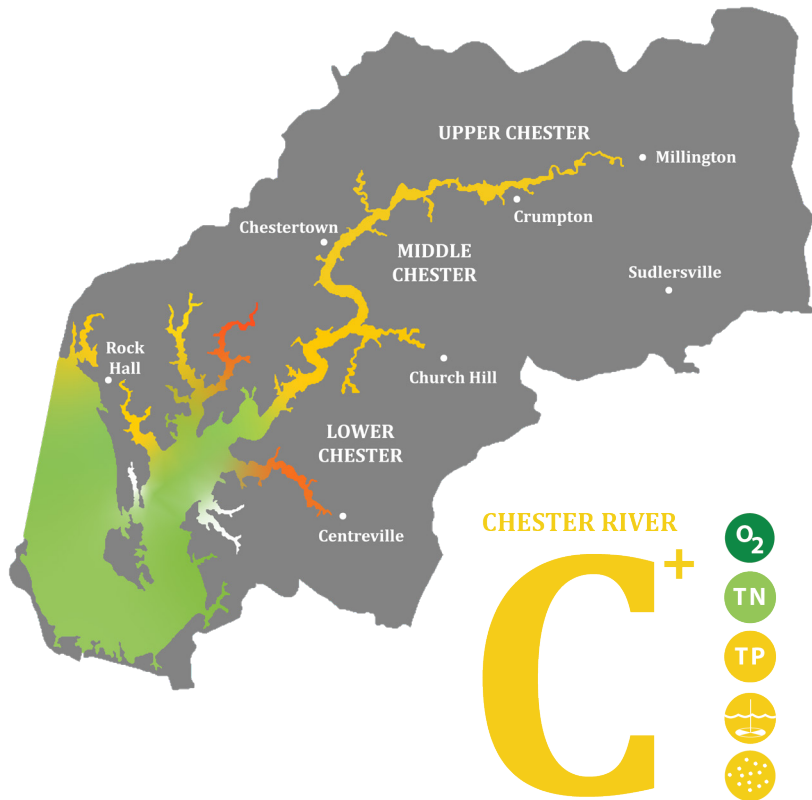


CHESTER RIVER REPORT CARD

2023

BAY HEALTH SCALE



The Eastern Shore experienced drought conditions in the spring and early summer, which vastly improved water clarity and nutrient scores in those seasons. They also increased salinity levels—measuring more than twice the nine-year average at many stations. This may have impacted submerged aquatic grass beds (SAV), especially in the upper Chester, where native species are intolerant of increased salinity levels. In July through September, increased rainfall led to more stormwater runoff—negatively impacting clarity and oxygen scores.

Our 2023 data shows that phosphorus, clarity, and chlorophyll *a* (Chl *a*) continue to be the Chester River’s largest threats, with an overall score of 46%, 41%, and 48% for these parameters, respectively. It is common for phosphorus and clarity scores to correlate, as phosphorus moves into a waterbody when bonded to sediments. Chl *a* concentrations—especially upstream in low salinity areas—increase from excess phosphorus in our waterways. Levels in excess of 40 ug/l can be indicators for algal blooms. This year, our data indicated elevated algal activity in Southeast Creek, the Corsica River, and the east fork of Langford Creek. While the majority of these blooms occurred in late summer, the Corsica experienced high Chl *a* levels of concern as early as late April.

- DISSOLVED OXYGEN
- TOTAL NITROGEN
- TOTAL PHOSPHORUS
- WATER CLARITY
- CHLOROPHYLL A

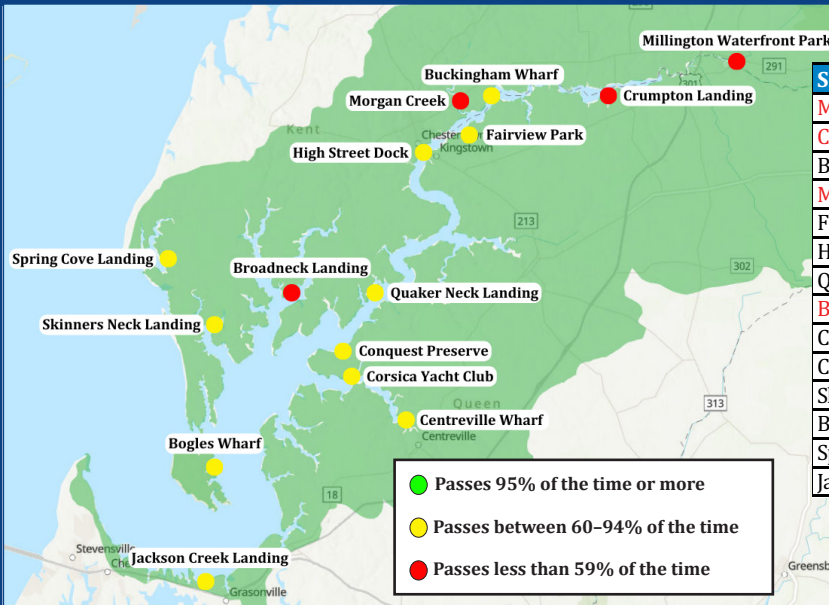
ShoreRivers uses Mid-Atlantic Tributary Assessment Coalition scientific protocols to collect and evaluate water quality data. A numeric **Water Quality Index** is calculated using established thresholds for water quality parameters, then converted to a letter grade.

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	DISSOLVED OXYGEN	TOTAL NITROGEN	TOTAL PHOSPHORUS	WATER CLARITY	CHLOROPHYLL A	WATER QUALITY INDEX	2023 GRADE
Chester	90%	65%	46%	41%	48%	58%	C+
Corsica	69.6%	37.8%	13.6%	30.2%	16.3%	33%	D
Grays Inn	75%	64%	47%	36%	34%	51%	C
Langford	50%	57%	25%	36%	31%	40%	C-
Southeast Creek	100%	55%	27%	25%	44%	50%	C
Swan Creek	92%	60%	51%	34%	52%	58%	C+

BACTERIA MONITORING ON THE CHESTER | 2023



Site	Pass Rate	Average Failing CFU*
Millington Waterfront Park	40%	300
Crumpton Landing	40%	220
Buckingham Wharf	60%	157
Morgan Creek	7%	250
Fairview Park	80%	201
High Street Dock	80%	228
Quaker Neck Landing	87%	345
Broad Neck Landing	40%	200
Conquest Preserve	93%	285
Corsica Yacht Club	87%	186
Skinners Neck Landing	74%	165
Bogles Wharf	80%	323
Spring Cove Landing	62%	104
Jackson Creek Landing	93%	199

CFU = Colony Forming Units
Pass/Fail Threshold = 104 CFU

*Indicates the average of all failing scores this season

Each season our volunteer SwimTesters, as a part of the Swimmable ShoreRivers program, test for bacteria pollution at shoreline sites along our rivers, including popular public access locations, marinas, yacht clubs, and town piers. These tests are conducted weekly from Memorial Day through Labor Day. The program follows the Environmental Protection Agency’s standard protocols for collecting and analyzing samples and uses a pass/fail system to determine the level of risk that bacteria levels pose for water contact activities.

This year’s bacteria results were varied across the region, with the majority of test sites (10 of 14) passing 60–93% of the time. Millington Waterfront Park, Crumpton Landing, and Broadneck Landing had a 40% pass rate, while Morgan Creek Landing’s pass rate hit an all-time low of 7%. **Surrounding land use and water temperature vary at each location, and both rain events and tidal stages are usually connected to spikes in bacteria levels at any site.**

While pass rates were mixed in the 2023 monitoring season, an important improvement to note is that the 2023 average failing CFU levels decreased. These averages indicate how significantly a site fails to meet water quality standards, with anything higher than 104 CFU being considered a failing score. **This season, our average CFUs ranged between 104–345, which is dramatically lower than ranges from any previous year of testing. We hope to see this trend continue in 2024.**

BACTERIA MONITORING STUDY SUPPORTS TIPS FOR SAFE SWIMMING

Thanks to funding from the Chesapeake Bay Trust, Morgan Buchanan, ShoreRivers’ Education Programs Coordinator, conducted a continuous bacteria monitoring study at Morgan Creek Landing on the Chester River to better understand the relationship between tidal cycles and bacteria pollution in our waterways.

Results support our understanding that outgoing tides bring the highest bacteria levels of each tidal cycle. This can be seen in the figure to the right, showing results for the tidal cycle sampled on July 11, 2023, which saw no rain in the 24 hours prior to sampling. The highest bacteria level that day occurred one hour prior to low tide and with a reading of 471 CFU, whereas the average bacteria level that day was 124 CFU.

