

Watershed at a Glance

Mills Creek is a 42.4 square mile watershed with unique karst geology: sinkholes, springs, and fractured bedrock connecting the surface and groundwater at several locations. The watershed is a mix of 3 landuses: Agriculture (67%), Urban (26%) and Natural (7%), that flows from Bellevue to Sandusky.



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:



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Cover photo: Railroad bridge crossing of Mills Creek near Tiffin Ave. Photo credit: Erie SWCD



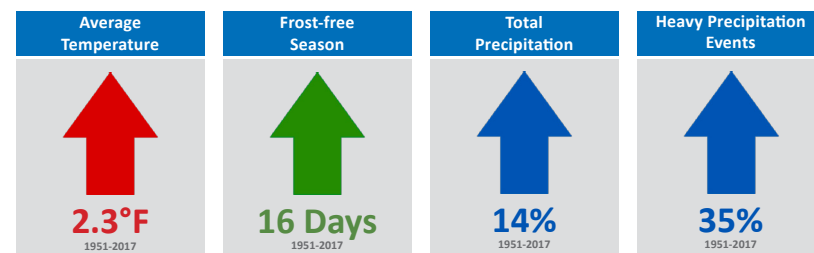
Water Quality
2023



A Storm-Driven System

When it rains, it drains; and these storm events move pollutants through the watershed. When Mills 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

Mills Creek Report Card



Collecting Data

Monthly water samples were collected and analyzed by volunteers and staff from Old Woman Creek Reserve and the Erie Conservation District from April through November. Annual aquatic macroinvertebrates 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.

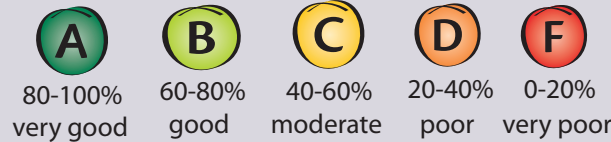
Indicators of Stream Health

- 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 and 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.

What do these grades mean?



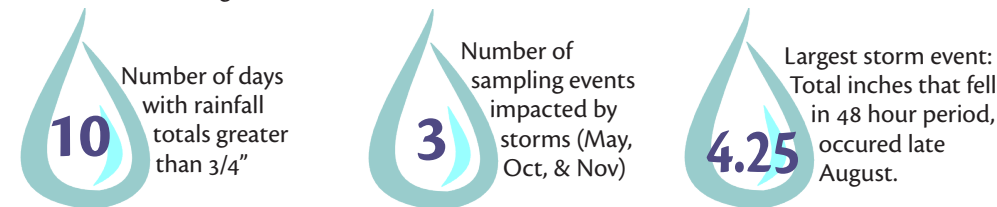
Previous Watershed Scores

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

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



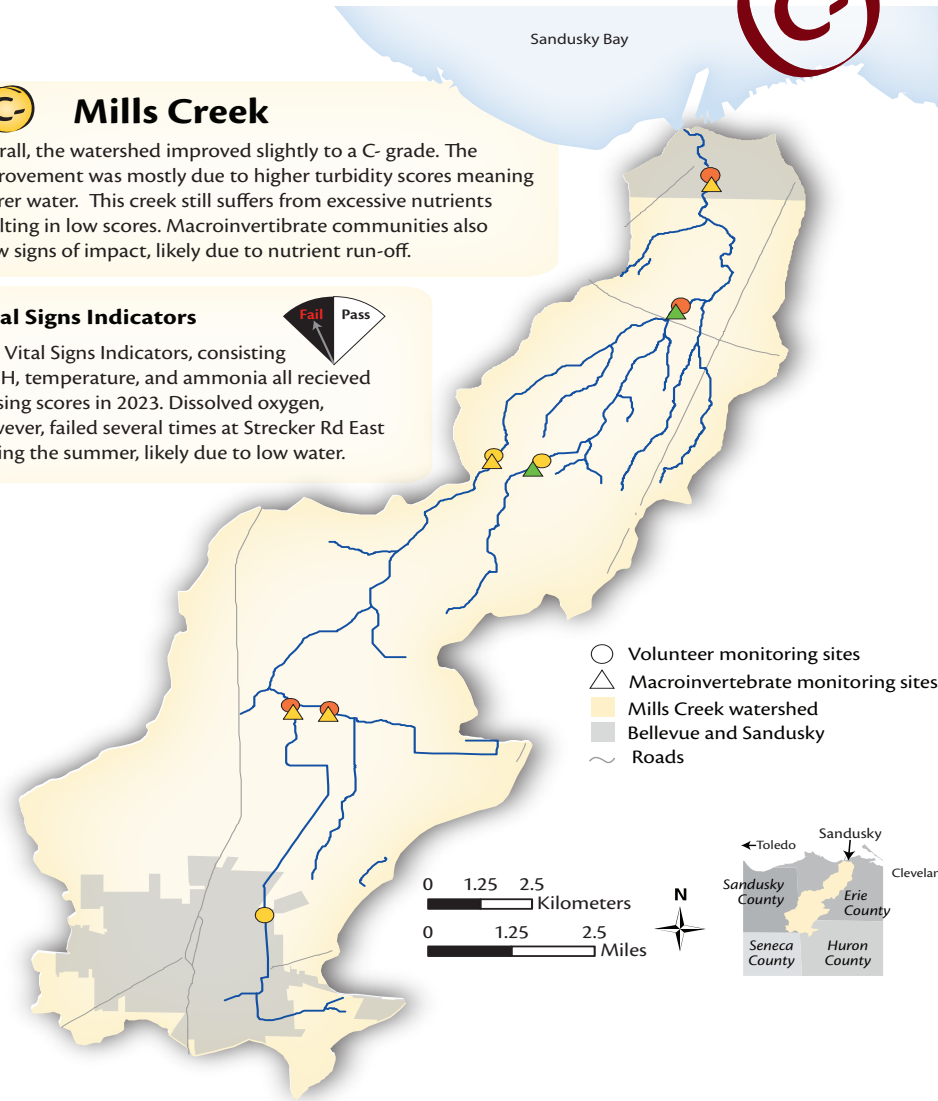
Mills Creek 2023 Report Card

C- Mills Creek

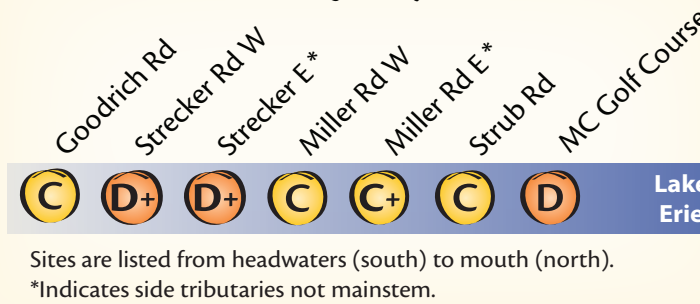
Overall, the watershed improved slightly to a C- grade. The improvement was mostly due to higher turbidity scores meaning clearer water. This creek still suffers from excessive nutrients resulting in low scores. Macroinvertebrate communities also show signs of impact, likely due to nutrient run-off.

Vital Signs Indicators

The Vital Signs Indicators, consisting of pH, temperature, and ammonia all recieved passing scores in 2023. Dissolved oxygen, however, failed several times at Strecker Rd East during the summer, likely due to low water.

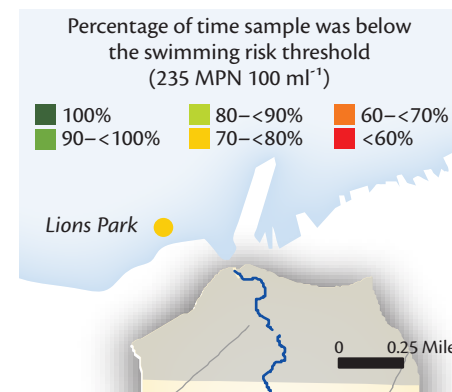


Creek Site Water Quality Score



2023 Beach Health and Safety

In Mills Creek, indicator bacteria are measured by the Erie County Health Department at Lions Park sampled twenty times during the swimming season. In 2023, Lions Park received an 70%, meaning samples indicated high risk of illness from contact with water about 1/3 of the season. Although this site is not directly located at the mouth of Mills Creek, this small stream does contribute to the overall condition of Sandusky Bay.



Showing Signs of Improvement

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 season and only aligns with a storm event each year. In years like 2023, where our sampling aligned with more storms the potential for lower grades increases.

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.

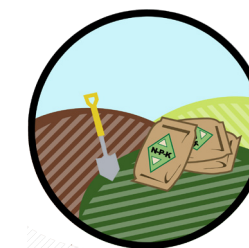
So is Mills Creek Improving? Yes, water quality appears to be improving with decreasing sediment and phosphorus over the past 5 years. Nitrogen, however, is showing an increasing trend. Nitrogen is always highest in the main channel of the watershed, which is influenced by both industrial discharges and agricultural run-off. However, the combination of storm activity and fertilizer applications appear to be the drivers of the nitrogen pulses throughout the watershed. Overall, Mills Creek still has a long way to go and will take all its residents doing thier part!

In an effort to simplify our data in the grading system, we lose the ability communicate subtle changes that may occur seasonally or from

Be the Solution!

In 2010, after being assessed by the Ohio Environmental Protection Agency, Mills 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 urban, agricultural, and industrial areas, so it will take all of us to improve Mills Creek! Get inspired below to be the change.

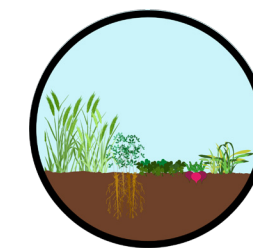
Farmer



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.