

# 2021

## MONTGOMERY COUNTY WATER QUALITY SUMMARY REPORT

Water in the Anacostia watershed has always been central to the growth and prosperity of those who live on its banks. Flowing through the densely populated Washington DC metropolitan area, the Anacostia watershed provides recreation opportunities and natural respite within an ever more urban landscape. In the past, the health of the watershed has languished in part because of this growth; resulting in the proliferation of pollution, damaged ecosystems, and lost biodiversity in our rivers and streams. In recent decades, however, the watershed and its streams have undergone a surprising resurgence, due to the combined efforts of residents, local stakeholders, and the government. Montgomery County's Department of Environmental Protection (DEP) has made significant investments in restoration efforts to curb stormwater inputs to the river and its tributaries, in addition to educating County residents about the impacts of stormwater and how they can help. These efforts are impactful as 35 percent of the Anacostia watershed lies within Montgomery County.

This project was awarded to Anacostia Riverkeeper (ARK) in 2021 through the Montgomery County Watershed Restoration and Outreach Grant program funded through the Montgomery County Water Quality Protection Fund and in partnership with the Chesapeake Bay Trust. Anacostia Riverkeeper worked with Friends of Sligo Creek and Neighbors of Northwest Branch to recruit and train volunteers to collect and disseminate up-to-date, bi-weekly recreational water quality data to residents and visitors alike.



The Anacostia watershed encompasses **176 square miles** across the District of Columbia, Prince George's County, MD, and Montgomery County, MD. The watershed is one of the most urbanized watersheds in the United States with **70% of the land designated as urban/developed**. "Residential" is the primary land use encompassing 45% of the watershed.



  
**Anacostia**  
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# Program Overview

## Site Selection

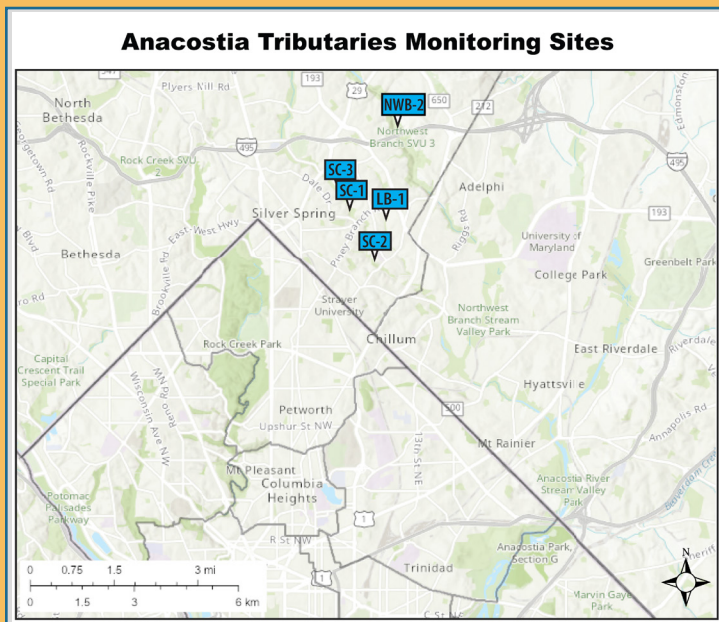
Five sites were monitored during the 2021 season. Three sites were chosen along Sligo Creek. Sligo Creek sites SC-1 and SC-2 were monitored by ARK in 2020 and exhibited high levels of bacteria. In order to determine if an outfall by Wayne Avenue was contributing to the bacteria measured at SC-1 and SC-2, a third site (SC-3) was chosen upstream of that outfall. One site was located along the Northwest Branch at Burnt Mills (NWB-2). This was a priority location for the county due to high recreation on and around the trail. The Montgomery County portion of the Northwest Branch typically has more forest cover and riparian landscapes along its banks compared with the sites in the Sligo Creek subwatershed. The Northwest Branch is designated as Class IV waters or “Recreational Trout Waters.” Finally, one site was chosen at Long Branch near Rolling Terrace Elementary School (LB-1). Three years of seasonal macroinvertebrate sampling by the Audubon Naturalist Society (ANS) at this site had indicated poor to fair water quality. ARK added this site to bi-weekly monitoring to supplement the ANS data and see if other trends could be identified that contribute to the poor water quality.



## Field Methods

Volunteers collected water quality samples from five sites along Anacostia river tributaries every other week on Wednesday mornings. At each site, volunteers measured pH, air temperature, water temperature and collected water samples for fecal indicator bacteria (*E. Coli* and fecal coliform) and turbidity. Volunteers also recorded physical information about the site (i.e., flow conditions, weather, tide) on their field sheet. A YSI probe was used to measure additional parameters such as dissolved oxygen and specific conductivity, both of which have profound effects on the health of aquatic species.

Sample duplicates were collected from one site each week to ensure quality assurance and check volunteer sampling techniques. All physically collected water samples were recorded on a Chain-of-Custody (CoC) form to ensure sample fidelity and provide quality assurance for all samples coming into the Anacostia Riverkeeper lab.





# Methodology



"I have lived near the Northwest Branch of the Anacostia for 31 years. I raised two kids who grew up in the woods and love nature—one even became an ecologist/botanist. I'm busy in retirement, but I make sure I save some time to work for the health of the river which is why I became a water monitor. I also work with the Neighbors of Northwest Branch, collect/dispose of trash in and along the river, and I am often found walking along the trails just enjoying being next to the river."

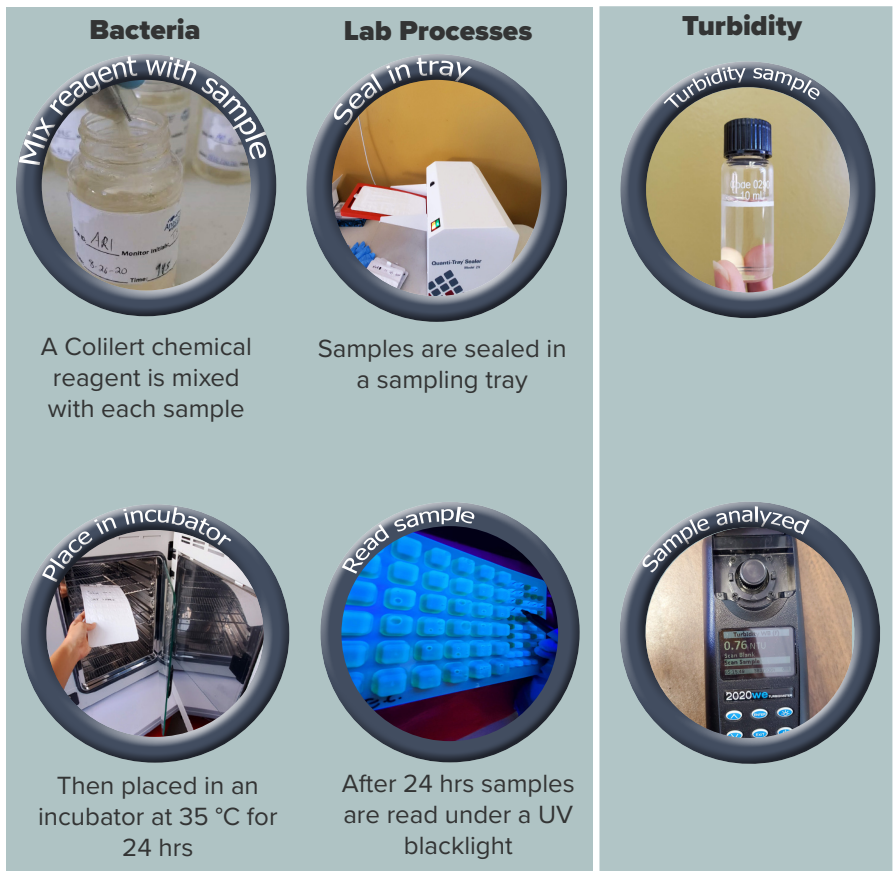
- Kem Morawski

## Lab Methods

Bacteria samples are collected and analyzed using the IDEXX Colilert system (Method 9223 Enzyme Substrate Coliform Test 2017) and results published in "Most Probable Number of Colony Forming Units" or MPN/100mL (comparable to CFUs). A Colilert chemical reagent is mixed with each sample, sealed in a sampling "tray", and then placed in an incubator at 35 °C for 24 hours.

After 24 hours, samples are read under a blacklight and each sample's MPN/100mL is determined. As an additional quality control check, ARK ran lab QA/QC samples and a lab blank each week.

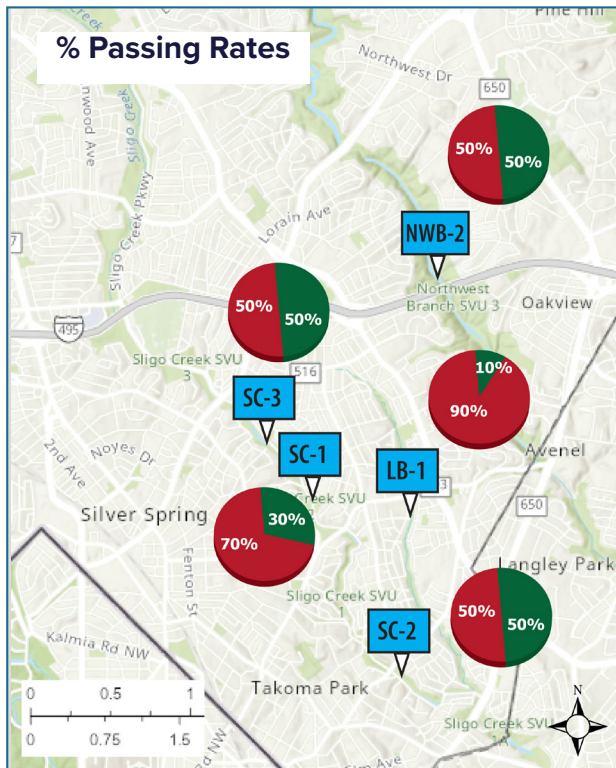
Turbidity samples are assessed using an in-lab LaMotte 2020we/wi turbidimeter which uses light attenuation passing through a sample compared to lab standards to determine the turbidity of a sample in nephelometric turbidity units (NTUs). Standards for 0 NTU, 1 NTU, 10 NTU, and 100 NTU are run before each week's samples to assure accurate readings. Lab turbidity samples are run concurrently with bacterial samples so both results are available within 24 hours.





# Results and Conclusions

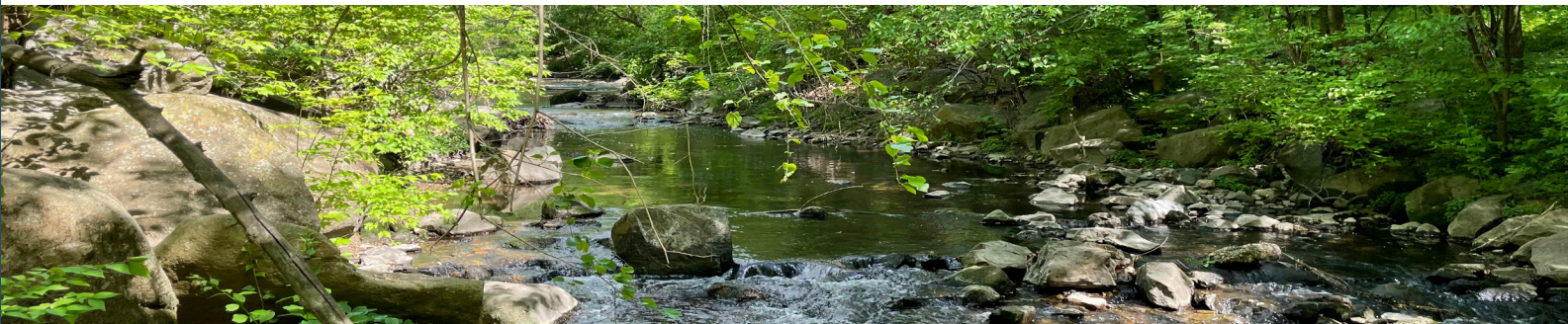
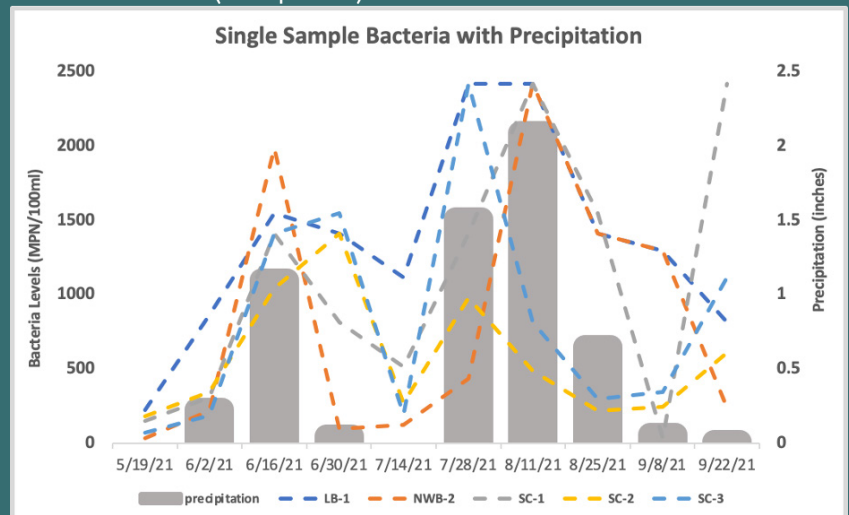
Water quality is poor to fair at all of ARK's Montgomery County water quality monitoring sites. All sites passed for physical water quality parameters such as dissolved oxygen, pH, and water temperature. Despite this, bacteria levels were frequently high.



## Bacteria Results

Samples are considered "passing" when bacteria levels are less than 410MPN.

- 50% pass rate at NWB-1, SC-2, and SC-3
- SC-1 passed 30% of the time. In previous studies, this site has had high bacteria levels leading ARK to add SC-3 just north of an outfall that was suspected to be contributing to the high bacteria levels. While SC-1 failed more often than SC-3, both sites regularly had high bacteria. This suggests that the outfall is not the only contributor to poor water quality at SC-1.
- It is possible that non-point sources are an important contributor to high bacteria all along Sligo Creek. One suspected additional source is pet waste, as a large portion of Sligo Creek runs through park land and highly recreated areas.
- LB-1 had the worst bacteria levels of the MoCo sites with a 10% pass rate and an average of 1354 MPN. The Audubon Naturalist Society conducts macroinvertebrate studies with volunteers in the spring, summer, and fall. The macro assemblages recorded suggest poor to fair water quality and have not changed much over the three years of monitoring, confirming a trend of relatively poor water quality at this site. This requires further investigation. Additionally, overflowing mounds of trash are consistently noted by water quality volunteers upstream of the LB-1 monitoring site and adjacent to the stream (see photo).



## Ecological Results

- Across all sites and all weeks of monitoring, there were no exceedances or "failing" values for dissolved oxygen, pH, water temperature, and specific conductivity.
- Average turbidity across the summer was below 5 NTU, indicating high clarity of water low suspended sediment.
- Low to modest specific conductivity across all sites demonstrates healthy conditions for aquatic organisms, especially fish. However, sampling occurred in the spring and summer, missing potential contamination from road salt in the winter.
- Noting healthy ecological water quality paired with high bacteria levels shows that just because a stream looks healthy and has vibrant aquatic life, it can pose harm to humans.
- Precipitation had inconsistent effects on ecological health with "dry" conditions and "wet" conditions showing variable impacts on ecological parameters.

## Conclusions

While there is a correlation between precipitation and bacteria, there are multiple instances of “dry conditions” (<0.5 inches in the previous 72 hours) and high bacteria levels. Therefore, other factors are driving high bacteria in addition to known issues with leaky sewer connections.

Longbranch, in particular, consistently has poor water quality as shown through this bacteria monitoring program as well as Audubon Naturalist Society’s biological monitoring program. There may be many factors contributing to poor water quality at this site including the issue of trash management at adjacent properties. This site's issues are mirrored to a degree in Sligo Creek and, due to stormwater pipes leading into these streams, may have a common contributor to high bacteria counts. Both LB-1 and SC-1 exhibited some of the highest bacteria results throughout the summer, and were also directly downstream of stormwater outflow pipes.

As a whole, while ecological data remains good to healthy, recreational water quality in the Northwest Branch and Sligo Creek subwatersheds of the Anacostia still remains a matter of concern. High amounts of public recreation along these waterways and around our monitoring sites makes this an even more troubling issue. Looking to the future, an increase in monitoring frequency and geographical coverage, as well as signage indicating potential water quality dangers to recreators is necessary. While our Montgomery County waterways have made strides when it comes to their overall health, there are still pressing issues stemming from urbanization that need to be met in order for these waters to be safe for all.





# Thank You!



Thank you to all of the volunteers who enthusiastically dedicated their time this summer. This program would not be possible without you!

Thanks to our funder:



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Montgomery County Water Quality Protection Fund

And to our partners:



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