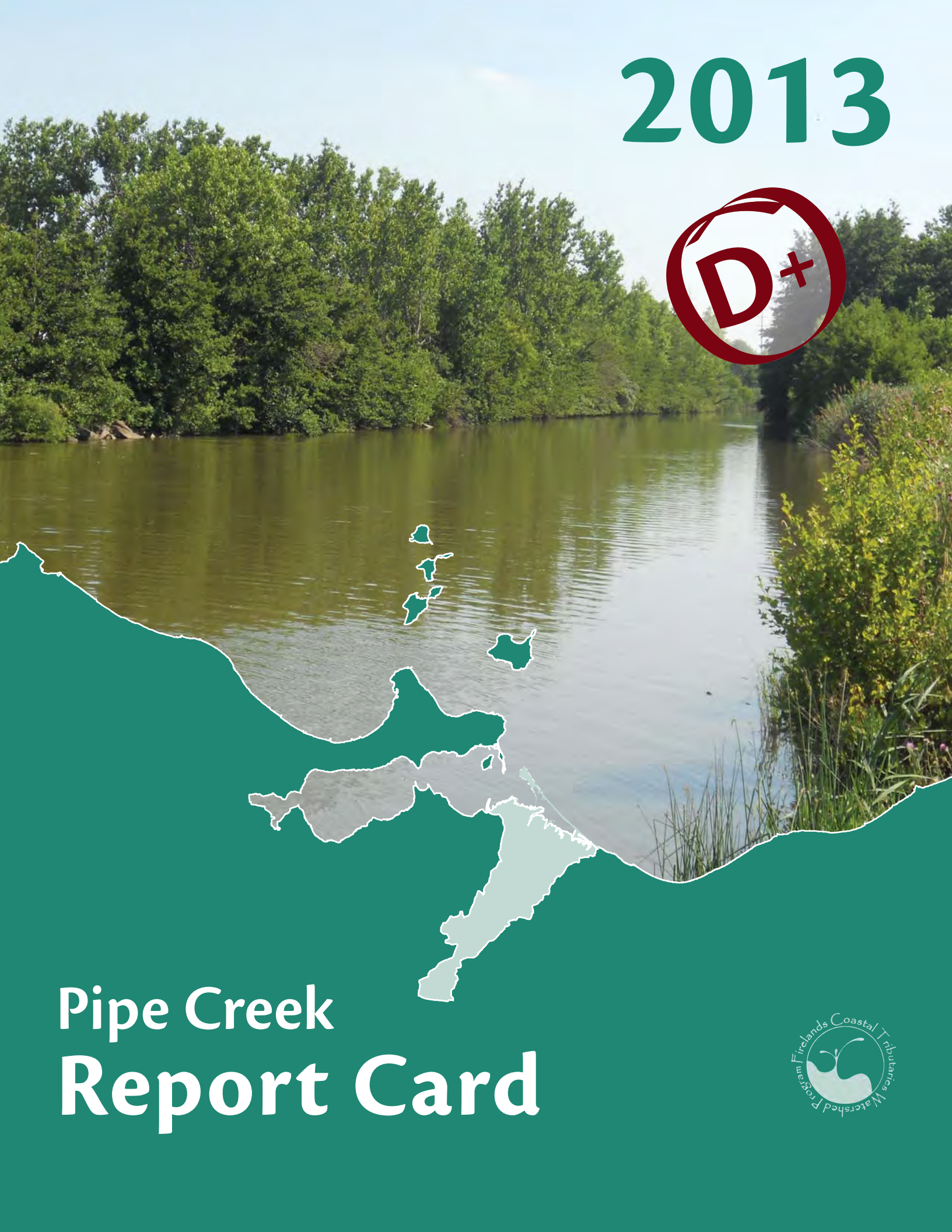


# 2013



## Pipe Creek Report Card





# Firelands Coastal Tributaries Watersheds

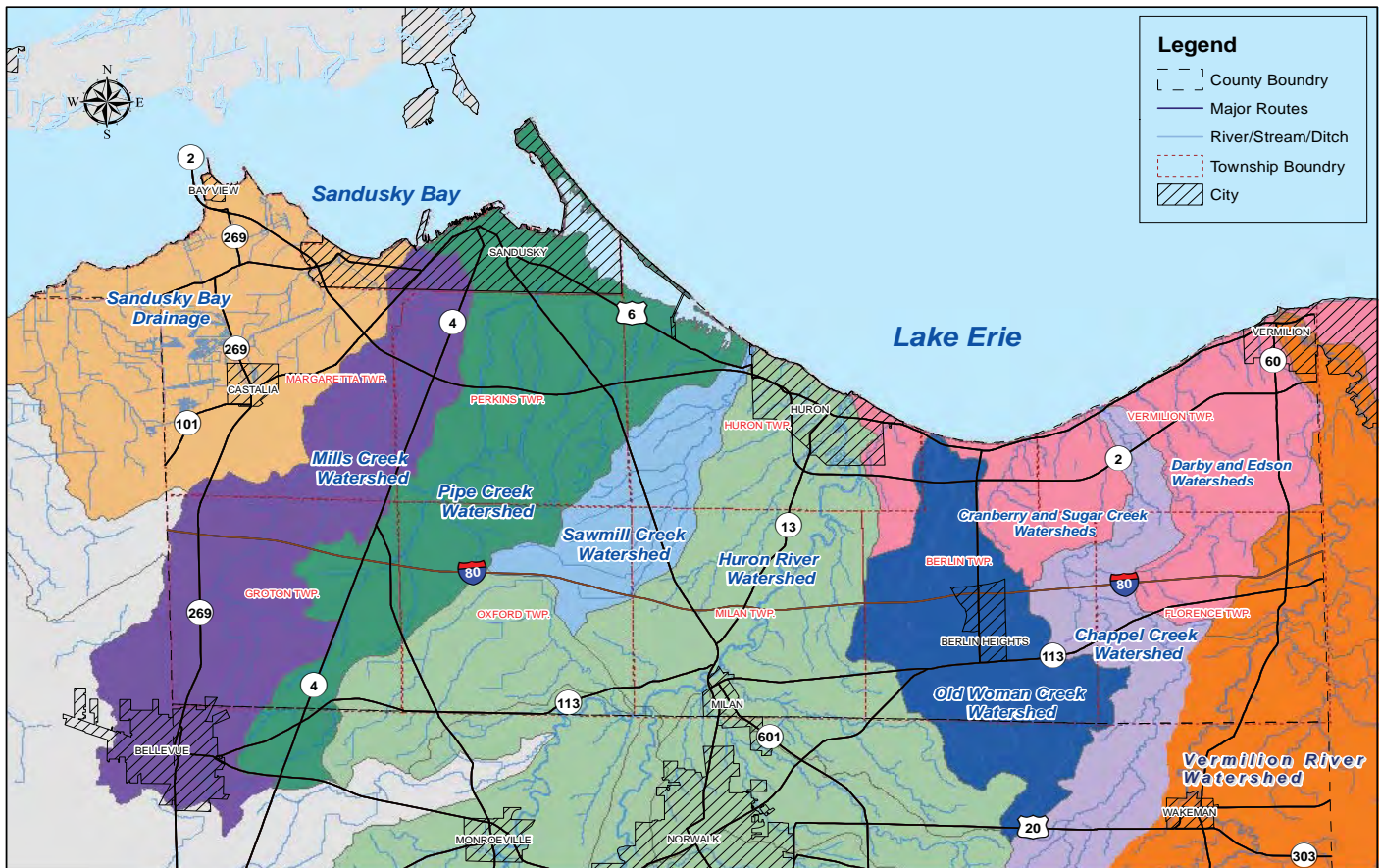
Erie County is unique because most of its drainage includes small streams that empty directly into the Sandusky Bay and Lake Erie. As you travel across the county, you will cross small drainage areas called "watersheds" that define where rainfall and snow melt will flow to a stream or tributary. Many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

Pipe Creek is a 48.5-square-mile watershed made up of three main streams: Pipe Creek, Hemminger Ditch, and Plum Brook. Pipe Creek begins in Huron County east of Bellevue and empties into East Sandusky Bay near the Cedar Point Causeway. The lake shoreline is a mix of coastal marsh and heavily altered land use for shipping, boating, and erosion control. The watershed consists of approximately 41% developed land, 39% agricultural land, and 20% natural areas. Land use has changed drastically in the past 15 years with the conversion of 9,250 acres of agricultural land to residential and commercial purposes.



A key feature of Pipe Creek is the wetlands in both the creek and East Sandusky Bay

Pipe Creek is part of a karst geological region, which is characterized by a series of sinkholes and underground rivers flowing through cracks and cavities in the limestone bedrock. The unique geology of Pipe Creek makes it ideal for limestone quarry operations, but at a higher risk for potential groundwater pollution.



Loss of habitat from filling the floodplain has negatively impacted Pipe Creek



## Key drivers

Pipe Creek's water quality is affected by many types of land uses, such as urban development, agricultural row-crop and livestock farms, commercial and industrial areas, and limestone quarries. Large amounts of polluted run-off enter the stream in the upper rural portion of the watershed. However, aging infrastructure in older developments with combined sanitary and storm sewer systems adds

sediment, nutrient, and bacterial pollution in the urbanized areas of the watershed. Heavier storms and loss of natural stream and wetland habitat have also reduced the stream's ability to effectively handle the excessive flush of pollutants from rain events.

Increasing landowner stewardship to hold back, slow down, or soak in stormwater and reduce polluted run-off would greatly improve the condition of Pipe Creek.

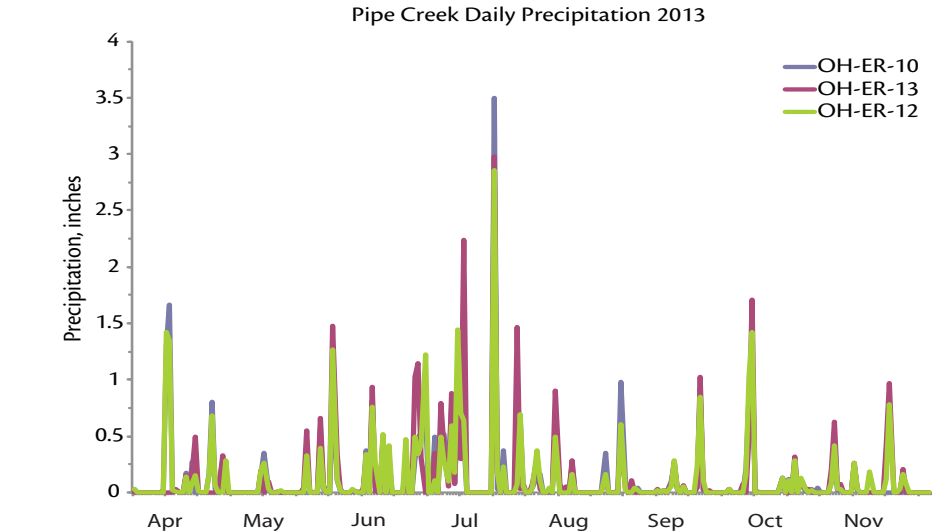


# Wet year with several storms

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 every month except May and November during the sampling year. 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.

Because Pipe Creek, like many watersheds, is a storm-driven system, water quality responds to storm activity during the year. 2012 was a drier year, resulting slightly better water quality in samples analyzed. In 2013, there was decline in quality, similar to results of wetter years like 2011.

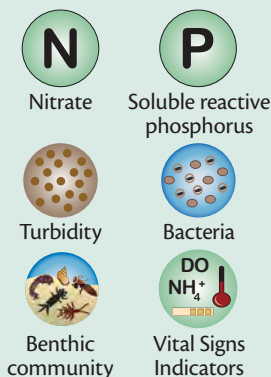
**How does this affect the water quality of Pipe Creek?** Overall, Pipe Creek scored a 35%, D+, which is considered poor health, and was primarily due to poor nitrate and poor to moderate turbidity scores. Comparing the headwater scores to the lower watershed did not reveal any major differences, suggesting pollutants affecting the scores occur at several locations in the watershed.



Daily rainfall totals from the COCORAHs stations within the Pipe Creek Watershed.

The majority of the sites received the lowest scores (D- thru D+), due to elevated nitrate concentrations and turbidity. All sites except Oakland Cemetery received failing scores for nitrate. The sites with the highest scores, C's, were Patten Tract Rd, Columbus Ave, and Oakland Cemetery. Soluble reactive phosphorus scores were the highest ranging from C to B+.

Although all site scores declined overall, soluble reactive phosphorus scores improved for Strecker Rd, Bogart Rd, Columbus Ave, and Oakland Cemetery. More frequent storms in 2013 may have contributed to declines at site level and overall watershed. However, improvements in soluble reactive phosphorus scores do not follow the same pattern.



## Monitoring in Pipe Creek

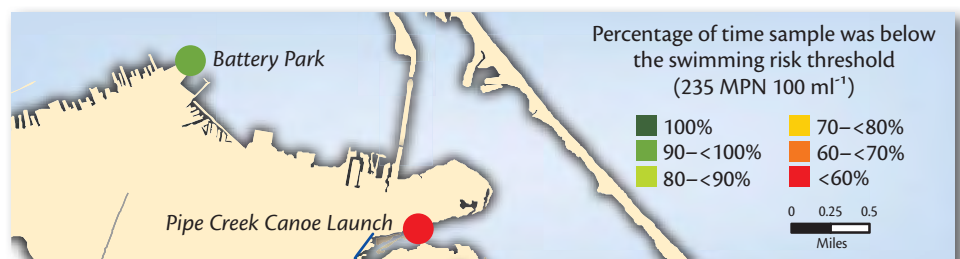
Monthly water samples are analyzed for these parameters from April through November by the Volunteer Stream Monitoring Program. Future monitoring will include benthic macroinvertebrates (aquatic worms and insect larvae) and an increase in the frequency and number of samples.

The aim of this report card is to provide a transparent, timely, and geographically detailed assessment of water quality for Pipe 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 combined into one overarching Water Quality Index, which is presented as the site 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

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 Pipe Creek, there are two Bay sites (see map) where indicator bacteria are measured by the Erie County Health



Department three to four times weekly. In 2013, Battery Park, received a 96% score meaning there was little detected risk of getting sick while swimming. The Pipe Creek Canoe Launch site, on the other

hand, received an 58% score. This site is located at the mouth of Pipe Creek and was most likely lower because of a higher potential of influence of pollutants that come directly from the watershed.

# Pipe Creek 2013 Report Card

## **D+** Pipe Creek

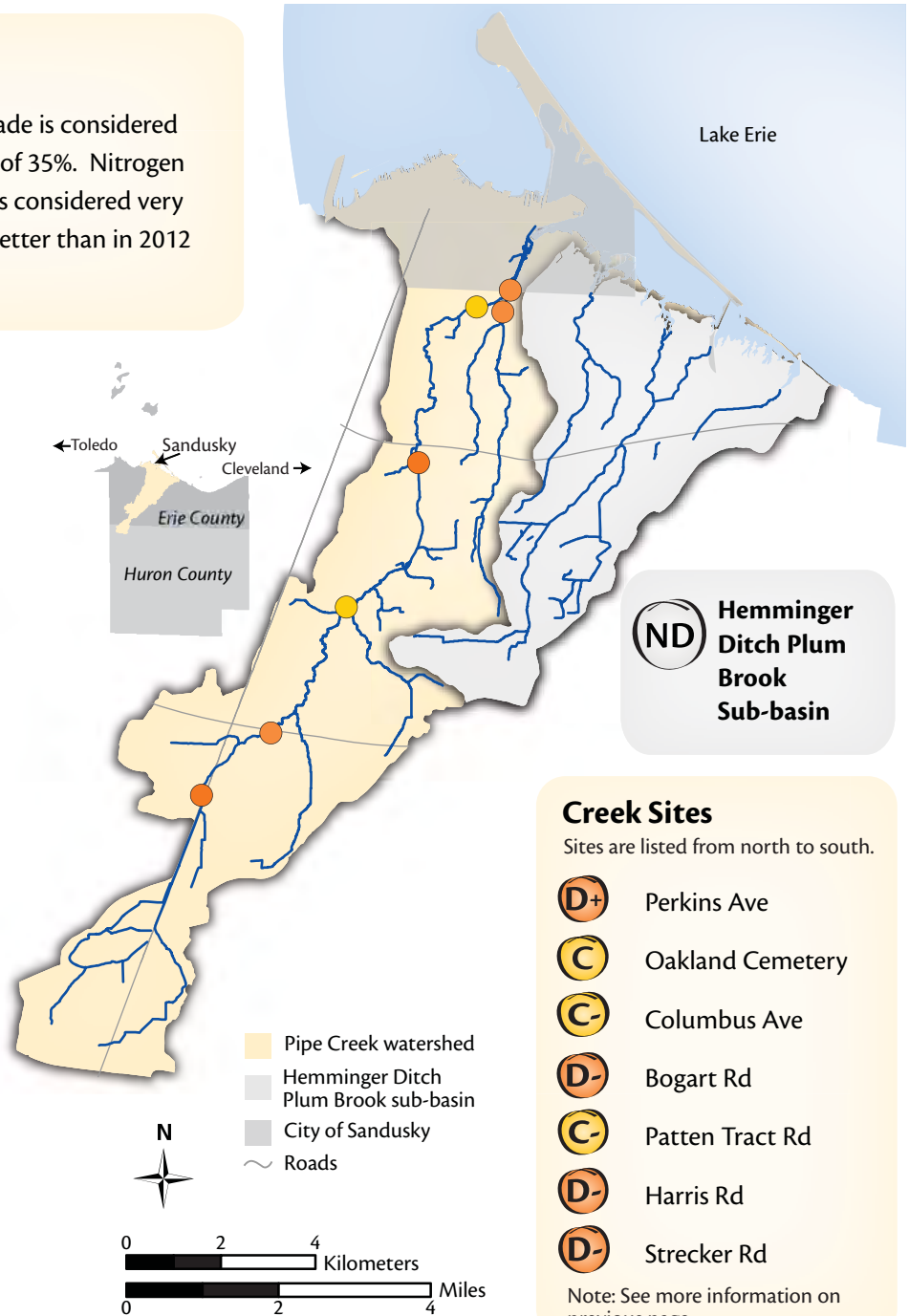
Pipe creek scored a 35% for 2013. This grade is considered poor. Turbidity score fell to a poor grade of 35%. Nitrogen received the lowest score of 13%, which is considered very poor. The phosphorus grade was slightly better than in 2012 at 59%, a moderate score.

## Nitrogen and Turbidity a Concern for Stream Health

Overall nitrogen and turbidity scores declined 20% compared to 2012 scores. Lower scores were present at all sites for nitrogen and turbidity, although improvements in phosphorus scores occurred at most sites.

All sites received a failing score for **N** except Oakland Cemetery which received the only D+. Strecker Rd, received the only failing station score for **P** although there were significant declines in scores seen at Harris Rd., Oakland Cemetery, and Perkins Ave.

### Vital Signs Indicators



## 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.



No Data (ND) is a designation used for areas where there is either insufficient or no data to give a grade on desired health levels.

# People working together for clean water

To reduce our greatest creek stressors (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, each of us has a role to play in reducing the impacts that come from our respective lifestyles. 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.

## Improving habitat in the urban community



*Living shoreline demonstration project in Downtown Sandusky*

Volunteers have helped to improve the coast of Pipe Creek watershed by helping to plant native vegetation to create a living shoreline on the shores of Sandusky Bay at Shoreline Park in downtown Sandusky, Ohio. Nearly 3,000 plugs of switch grass and little bluestem, which were grown by volunteers in the Sandusky Greenhouse, were installed as part of a shoreline enhancement project called Living Shorelines.

“Living” shorelines are alternative shoreline stabilization and protection that focus on the establishment of native vegetation within the upland and open water interface. These practices range from riparian and marsh plantings to constructed living breakwaters. Shore stabilization is often the primary objective for living shorelines, but they also provide quality improvement via filtration of upland run-off and better habitat.

## Reducing pollution in the urban community

Urban communities face numerous water quality concerns including stormwater runoff, flooding, combined sewer overflows, and more. To improve water quality, local communities are working together to reduce pollution in their urban areas. The Erie County Clean Water Coalition (CWC) has established goals that reflect the community's values and promote healthy water for generations to come.

In 2012, the City of Sandusky, Perkins Township, and the Erie County Engineers department began to

implement programs to address sediment and erosion control from construction and post construction development sites as well as illicit discharges to our storm sewer system. These communities have been working together through the CWC to develop appropriate legislation and form partnerships to share resources for implementation. Mapping and labeling of storm drains has also begun for identification of entry and exit points of our storm sewer and to inform others that nothing but rain water should enter those drains.



*GPS Unit training to record storm sewer inlets and outlets for Illicit Discharge Detection and Elimination Program*

## Protecting soil in the agricultural community



*No-till soy beans planted into corn residue in Pipe Creek.*

Our local farmers work with the Erie Soil and Water Conservation District and the Natural Resource Conservation Service to address nutrient loss and soil erosion impacting Pipe Creek and many other local streams.

Through the Farm Bill and other grants, farmers volunteer to reduce polluted runoff and improve soil health. Practices installed through these programs include conservation practices such as “no-till” and leaving crop residue (commonly seen as corn stalk stubs) on fields throughout the winter. Additional practices

include enhancing natural areas and buffers to waterways and the proper management of fertilizer and animal waste.

In 2013, Pipe Creek benefited from over 50% of its crop lands in “no-till” and the addition of a manure storage facility. Although these practices help to reduce pollutants, the recent fall in the watershed grade illustrates the need for more conservation practices in the whole watershed. Agricultural conservation is good for Lake Erie and is profitable for the farmer.



# You can help!

N = nitrogen  
P = phosphorus  
S = 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 S
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 S
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 S
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	P P
Plant cover crops	Cover crops build healthy soils that help hold back nutrients and water and increase crop yields	N P S
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 S
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 of 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](http://eriecleanwater.org) [oldwomancreek.org](http://oldwomancreek.org)  
[ian.umces.edu](http://ian.umces.edu) [eriecohealthohio.org](http://eriecohealthohio.org)



Join our volunteers to get involved in many opportunities at Pipe Creek.

## 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



Volunteers help Pipe Creek in many ways, including collecting water samples.



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# 2013

## Pipe Creek Report Card



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