

# Watershed at a Glance

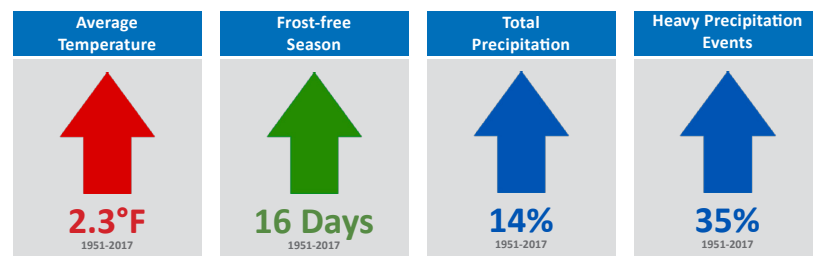
Pipe Creek is a 48.5 square mile watershed which includes three main streams: Pipe Creek, Hemminger Ditch, and Plumbrook. The watershed is a mix of 3 landuses: Urban (41%), Agriculture (39%), and Natural (20%), that flows from Bellevue to Sandusky.



## 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 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.

## Climate Trends in the Great Lakes



These trends are an analysis of weather observations provided by the National Oceanic and Atmospheric Administration's (NOAA) Regional Integrated Sciences and Assessment Team. While warmer temps & increased growing days benefit food production, increases in precipitation and intensity could drive more polluted run-off, resulting in more algal blooms.

For more information visit: [glisa.umich.edu/gl-climate-factsheet-refs](https://glisa.umich.edu/gl-climate-factsheet-refs)

# Learn More & Get Involved

If you would like to explore our stream monitoring data, learn more about our local watersheds, or have a passion for conservation and wish to join our volunteer list, Scan the QR codes below:



ErieConserves.org



WaterReporter.org



Volunteer Sign-up



For questions contact:  
Breann Hohman,  
Erie Conservation District  
419-626-5211 or  
bhohman@eriecounty.oh.gov

This publication was prepared by the Erie Soil and Water Conservation District using federal funds under the award NA22NOS4200097 from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce through the Ohio Department of Natural Resources, Office of Coastal Management. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Oceanic and Atmospheric Administration, Department of Commerce, Ohio Department of Natural Resources, the Office of Coastal Management, or the Old Woman Creek National Estuarine Research Reserve.

Published:  
March 2024



Connect with the Friends of Pipe Creek Watershed on Facebook to get involved with this stream.

Cover photo: Stormdrain Stenciling event in Sandusky, Ohio Photo credit: Erie SWCD



Water Quality  
**2023**



# Pipe Creek Report Card





# Collecting Data

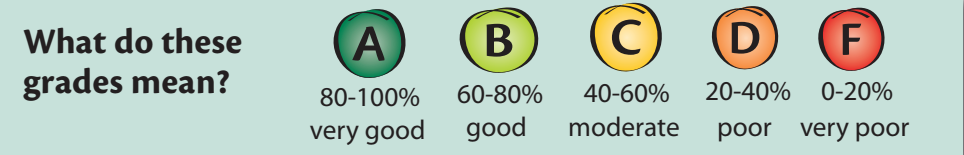
Monthly water samples were collected and analyzed by volunteers and staff from Old Woman Creek Reserve and Erie Conservation District from April through November. Annual aquatic macroinvertebrate sampling and identification is performed in the summer by staff, volunteers, and the assistance of an AmeriCorps Team Member. These indicators are combined to develop the overall scores of individual sites and the overall watershed score. More information about our thresholds and monitoring plan can be viewed at [erieconserves.org/watershed-program](http://erieconserves.org/watershed-program).

## Indicators of Stream Health

- N Nitrogen**, monitored as *nitrate*, is found in fertilizer and untreated waste. In excess, this chemical can lead to algal blooms.
- P Phosphorus**, monitored as *soluble reactive phosphorus*, is found in fertilizer and untreated waste. In excess, this chemical can lead to algal blooms.
- Turbidity** is a measure of cloudiness of the water typically caused by sediment-laden runoff. Excessive sediment in the water can clog fish gills and cover macroinvertebrate habitat and fish eggs.
- Benthic macroinvertebrates** are aquatic organisms with no backbone that are visible to the naked eye. Some are very intolerant to pollution, therefore make great indicators of water health.
- Vital Sign Indicators** are a collective of *pH*, *temperature*, *dissolved oxygen*, and *ammonia observations*. Like our blood pressure, these parameters can identify if a serious problem is present and if one fails the whole indicator fails.

## Indicator of human safety

- Bacteria**, measured as *E. coli*, are microorganisms commonly found in untreated waste. Many bacteria are harmful to human health and can restrict our drinking and recreational water uses.



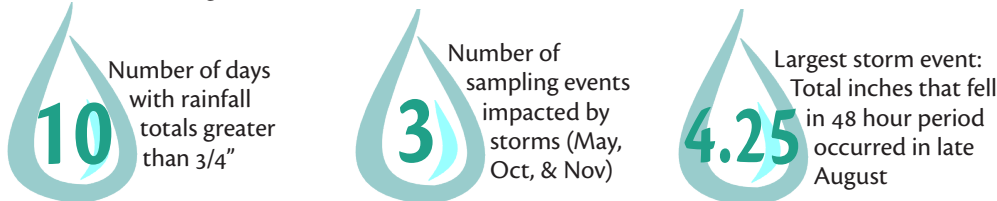
# Previous Watershed Scores

In 2021, nitrogen threshold was increased to be more consistent with aquatic response to nutrient concentration.

Indicator	2014	2015	2016	2017	2018	2019	2020	2021	2022
N Nitrate	B	C	C+	D	C-	C	B	C	C+
P SR Phosphorus	C+	C-	D-	D	D	C	D	C+	C
Turbidity	D-	C	D	C	D+	C-	C	B-	C
Benthic Macroinvertebrate	B	C+	C+	C	C+	C+	C	B-	C

# Weather During our Sampling Period

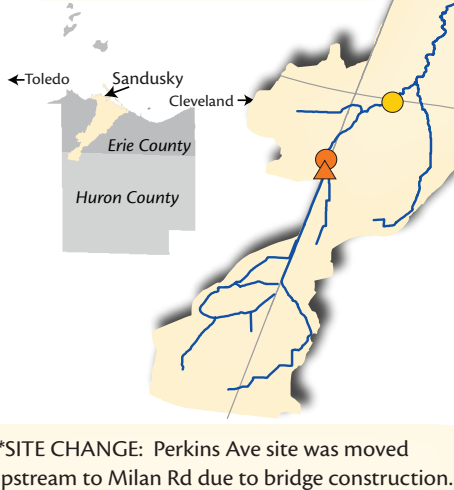
Observations collected from three CoCoRAHS.org stations revealed a dry spring and a wet summer. Most months fell well below average for rainfall, while July and August were the only months above average.



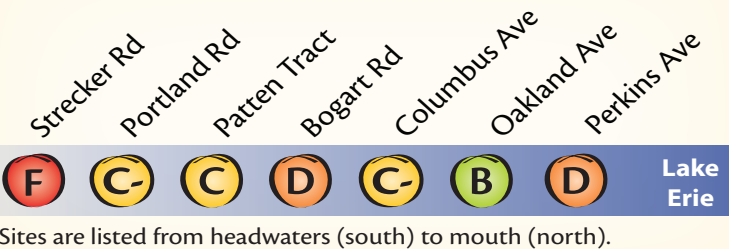
# Pipe Creek 2023 Report Card

**C Pipe Creek**  
Overall, the watershed remained a C grade. While this represents no change from 2022; there was an improvement in phosphorus scores coupled with a significant decline in nitrogen scores.

**Vital Signs Indicators**  
The Vital Signs Indicators, consisting of pH, ammonia, and temperature, revealed passing scores in 2023, but temperature failed at Strecker Rd. Annual failures at this headwater site are becoming common; likely due to low flow and lack of shading.



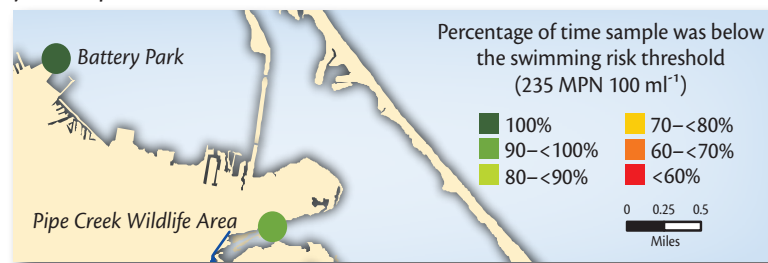
## Creek Site Water Quality Scores



## 2023 Beach Health and Safety

Two lake sites located on the shoreline (see map) of Pipe Creek are monitored by the Erie County Health Department. In 2023, Battery Park and the Pipe Creek Wildlife Area both scored 100% and 92.7% respectively, meaning nearly all samples indicated low risk of illness from contact with water.

Note that the bacteria scoring scale is more stringent than water quality indicators because of the high variability and importance to human health and safety.



# More work to be done!

One question asked often is "why are the watershed grades not changing?" Unfortunately, the answer to this question is complicated. Landuse, storm activity, seasonality, and sampling frequency have the greatest influence on water quality and analysis. With stream sampling, it is important to remember that any one sampling event is like taking a single snapshot in time. This means one sample will not provide the range of conditions that can occur in a stream. For example, storm events typically carry pollutants through a watershed, meaning pre-storm sample may be cleaner than post-storm sample. Since we sample on a set monthly schedule, our annual sample size is small for each site and doesn't always coincide with a precipitation event. In fact, sampling monthly only accounts for 3% of days in our sampling year. In years like 2023, where our sampling aligned with more storms the potential for lower grades increases.



Algal growth in ditch due to excessive nutrients

changes that may occur seasonally or from year to year. The overall watershed grade is a combination of all sites and indicators sampled in that creek. Sometimes, sediment or nutrients could be improving at a site but not enough to change the grade. So does this mean our sampling program is not effective? Not at all! Our data can help identify where pollutants sources occur within the watershed and whether these pollutants appear to be increasing or decreasing.

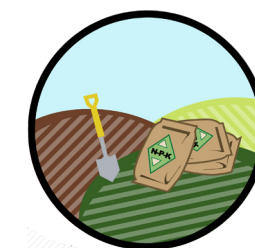
So is Pipe Creek improving? Yes and no. Sediment is trending down, but nutrients are increasing. Nitrogen is highest in the mid and upper watershed where agricultural row-crop is the dominant landuse. Phosphorus is high at nearly every site with the headwater site (Strecker Rd) more than 200% higher than all other sites in the watershed on average. Like other watersheds, elevated nutrients are associated with storm activity and the timing of fertilizer applications. Pipe Creek does not appear to be buffering increasing storms well and is in need of more stewardship from both rural and urban landowners to move the needle in this creek.

In an effort to simplify our data in the grading system, we lose the ability communicate subtle

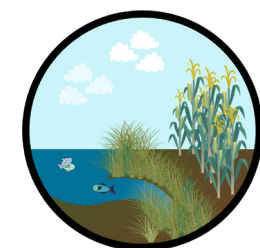
# Be the Solution!

In 2010, after being assessed by the Ohio Environmental Protection Agency, Pipe Creek was placed on the "303d list" for impaired waters of the United States of America. In order to get off this impairment list, we need to greatly reduce the sediment, nutrients, and bacteria degrading our stream. These pollutants come from both the urban and agricultural areas, so it will take all of us to improve Pipe Creek! Below are a few key ways you can help.

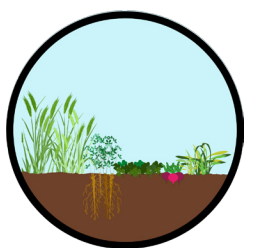
## Farmer



Follow the 4R's of fertilizer use: Right source, Right amount, Right place, Right time.



Plant vegetative buffers along streams and ditches.



Don't leave your field bare. Reduce tillage & plant cover crops!

## Homeowner & Community



Inspect and pump out your septic system every 3-5 years.



Promote the use of MORE green infrastructure in your community.



Plant a rain garden or install a rain barrel at home.