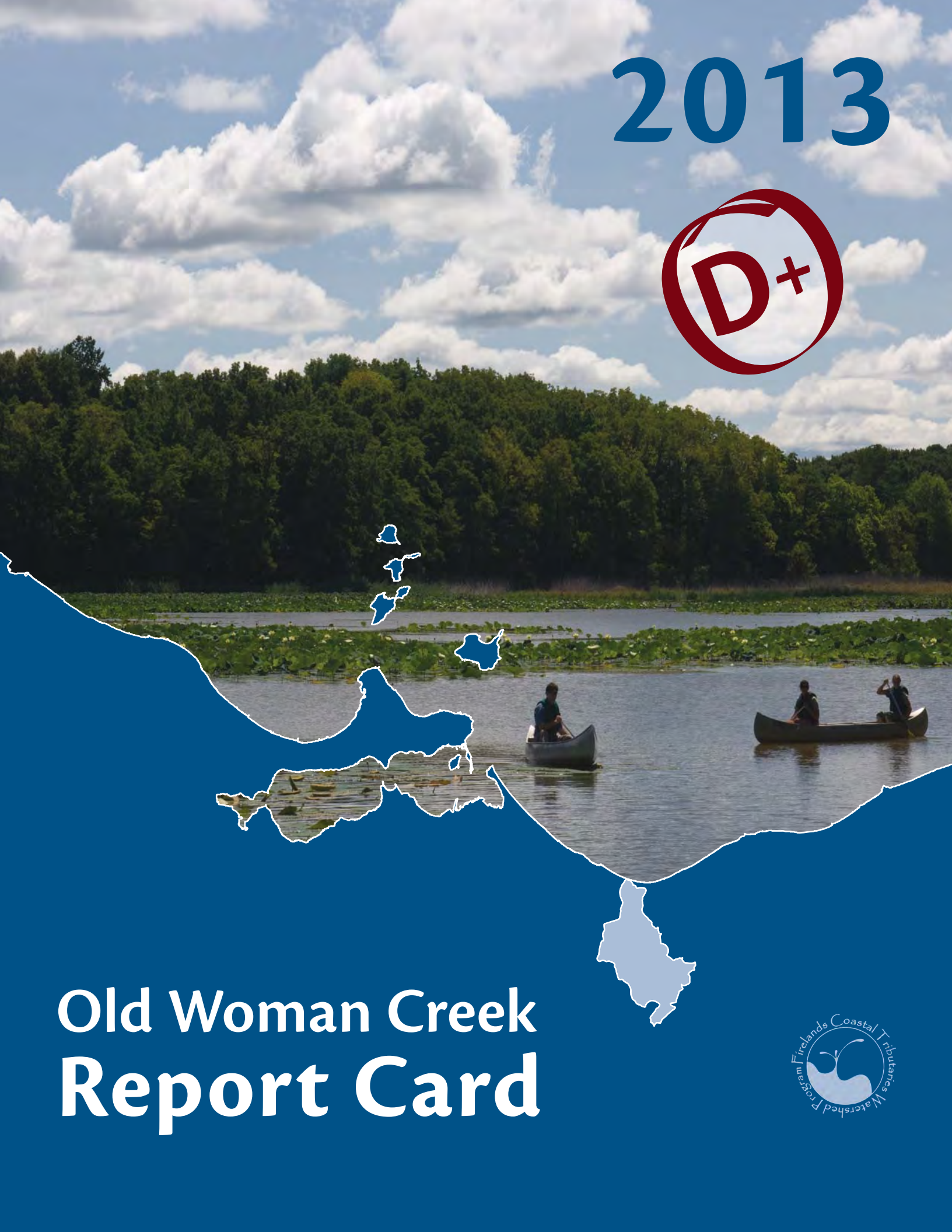


2013



Old Woman Creek Report Card



Firelands Coastal Tributaries Watersheds

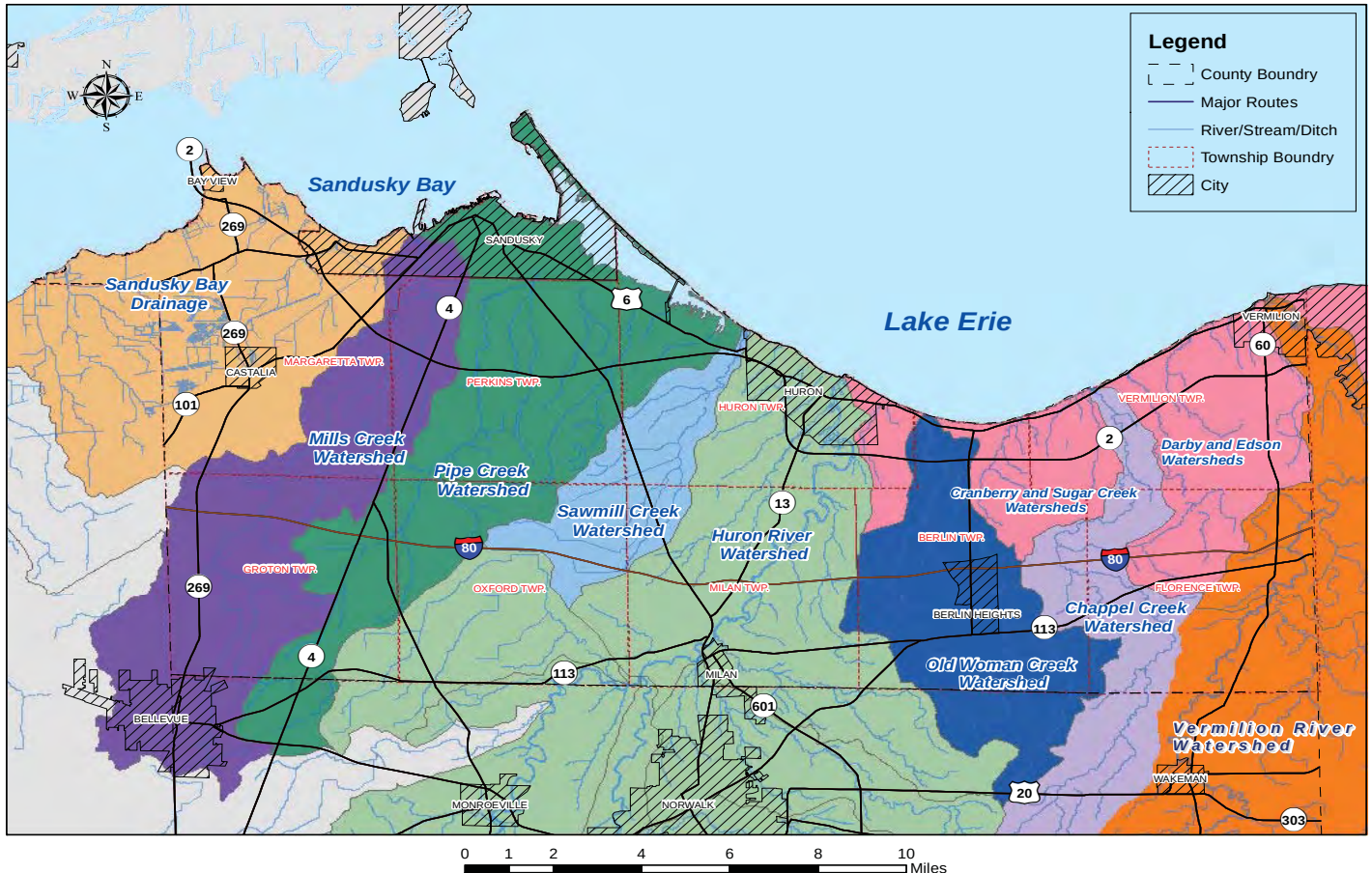
Erie County is unique because most of its drainage includes small streams that empty directly into the Sandusky Bay and Lake Erie. As you travel across the county, you will cross small drainage areas called “watersheds” that define where rainfall and snow melt will flow to a stream or tributary. Many 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 makes our

Firelands watersheds 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 which streams need the most attention to improve water quality.



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 treated and 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

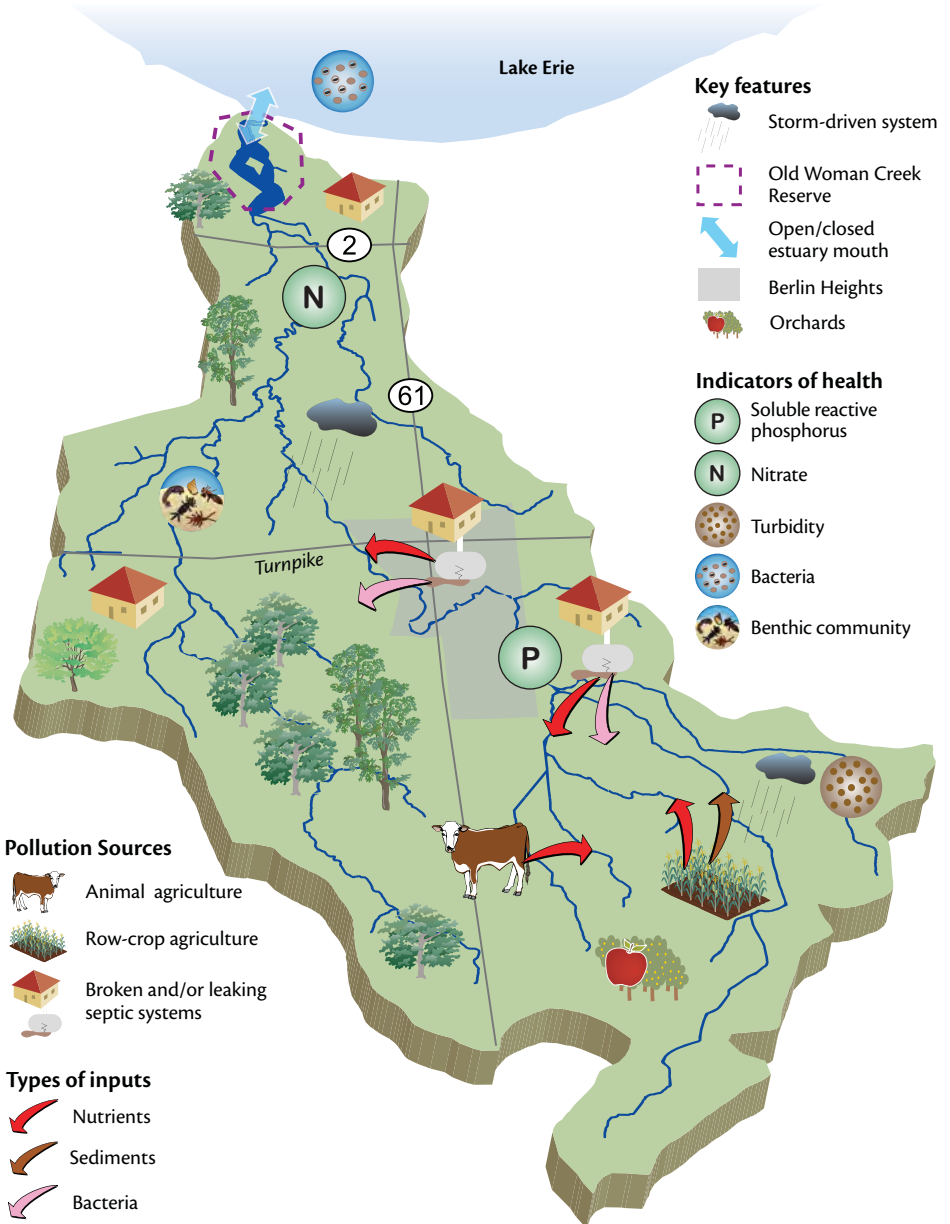
When it rains, it drains; and these storm events move pollutants through the watershed. When Old Woman Creek's flow is low to normal, we often find little nutrient and sediment pollution. However, during and after a storm, the creek will turn light brown from being laden with sediment and often carries 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 and mix 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

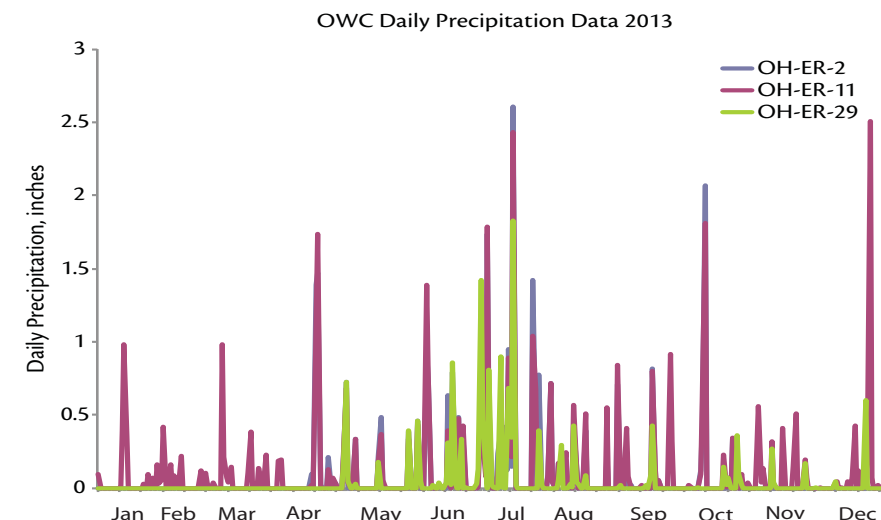
and human factors. Storms in the upper reaches of the watershed during spring planting and fall harvest cause sediment to move downstream. Nutrients from field runoff, animal waste, and failing septic systems also enter the Creek during storms. Habitat quality influences water quality and the Creek's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

Wet year with several storms

2013 was a very wet year. During the sampling period from April to November, records show the number of “wet days” for daily rain events was 10 days or greater for the majority of sampling months. The driest month in 2013 was May. In addition to the wet days, the total number of storms producing rainfall greater than 3/4 inch from April to November was 16. The months with the highest amount of both wet days and significant storm events were June and July with 5 major storms occurring in both months.

Because Old Woman Creek, like many watersheds, is a storm-driven system, water quality responds to storm activity for the year. 2012 was a drier year, resulting in slightly better water quality in samples analyzed. In 2013, there was decline in quality, which was similar to results of wetter years.

How does this affect the water quality of Old Woman Creek? Overall, Old Woman Creek scored a 37%, D+, which is considered in poor health. All site scores declined from 2012 to 2013 with the greatest overall decline occurring in the Creek sub-region, which scored in poor



Daily rainfall totals from the COCORAHs stations within the Old Woman Creek Watershed.

health. The best sites were in the Lower Estuary sub-region which scored moderate good health. This could be attributed to cleansing effects of the wetland or dilution of the polluted stream water with Lake Erie water.

Nitrate and soluble reactive phosphorus scores declined at most sites with only a few mid-watershed sites improving or

showing no significant change. Nitrate exceeded the threshold at every site, with several sites in the Creek sub-region failing overall. This could be a result of increased storm activity. The turbidity score did not change significantly, with an overall moderately poor score of C-.

Overall nutrient reduction is greatly needed to improve the watershed especially if storm activity increases.



Nitrate



Soluble reactive phosphorus



Turbidity



Bacteria



Benthic community



Vital Signs Indicators

Monitoring in Old Woman Creek

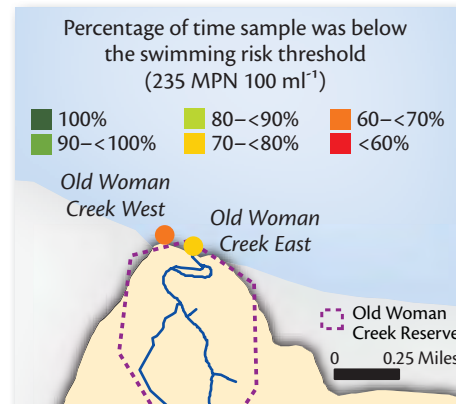
Monthly water samples are analyzed by volunteer stream monitors and Old Woman Creek Reserve Staff from April through November. Future monitoring will include benthic macroinvertebrates (aquatic worms and insect larvae) and an increase in the frequency and number of samples.

The aim of this report card is to provide a transparent, timely, and geographically detailed assessment of water quality for Old Woman Creek in 2013. 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 2013, east beach scored lower (69%) than west beach (78%) meaning there was a risk of getting sick while swimming for more than half the swimming season. 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 2013 Report Card

B- Estuary

The lower estuary scored a 65%, for 2013. This grade is considered moderately good, but has declined from 2012 which was very good. This lower grade represents a significant decline in nitrate score of 50% which is considered moderate health. Turbidity was not scored in 2013, for lack of an estuary threshold.

Nitrogen and Phosphorus a Concern for Stream Health

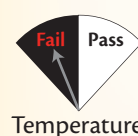
Overall nitrate and soluble reactive phosphorus scores were very poor and poor which lowered the total watershed score. **N** scores showed the greatest decline from 2012 with failures occurring at most sites except in the estuary and Liles Rd and Tenant Rd East. Nearly half of sites received moderate or better scores for **P**. However, failures occurred at Liles Rd, Rt 61, and Tennant Rd West.

D Creek

The creek sites scored a 30% overall in 2013. This grade is considered a poor score. This score represents a decline in nutrient scores. Nitrate received a 13% which is considered very poor while phosphorus scored 34%, which is poor. Turbidity scored a 43% which is considered moderate health and did not significantly change from 2012.

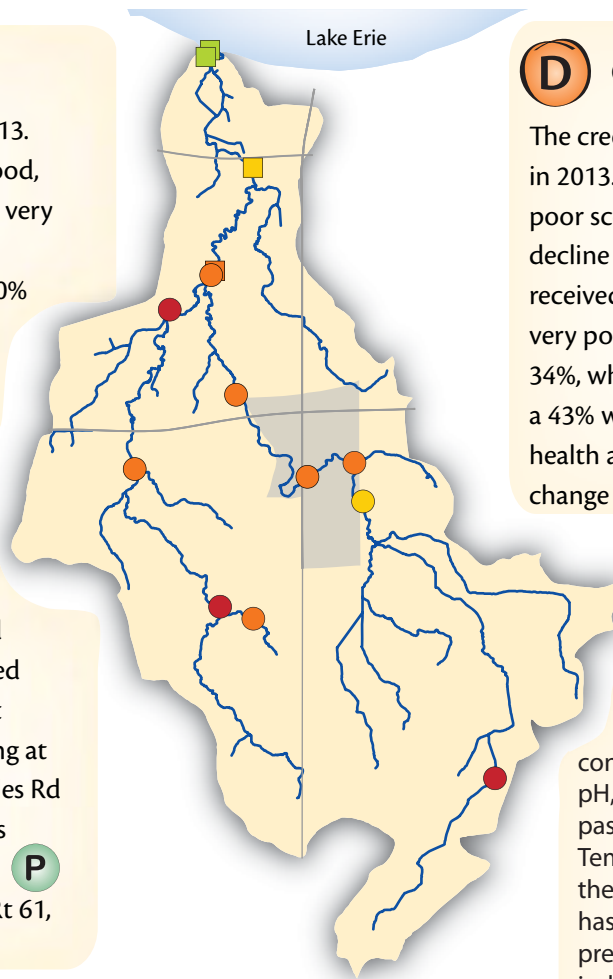
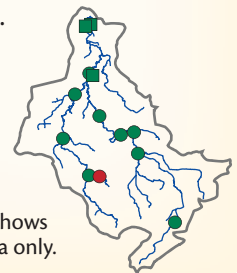
Vital Signs Indicators

The Vital Signs Indicators, consisting of dissolved oxygen, pH, and ammonia revealed passing scores in 2013. Temperature, however, failed at the Tennant Rd west site. This site has shown mixed results in the previous years and may be an indication of a serious problem affecting the health and habitat of the Creek.

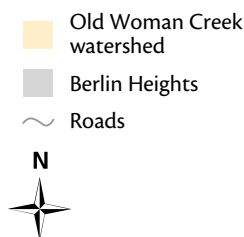


Temperature

Note: This map shows temperature data only.



- Volunteer monitoring sites
- NERR and Erie County Health Department monitoring sites



What do these grades mean?



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.



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.



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.



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.



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 boasts several areas to hike and explore nature: Old Woman Creek NERR, Edison Woods, & Hoffman Forest Preserve



Benefits of protecting coastal wetlands



The Old Woman Creek estuary is a high quality wetland that serves as critical habitat to native wildlife and superior pollutant filter to Lake Erie.

An important natural feature of the Old Woman Creek watershed is its estuary. The estuary is the wetland system formed at the intersection between a stream and Lake Erie. Most of these systems along Lake Erie's shoreline have been altered, the Old Woman Creek estuary is one of Ohio's few natural estuaries. In recognition of its importance, the Old Woman Creek estuary has been designated as an Ohio State Nature Preserve and is part of the National Estuarine Research Reserve system.

After a storm, water volume in the estuary increases and holds runoff for several hours. This "slowing of the flow" starts biological and chemical processes to break down what has run off the land. The Old Woman Creek estuary is particularly adept at removing the majority of nitrates and phosphorus. It also captures sediments and transforms contaminants. This valuable wetland system can be overburdened by pollutants from the upper watershed. We can all help to reduce impacts to this system and to ensure its function by practicing proper management of soil and water on our own properties.

Improving soil health in the agricultural community

Our local farmers work with the Erie and Huron Soil and Water Conservation Districts (SWCD) to address nutrient loss and soil erosion impacting Old Woman Creek and many other local streams. Recently the Huron SWCD received a grant through the Great Lakes Restoration Initiative that provides cost share for installing filter strips, grass waterways, and cover crops in targeted watersheds in the Huron River watershed like Old Woman Creek. This program has benefited our watershed from the installation of 1.1 acres of improved grass waterway and nearly 100 acres of cover crops.

Cover crops are an important conservation tool that is needed to improve both the condition of the watershed and increased productivity of our farmland. Over the last hundred years, our soils have been heavily worked and have lost organic matter and structure, which has increased compaction and erosion, while reducing the ability to hold water and nutrients. Cover crops help to rebuild the soil by keeping it alive throughout the year. Seed mixes are customized to meet the needs of the soil whether reducing compaction or building organic matter.



Cover crop of clover planted in wheat residue. Continual use of this practice helps to improve soil fertility and structure.

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	N P 
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 into our streams	N P 
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	N P 
Follow the “4Rs” of fertilizer use: R ight source, R ight amount, R ight place, R 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	N P
Plant cover crops	Cover crops build healthy soils that help hold back nutrients and water and increase crop yields	N P 
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	N P 
Install a drainage management system	Managing field drainage reduces nutrient loss while saving water for when your crops need it the most	N P
Properly manage livestock & pet waste	Storing and disposing animal waste properly reduces nutrients and prevents harmful bacteria from fouling beaches	N P

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 oldwomancreek.org
ian.umces.edu eriecohealthohio.org



Volunteers help remove invasive plants at Old Woman Creek Reserve.

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

Available Opportunities:

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



Stream monitor training at Hoffman Forest Preserve in Old Woman Creek.



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2013

Old Woman Creek Report Card



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