



**Investigator Annual Report (IAR): Findings
Potomac Riverkeeper Network
Summer 2019 Water Quality Monitoring Results**

Study #:GWMP-00162

Permit #:GWMP-2019-SCI-0011

Name of Principal Investigator:Potomac Riverkeeper

Study Title:Volunteer Water Quality Monitoring on the Potomac

Start Date:5/30/2019

End Date:9/12/2019

Purpose:

As a result of concerted efforts to clean up the Potomac River, our waterways have become visually more appealing primarily due to reductions in floating debris. However, contamination from fecal bacteria released into the water after a heavy rain (including raw sewage and pet and wildlife waste) still poses a significant human health risk. Hundreds of thousands of people use the Potomac River for recreation, typically May through October, every year. Recreational users are frequently coming in direct contact with waters of the Potomac River. Thus, timely public notification of the presence of E. Coli during the primary recreation season from May through September, via easily downloadable APPs like SwimGuide and accessible websites (www.potomacriverkeepernetwork.org and www.swimguide.org) will support recreational use goals, and public health and safety for citizens who recreate on and in our local waters. The purpose of this monitoring project is to increase understanding of water quality health in areas with large amounts of water recreational activities and to make E. coli data directly accessible to the public. Results from weekly sample collections will be reported within 24 hours to the Chesapeake Monitoring Cooperative (CMC), and distribution on Waterkeeper SwimGuide App.

Proposed Methods:

Sample data shall be representative of the actual conditions or concentrations present in the stream at that point in time. Sample collection, preservation, and handling methods are interactive factors that directly affect field sample representativeness. Monitors will collect water samples from as close to mid-stream as feasible, by either wading into the stream, using a sample collection pole, or sampling from a bridge using a bucket. Water samples will be collected using bottles appropriate for the parameter being measured. Sample bottles (and sample bucket if applicable) for turbidity will be rinsed three times, and swiped vertically through the water column, in order to collect a single sample that is representative of the conditions in the stream at that particular location and time. Bacterial samples will be collected by simple methodology but without any rinsing of sample bottles due to the presence of preservatives in designated bacterial sample bottles. During sample collection and analysis, monitors will follow prescribed methods and QA procedures to ensure representative data are collected. These techniques will ensure that the minimum standards of field representativeness are met. All routine sampling will be collected on a Wednesday-Thursday collection schedule, excluding holidays, to allow for the most flexibility in sampling and to account for potential week-to-week weather conflicts (i.e., rain events). Volunteers will collect and deliver the sample from their respective station every week, either a designated Wednesday or Thursday. Samples will be delivered to the PRKN Sea Dog (42 foot boat) floating lab located at National Harbor in Oxen Hill Maryland between the hours of 12:00pm –5:00pm. In the case that a volunteer and the volunteer substitute are both unavailable for collection and delivery, the volunteer will inform the Team member covering that jurisdiction who will then be responsible for collecting the sample and delivering to the lab for testing and reporting. Samples must be turned into the lab within 6 hours of collection.

2019 Results:

Potomac Riverkeeper Network -- Summer 2019 Water Quality Monitoring Results

Potomac Riverkeeper Network had a highly successfully summer protecting and defending the Potomac River. With the goal of making the Potomac fishable, drinkable, and swimmable, PRKN employed the services of dozens of volunteers to collect and analyze water samples from a broad stretch of the Potomac River, from Fletcher's Cove to National Harbor.

- Teams successfully conducted 200 water monitoring collections from 10 sites from early May through early October 2019.
- E Coli analysis of these collections revealed the Potomac was swimmable 55.8% of the time.
- The results demonstrate a measurable degree of correlation across locations and dates, providing substantial confidence in our testing results.
- The Tidal Basin collection site (PR 6) was constantly the cleanest location, passing the E. Coli bacteria test 90% (18 of 20) of the time. This location appears to be shielded from regional runoff effects of the greater Potomac River.
- The National Harbor collection site was a close second with 85% passing rate.
- The Battery Kemble Creek was most frequently E. Coli contaminated site regardless of rain effects as the location passed testing only 5% of the time. Foundry Branch performed only slightly better with a 10% pass rate.
- Of the lower three Potomac sites (PR 8, 9 and 10), Oronoco Bay failed the most, likely due to its location near both a Combined Sewage Overflow (CSO) site to the south and the mouth of Four Mile Run to the north.
- Not surprisingly, measurable rainfall in three days prior to testing significantly increased the probability of E. coli test failure.
- Beyond tracking KDCA rainfall as a runoff indicator, our analysis revealed monitoring USGS streamflow gauges, such as at Little Falls and Difficult Run helped correlate to downstream testing results. Tracking these flows captures the effect of larger regional rain events to the north and west of DC.
- Over the summer, the river appeared to recover from even the heaviest rain events in less than a week.
- All data is accessible through the Chesapeake Data Explorer - <https://cmc.vims.edu/#/home>
- Weekly water quality status was uploaded to Swimguide - <https://www.theswimguide.org/>

Summary: This summer's collection and analysis program indicate that PRKN water monitoring efforts are highly relevant and impactful to tracking the health and viability of the Potomac River. Volunteer operations demonstrated great success this year and have strategically positioned PRKN to successfully expand collection operations in 2020.

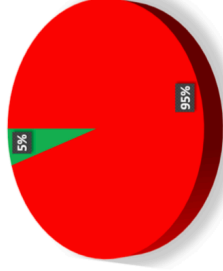


Potomac River Pass/Fail Results

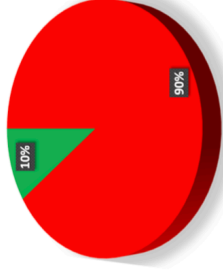
PR 1 - PR 7 : 1 May19 - 11Sep19 *E. coli* geometric mean = 126 MPN/100mL

PR 8- PR 10: 23 May - 20Oct19 *E. coli* single sample value = 235 MPN/100mL

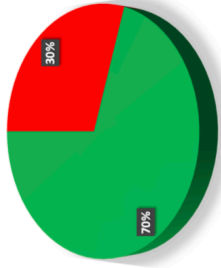
Battery Kemble Creek - PR 1



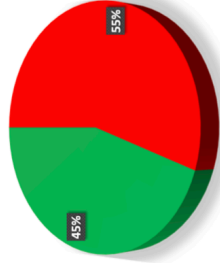
Foundry Branch - PR 3



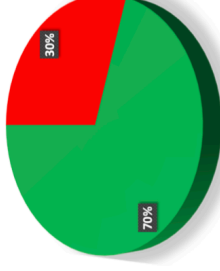
Fletchers Cove - PR 2



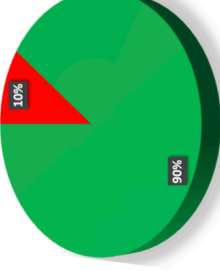
Washington Canoe Club - PR 4



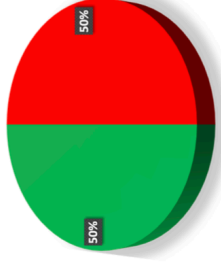
Thompson Boat Center - PR 5



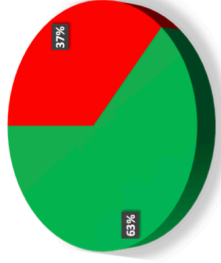
Tidal Basin - PR 6



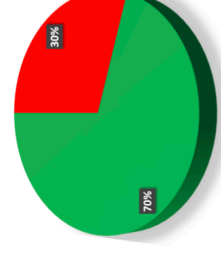
Columbia Island - PR 7



Oronoco Bay - PR 8



Belle Haven Marina - PR 9



National Harbor - PR 10

