

Broad-Winged Damselfly larvae

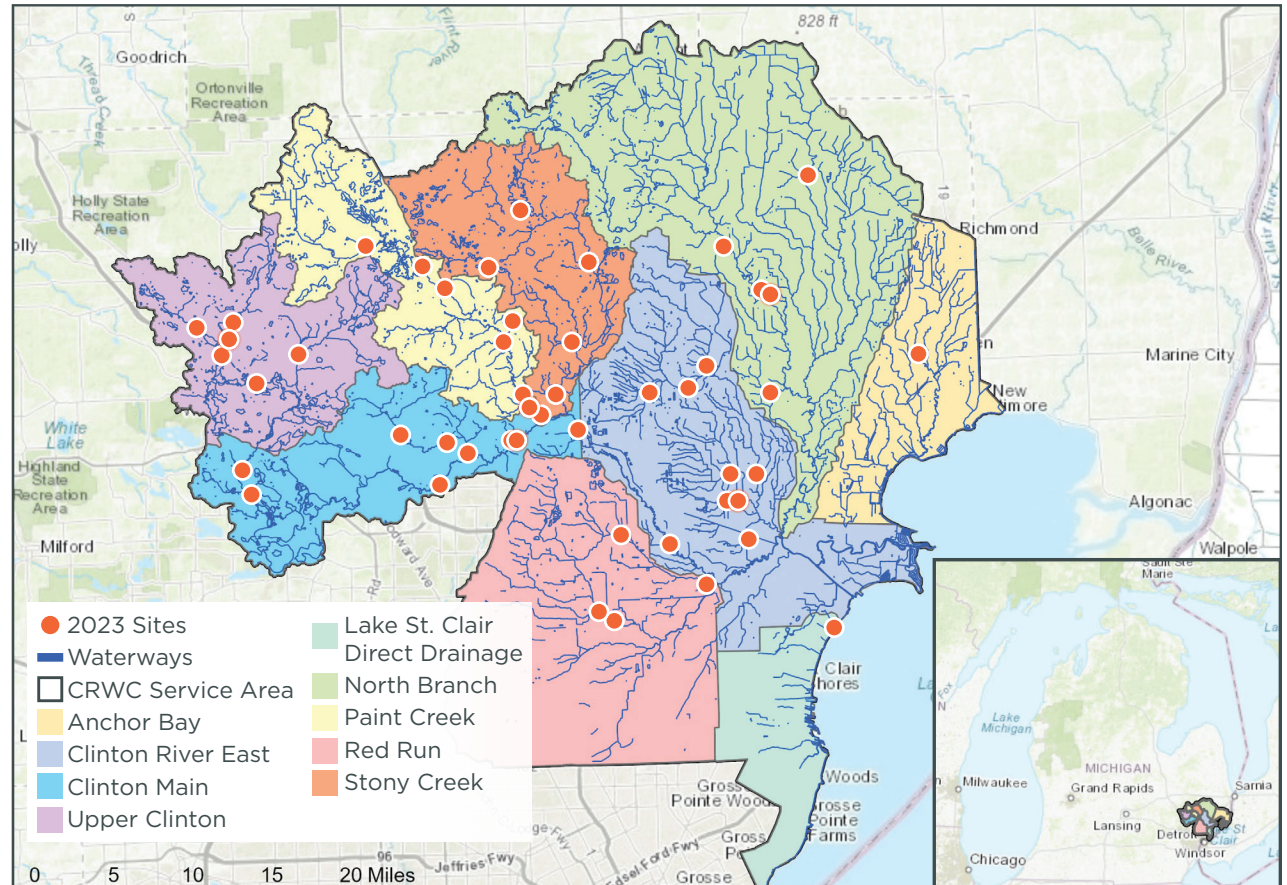




# Introduction

The Clinton River runs over 80 miles through Oakland and Macomb counties before draining into Lake St. Clair. Between the length of the river and its sprawling tributaries, the Clinton River watershed covers a very diverse terrain, from farmlands to urban cities. Most large watersheds experience issues such as pollution and flooding, and that is no different in the Clinton. The Clinton River Watershed Council (CRWC) was created over 50 years ago by a council of local governments to address these types of concerns. The first major project undertaken by the council was to collect detailed water quality data from the river, which eventually evolved into Adopt-A-Stream, the volunteer-based water quality monitoring program that CRWC continues to host today.

Enhancing habitat conditions and engaging communities are two essential parts of CRWC's mission, and the Adopt-A-Stream program has helped CRWC do this since its inception in 1998. With the help of our tireless team of volunteers, CRWC can consistently monitor dozens of sites across the watershed, which provides insight into the quality of local waterways. Hundreds of people help CRWC learn of habitat changes and disruptions such as illicit discharges, invasive species, and construction impacts every year. In 2023, 49 total sites across the watershed were monitored between spring and fall, which is the most sites that CRWC has been able to monitor in more than 5 years.





# What are we monitoring?



## MACROINVERTEBRATES

Aquatic macroinvertebrates are insects in the early stages of their life, and other critters like snails, worms, crayfish, and clams that live in the water. Macros are important because they are great indicators of water quality. Some bugs tolerate pollution and can be found across the watershed. Other bugs are incredibly sensitive to pollutants and will only be found in pristine waters. By identifying the bugs that are present within the Clinton River watershed, we can score sites in a way that is representative of the water quality.

## HABITAT

Volunteers perform an assessment of different habitat characteristics, noting things such as vegetation, erosion, and substrate. These characteristics provide context for the macroinvertebrates collected and help document habitat features that may change over time.

## SALINITY

Chloride is a pollutant commonly introduced into waterways through road salt. High amounts of chloride can be detrimental to water quality and the organisms that live in lakes, rivers, and streams. By monitoring salinity, we are able to offer insight into municipal salt usage and water quality overall.

## INVASIVE SPECIES

Volunteers are provided with a small list of priority invasive species to look out for during their site visit. Monitoring the presence and absence of invasive species across the watershed helps track their distribution, aiding the potential management of these species.



# Scores Overview

The scores used to discuss water quality are calculated based on the Michigan Clean Water Corps (MiCorps) scoring system. The MiCorps procedure and scoring system were redesigned in 2021 to better align with the commonly accepted tolerance values of macroinvertebrates. Prior to 2021, macros were identified in the field, with a small representative sample submitted for verification. Under the new system, all macros are submitted so that they can be identified to a higher level in a lab, allowing for more accurate results.

However, the new scoring system does include some qualifiers related to abundance. If 31-60 macros are collected, that site automatically is scored "Fairly Poor," and if less than 30 are collected, the site is considered "Very Poor." Many sites scored worse since 2021 than previous years due to the change in procedure. In 2024, CRWC updated materials to help communicate the change and adapted trainings to help demonstrate field techniques that volunteers can employ to collect more macroinvertebrates during sampling.

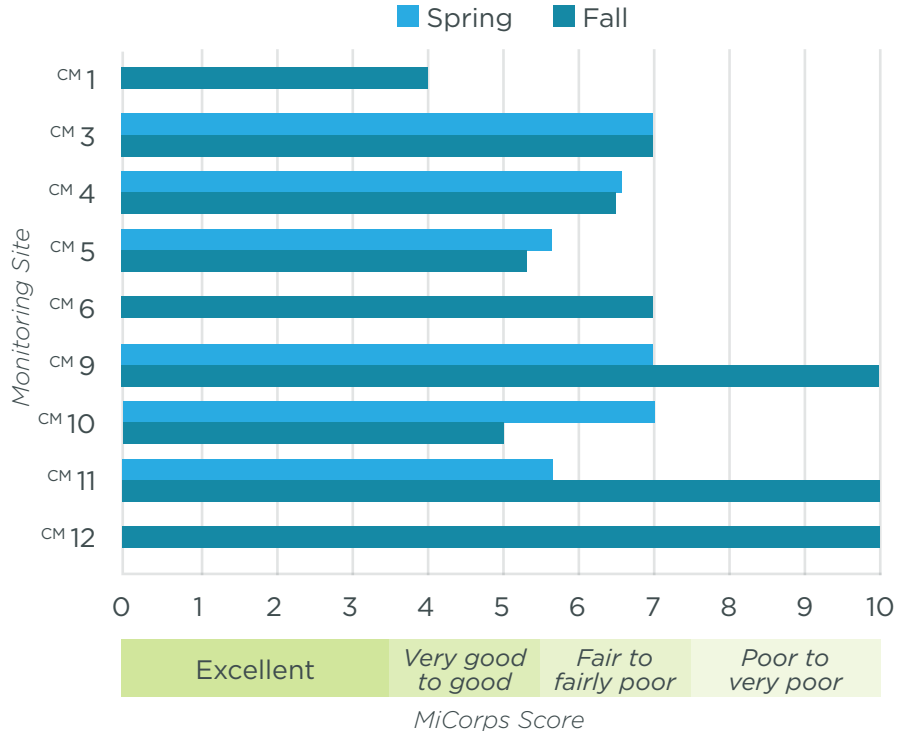




# CLINTON MAIN

The Clinton Main subwatershed, based around the main branch of the Clinton River, is on the West side of the watershed and includes Pontiac, Auburn Hills, and Rochester Hills. Nine sites were monitored in 2023, with six sites directly on the Clinton River, two sites on Galloway Creek, and one on Avon Creek. Site CM10 in Galloway Creek contained the greatest diversity of macros within the Clinton Main subwatershed. There were 14 different families of taxa collected in just one event at this site, including three Ephemeroptera, Plecoptera, and Trichoptera (EPT) families, more commonly known as mayfly, stonefly, and caddisfly. EPT families are useful bio-indicators when looking for pollution.

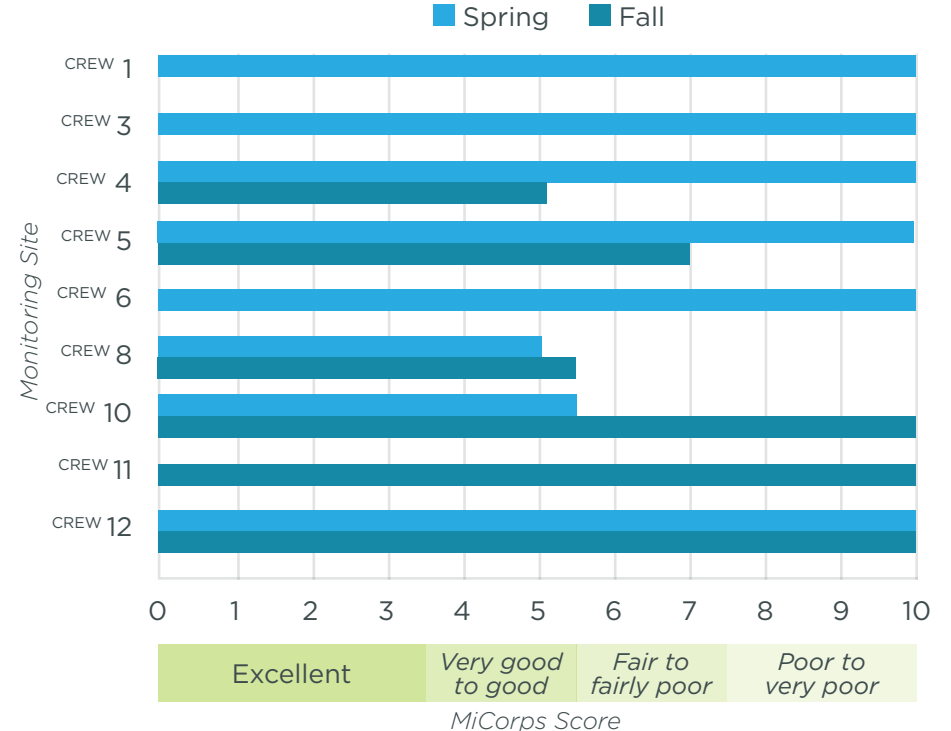
Scores for these sites ranged from “Very Good” to “Very Poor,” with most falling between “Fair” to “Fairly Poor.” Many sites were given an automatic score of “Fairly Poor” or “Very Poor” based on abundance alone, but the composition of the bugs that were found is indicative of better scores. CRWC believes that in 2023’s data, the amount of macros collected isn’t entirely representative of the abundance of bugs that can be found at that site. CRWC hopes to improve collection efforts in 2024.



# CLINTON RIVER EAST

The Clinton River East subwatershed (CREW) is just east of the Clinton Main and includes both the main and middle branches of the Clinton River, from where they enter Macomb County until they reach Lake St. Clair. This subwatershed spans as far north as Bruce Township, down to Fraser, encapsulating a wide variety of land usages. Sites are established on the main and middle branches of the Clinton River as well as at Utica Drain, Price Brook Drain, Gloede Drain, and Kuku Creek for a total of 9 sites in this subwatershed. The best score, falling under “Good,” was found at CREW 8, which monitors Price Brook Drain in Shelby Township.

Just like the Clinton Main subwatershed, many sites in the Clinton River East subwatershed had their scores adjusted due to abundance, with most sites falling into the “Very Poor” scoring range. Some of the sites suffer from unstable or low-quality habitat, which could also have contributed to low abundance. Other sites’ fall scores are believed to have been primarily influenced by significant rain events.





# ANCHOR BAY, LAKE ST. CLAIR DIRECT DRAINAGE, & NORTH BRANCH

## ANCHOR BAY

One site in the Salt River within the Anchor Bay subwatershed was monitored in the Fall of 2023 for the first time since 2019. While the Salt River has relatively unstable habitats, this site had many pollution-tolerant macroinvertebrates, giving this site a “Good” score.

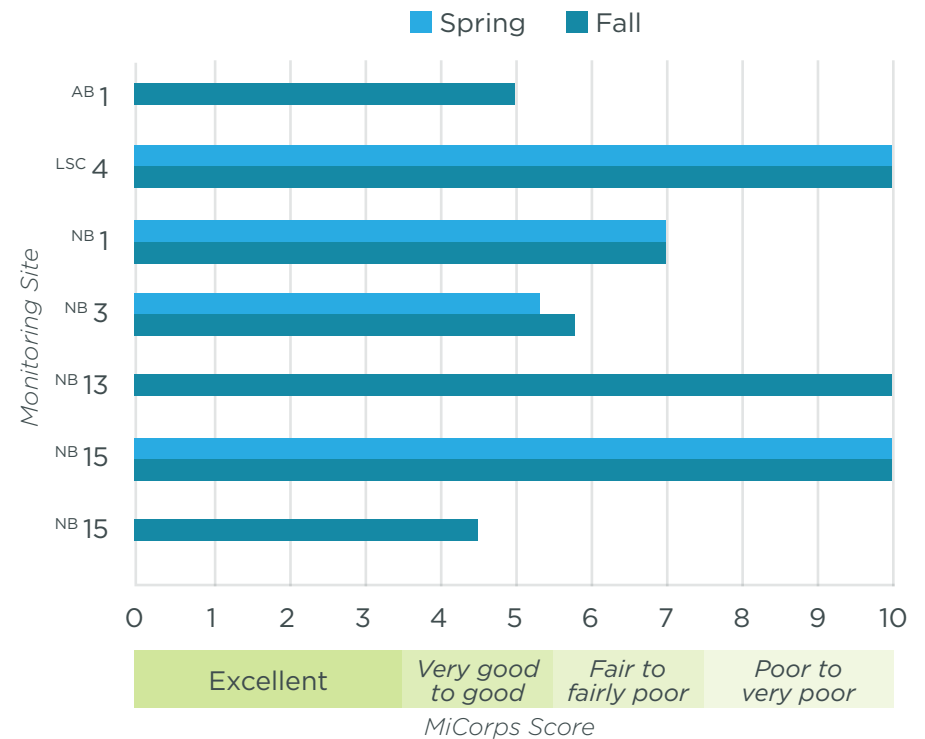
## LAKE ST. CLAIR DIRECT DRAINAGE

Contrell Drain has been monitored in the Lake St. Clair Direct Drainage subwatershed since 2004. In the past several years, there has been a significant decline in the number of macroinvertebrates collected at this site despite no obvious habitat changes reported by the team. In 2023, a total of 15 pollution-tolerant bugs were collected across two monitoring events. This site automatically received a “Very Poor” score for 2023 due to the abundance of bugs collected.

## NORTH BRANCH

The North Branch of the Clinton River runs through the northernmost parts of the watershed in Leonard and Almont, eventually meeting with the main branch in Mt. Clemens. The land use in this subwatershed is primarily agriculture, which leads to some unique issues relating to stormwater, including the introduction of fertilizers into the waterways. In addition to the three monitoring sites along the North Branch, sites are also established at East Coon Creek and McBride Drain. Many sites faced issues with the abundance of macros collected in 2023.

Site NB1, which monitors the North Branch at Wolcott Mill, had four sensitive families collected in the spring, which would traditionally lend itself to a “Very Good” score, however, the site was still scored as “Fairly Poor” due to the total abundance. The North Branch as a whole was scored in the “Fairly Poor” range due to abundance. Historical data and the bugs found suggest most sites would have fallen into the “Good” range if abundance criteria had been met.

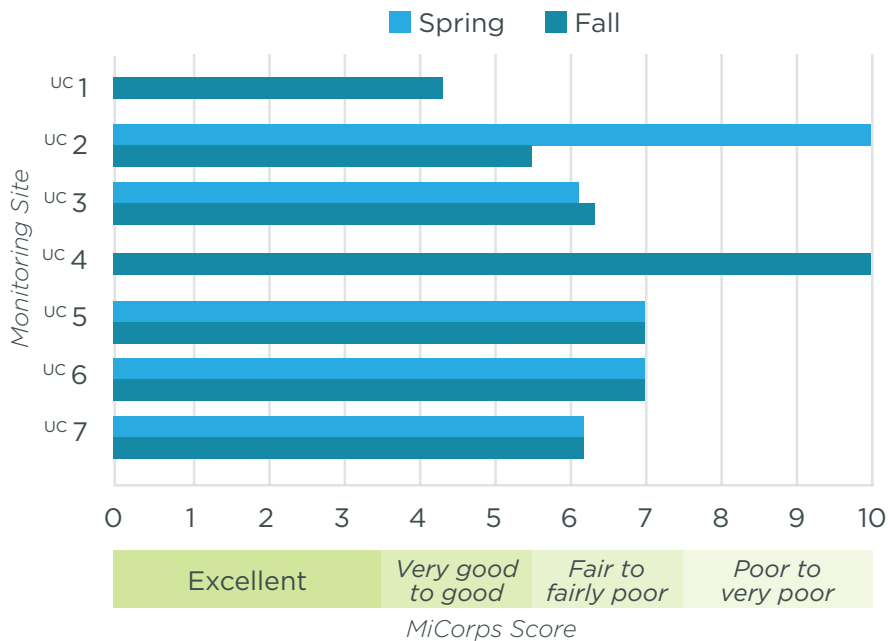




# UPPER CLINTON

The Upper Clinton subwatershed surrounds the headwaters and chain of lakes that start the Clinton River. It's important to monitor the headwaters because they influence the rest of the river system. Six sites in this subwatershed monitor the Clinton, while the remaining site monitors Sashabaw Creek. This year's best-scoring site in this subwatershed, UC1, monitors the Clinton River in Independence Township; this site received a "Very Good" score! A large number of net-spinning caddisflies were found here in 2023. Sashabaw Creek (UC3) only received a "Fair" score, even though it contained the largest diversity of bugs found across all sites in 2023, with 32 families collected in fall 2023. This diversity of life is a testament to the stability of the habitat in the wetlands surrounding the Upper Clinton.

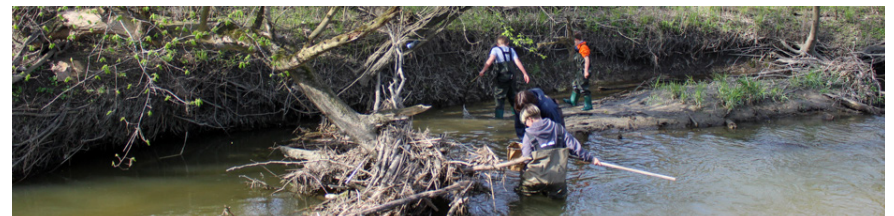
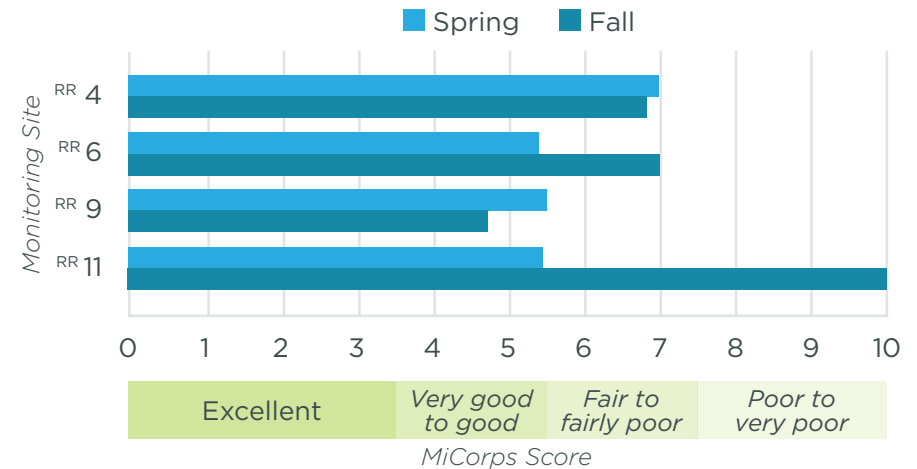
The headwaters typically score relatively well due to the lack of accumulation of pollution, but scores averaged on the lower side in 2023 due to the abundance collected. Abundance was lower in the Fall across most sites, and it is believed that the rain leading up to the monitoring date affected results. Overall, Upper Clinton sites averaged a "Fairly Poor" rating in 2023 but have the potential to score in the "Good" range based on species found.



# RED RUN

The Red Run subwatershed covers some of the most developed areas within the Clinton River drainage basin, surrounding the Red Run. Developed areas have more impervious surfaces than undeveloped land, which can lead to flashy waterways that are prone to sudden changes during precipitation events. The Red Run also tends to collect a large amount of stormwater runoff. The Red Run itself is very large and deep, so the four monitoring sites in this subwatershed are on Big Beaver Creek, Chrissman Drain, and Plumbrook Drain, all of which lead to Red Run. During the spring monitoring, some sensitive mayflies and damselflies were found in Chrissman Drain (RR6). Sensitive mayflies have been found at this site for many years, which is an indication of a stable habitat.

While overall, the Red Run sites averaged in the "Fairly Poor" range in 2023, the sites are showing improvements from prior years. This could be partially due to the clean-up efforts happening at these sites, removing trash that had accumulated over decades, allowing for habitat improvements to naturally occur.

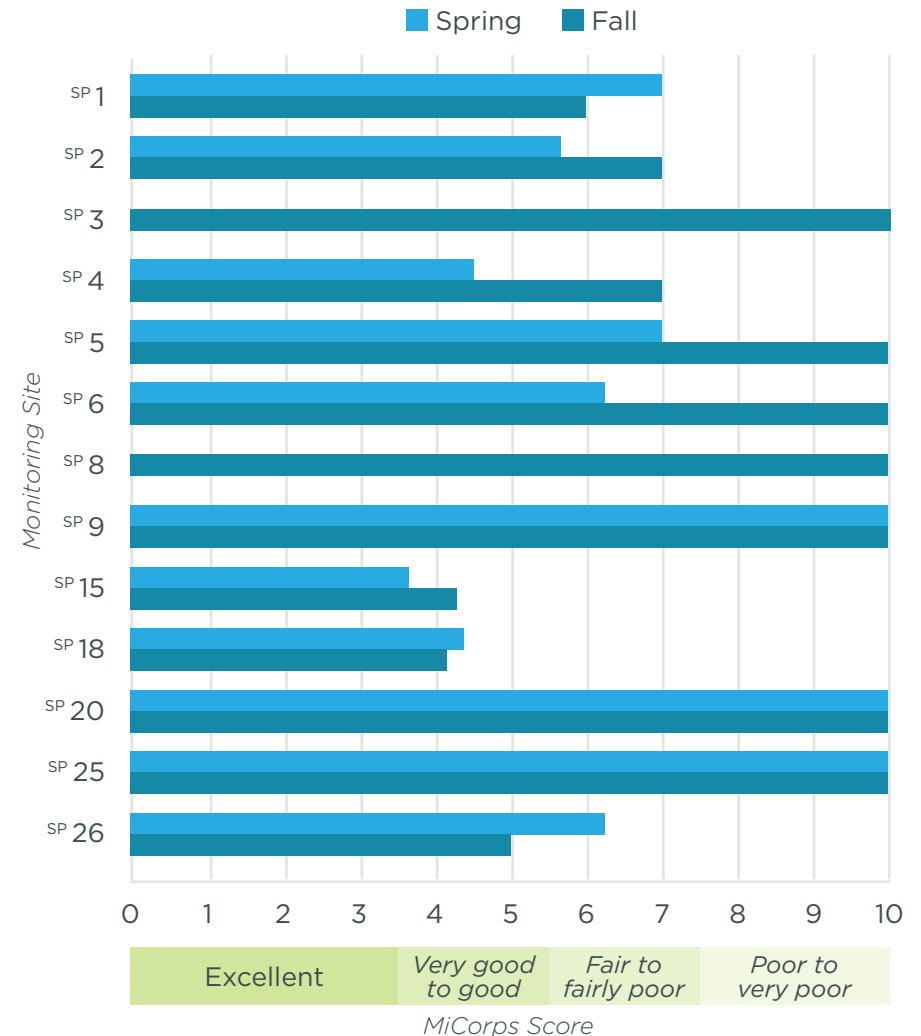




# STONY & PAINT CREEKS

Stony Creek and Paint Creek are two high-quality creeks that feed into the Clinton River, forming the Stony/Paint Creek subwatershed. This subwatershed is largely rural, forested land, which provides the creeks with extra protection from pollution. Because Paint Creek is one of the last remaining coldwater trout streams in Southeast Michigan, it's a priority for monitoring. Of the 13 sites monitored in 2023 in this subwatershed, 7 sites monitor Paint Creek, 5 sites monitor Stony Creek, and 1 site monitors Gallagher Creek.

Site SP15, which monitors Stony Creek at VanHoosen Farms, scored the best out of all sites monitored in 2023, falling on the high end of the “Very Good” range. A dragonhunter dragonfly, notable for being very sensitive to pollution, was caught at Stony Creek in Washington Township, making that the second verified collection of that species within Macomb County. Overall, sites ranged from scoring “Very Good” to “Very Poor,” with all the “Very Poor” ratings stemming from abundance qualifiers. Based on the families collected at these sites, we expect most sites to fall between “Fair” and “Good” with a greater sample size of bugs.





# Volunteer Observations

## RIVER CONDITIONS



## SITE CHANGES



## MACROS



## INVASIVE SPECIES



With the large number of sites that CRWC monitors, we rely on volunteers to report back on site conditions that may not be included in the datasheet. From water levels to construction to invasive species, the notes and photos our volunteers collect are important to understanding these sites over time. From these reports, CRWC can investigate sites that may need remedial action.

One such report caught a potential illicit discharge in Big Beaver Creek during Fall monitoring. Volunteers reported a sheen on the water and a foul, unnatural odor, both of which can be indicative of an illicit discharge. Thanks to volunteers sharing that information, we were able to report the site to Macomb County's Illicit Discharge Elimination Program (IDEP) to be investigated further.



# Summary



Overall in 2023, 49 total sites were monitored across the watershed, which is a notable improvement from 2022, in which 39 sites were monitored. More than 4,700 bugs were collected across the watershed. Collected bugs were comprised of 90 different families, 17 of which are very sensitive to pollution. True to historical data from the region, midges (Chronomidae), scuds (Amphipoda), and net-spinning caddisflies (Hydropsychidae) were CRWC's most common finds. Despite the issues with the abundance of macros collected, over 1/3 of our sites showed positive trends, which is on par with previous years. CRWC hopes that as volunteer trainings and sampling procedures are adjusted to meet new MiCorps scoring guidelines, site scores will more accurately represent life and water quality within the Clinton River watershed.

## THANK YOU!

None of CRWC's water quality monitoring efforts would have been possible without the help of over 400 volunteers who engaged in sampling through Adopt-A-Stream. CRWC is thankful for all our volunteers and their dedication to the program, braving diverse weather and terrain to continue monitoring. The monitoring performed by citizen scientists around the watershed is invaluable, allowing CRWC to take action to protect and enhance our natural resources. Thank you very much from all of us at CRWC. We hope to see you in the field in 2024 and beyond!

