2022

PRINCE GEORGE'S COUNTY WATER QUALITY SUMMARY REPORT

The Anacostia watershed has always been central to the growth and prosperity of those who live on its banks and 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. With continued development and a high percentage of historically underserved communities in Prince Goerge's County, the threats to its waterways and natural resources are numerous.

Almost half of the Anacostia River watershed is contained within the boundaries of Prince George's County, MD; and of that percentage, almost all is classified as Maryland Class I waters, or waters designated for water contact recreation. Despite this, finding up-to-date and publicly available water quality data that could help inform potential river recreators is lacking throughout Prince George's County watersheds.

This project was funded by the generous support of our donors, including the Town of Cheverly, MD. Anacostia Riverkeeper worked with Friends of Lower Beaverdam Creek, Friends of Quincy Run, and Anacostia Watershed Community Advisory Committee 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.

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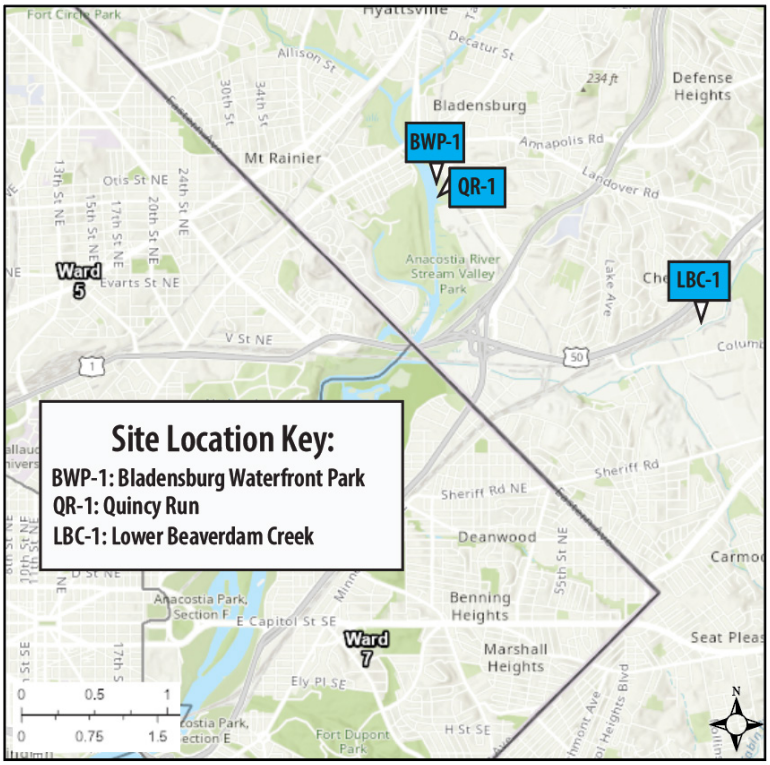
Program Overview

Site Selection

Three sites were monitored during the 2022 season. The site locations were chosen based on their high recreational importance, their need for continual monitoring, and accessibility for monitors. One site is located at Bladensburg Waterfront Park (BWP-1), which is expanding rapidly as a recreational hotspot in the area. The Quincy Run (QR-1) and Lower Beaverdam Creek (LBC-1) sites were similarly chosen due to their recreational usage and potential, as well as known concerns around pollution and contaminants. They offer a look at two tributaries in Prince Goerge's County close to the confluence with the main stem. These are the same sites monitored in 2021, which allow comparisons with data from previous years.

Anacostia Tributaries Monitoring Sites



Field Methods

Volunteers collected water quality samples from three 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, water color) on their field sheet.

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

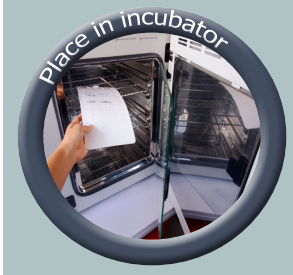
Lab Methods

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. ARK's turbidimeter was sent in for repairs in the middle of the season, so turbidity samples were sent to the University of District of Columbia from July 13, 2022 to August 24, 2022.

Bacteria

A Colilert chemical reagent is mixed with each sample



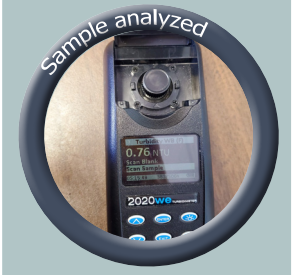
Then placed in an incubator at 35 °C for 24 hrs

Lab Processes

Samples are sealed in a sampling tray

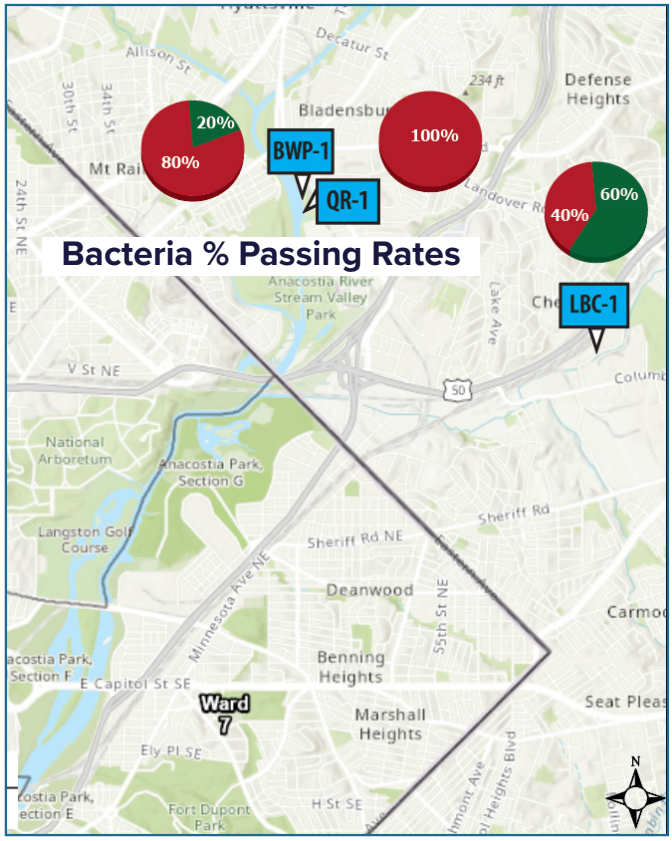
After 24 hrs samples are read under a UV blacklight

Turbidity



Results and Conclusions

Water quality is poor to fair at all of the Prince Goerge's County water quality monitoring sites. All sites passed for physical water quality parameters such as water temperature (<32.2 C) and turbidity (<20 NTU above ambient). pH showed some variability from the accepable range (6.5-8). Bacteria levels were frequently very high at all three sites.

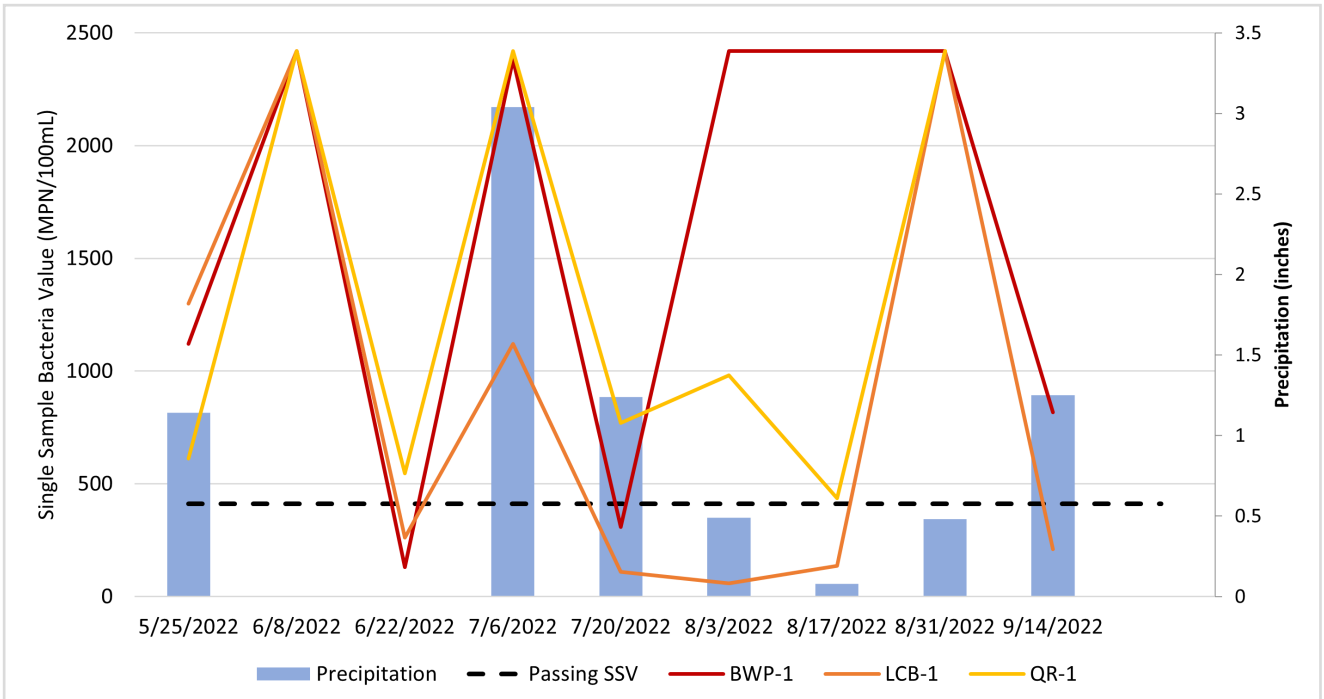


Bacteria Results

Samples are considered "passing" when bacteria levels are less than 410 MPN. The map on the left shows the passing rates for each site.

- QR-1 had the worst water quality, with a 0% passing rate, and an average of 1326 MPN/100mL for the season.
- LBC-1 had the best water quality, with a 60% passing rate, but general bacteria levels were still very high with an average of 893 MPN/100mL.
- BWP-1 had worse water quality, with only 20% passing rate and an average of 1604 MPN/100mL.
- Precipitation had inconsistent effects on bacteria levels with high bacteria levels found on both days after a heavy rain and relatively dry days.
- All sites averaged slightly higher bacteria levels than 2021, though precipitation was also much higher this year.

2022 Prince George's County Single Sample Bacteria Values and Precipitation



Results and Conclusions

Ecological Results

- Across all sites and all weeks of monitoring, there were no "failing" values for water temperature.
- pH showed some variability with a couple days of low measurements, though pH was within the acceptable range most days. A more precise pH method should be explored for future monitoring.
- Average turbidity across the summer was below 20 NTU, indicating high water clarity. There was one week (August 17) in which all three sites had turbity greater than 20 NTU (BWP-1: 32.9, LBC-1: 26.0, QR-1: 29.4 NTU). LBC-1 also had high turbidity of 22.1 NTU August 31. However the average for the season was 13.8 NTU.
- Precipitation had inconsistent effects on ecological health with heavy rain and relatively dry conditions showing variable impacts on ecological parameters.
- Debris, oil slicks, and scum were observed on multiple days at BWP-1 throughout the season.
- Noting fair to healthy ecological water quality paired with high bacteria levels shows that just because a stream looks healthy and has vibrant aquatic life, it can still pose harm to human health.

Conclusions

Across all sites we found poor water quality, in terms of bacteria levels. Quincy Run (QR-1), in particular, exhibits consistently poor water quality as shown through this bacteria monitoring program, with no passing sample for the entire season. This suggests a need for further sampling in the area. Precipitation is an important factor to analyze regarding water quality because some recreators base their recreation decisions on recent rainfall and how the water appears, (water level, turbidity, color, etc.). Precipitation trends indicate an inconsistent relationship between bacteria levels and precipitation at the three sites, but given the small sample size this should be investigated further. The inconsistency does suggest other factors are driving high bacteria in addition to known issues with leaky sewer connections.

Recreational water quality in Prince Goerge's County tributaries of the Anacostia remains a matter of concern. 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. In 2023, we will add 2 sites to our monitoring program: one on Northwest Branch and one on Northeast Branch. While our Prince George's 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 donor and partners:

Town of Cheverly, MD

Friends of Lower Beaverdam Creek

Friends of Quincy Run

Anacostia Watershed Community Advisory Committee (AWCAC)

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