2025 Magothy River Index

Prepared for "State of the Magothy" event to be presented at Anne Arundel Community College on 3/27/26

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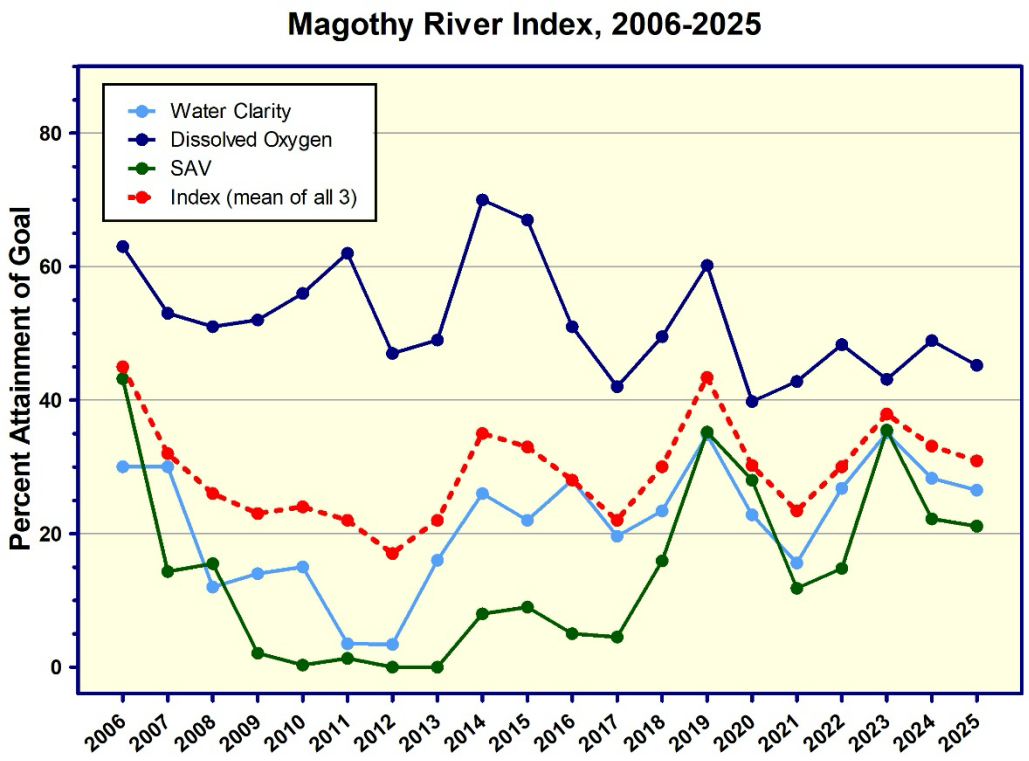
Magothy River Index declined slightly in 2025

The Magothy River Association's annual "Magothy River Index", first presented in 2003, assesses water quality in the tidal river. The Index is based on three criteria established by the Chesapeake Bay Program for ecosystem health, and is expressed as percent attainment of a desirable goal and as a letter grade where 0-20% is an F, 21-40 is a D and 41 to 60 is a C. The criteria are percent attainment of:

- **water clarity** based on Secchi disk depth of at least 1 meter
- **dissolved oxygen** of at least 5 mg/L in the deepest water at each station and
- achievement of the Chesapeake Bay Program Goal of 579 acres of **submerged aquatic vegetation** (SAV).



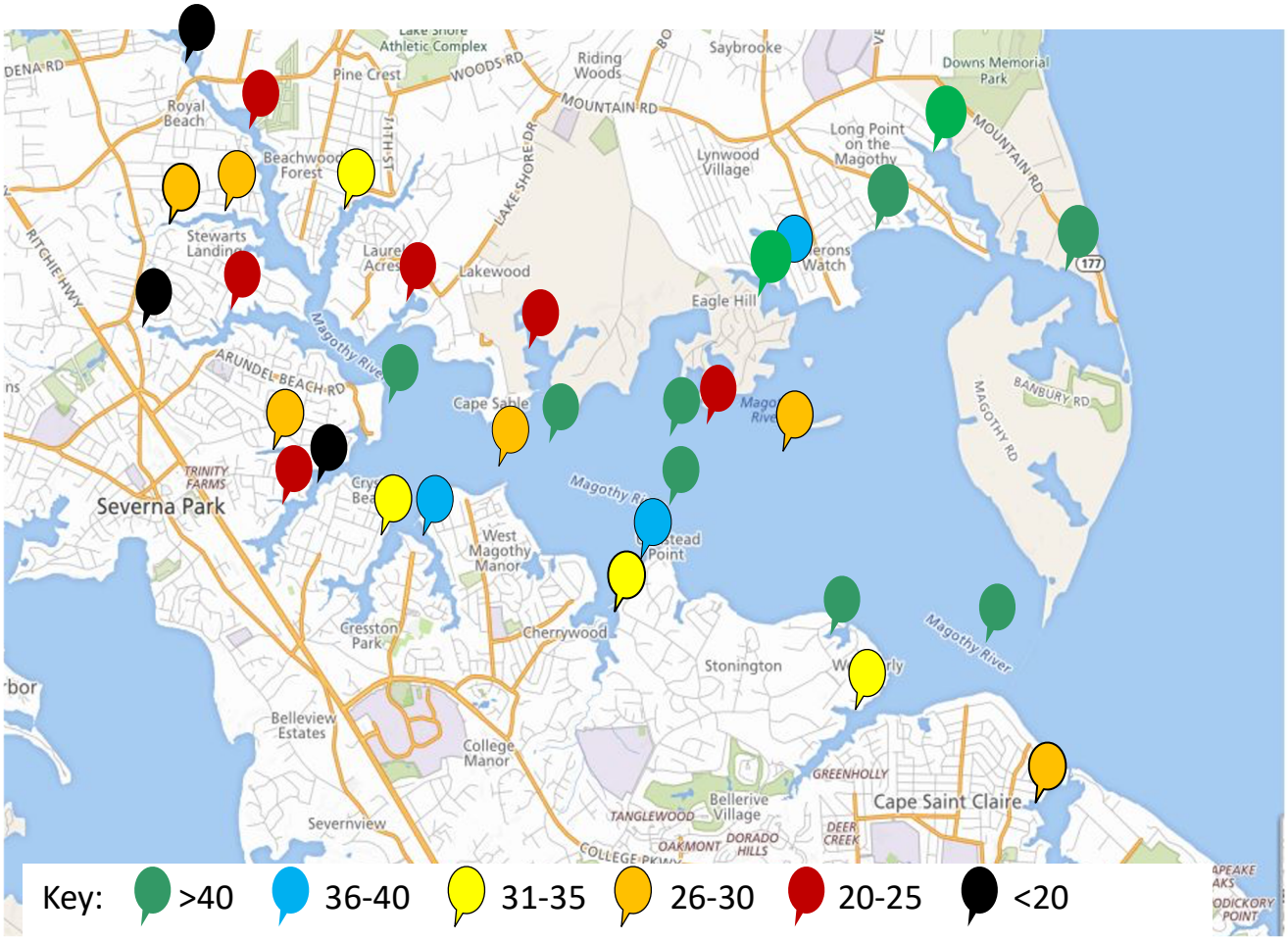
SAV requires water clarity for growth and provides oxygen as well as key food and habitat for fish and crabs while reducing the impact of wave action on the shore. Most fish, shellfish and aquatic invertebrates require at least 5 mg/L dissolved oxygen (DO) in the water column for their sustained growth and reproduction.

SAV acreage in the Magothy is provided by Bayland Consultants & Designers Inc., and by the Virginia Institute of Marine Science (VIMS). In 2025, BayLand surveyed five areas: Deep Creek, Cypress, Cattail, Gray's Creek and the shoreline at Hunter's Harbor. They found 64 acres of SAV during their early season and mid-season surveys. They reported finding eight species of underwater grasses: horned pondweed (*Zannichellia palustris*), common waterweed (*Elodea canadensis*), Sago (*Stukenia pectinata*), Curly pondweed (*Potomogeton crispus*), redhead (*Potomogeton perfoliatus*), slender pondweed (*Potomogeton pusillus*), Eurasian watermilfoil (*Myriophyllum spicatum*) and widgeon grass (*Ruppia maritima*). VIMS aerial data resulted in a significant decrease from 73 acres in 2024 to 59 acres in 2025. 32 of those 59 acres were seen in North and South Gray's Creeks. After subtracting the overlap in reported acreage between Bayland and VIMS, the total SAV coverage was 122 acres, which is 21 % of our goal. We saw an overall decrease in water clarity this year which is surprising since we didn't see mahogany tide algal blooms in most of the river, although there was persistant algal growth throughout the season. We

also saw a decrease in bottom dissolved oxygen although most of the areas where oysters bars are found had sufficient oxygen to support oyster growth.

This year's index is based on data collected by volunteers from seven open water mainstem sites sampled by boat and 25 stations sampled from shore. All sites are shown in the map below. We did not include the headwater sites of Cattail Creek and Old Man Creek in the final index since these sites have less than one foot of water depth. This year's index is 30.9, earning a D.

2025 Magothy Index Based on Bottom Dissolved Oxygen and Water Clarity

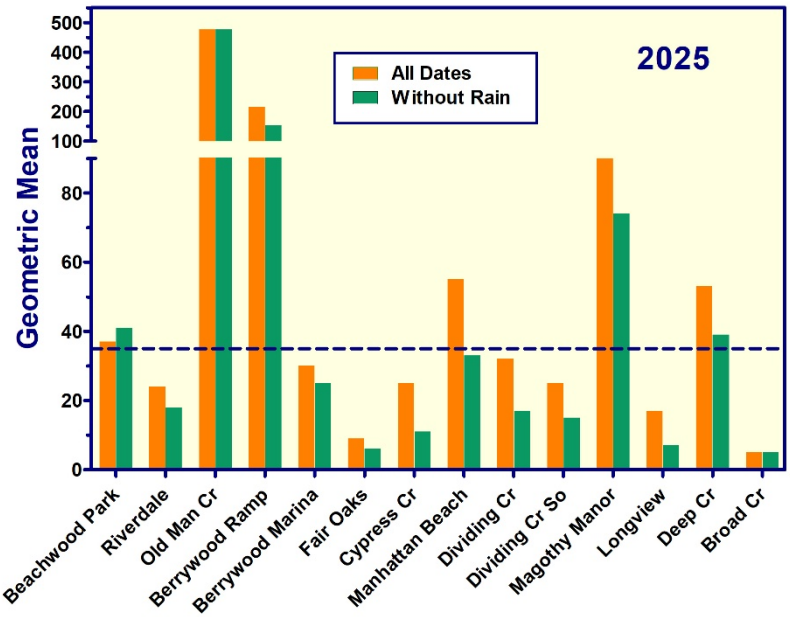


In the figure above, the Index is calculated for each station using only bottom DO and water clarity data, since we don't have SAV coverage goals for creeks. Two stations were added this year, Henderson Point and the headwaters of Old Man Creek. Of the 30 sites monitored in both 2024 and 2025, 12 showed improvement while 18 had lower indices. As we have seen in previous years, areas with greater development and impervious surfaces fared worse than areas with less development. The most problematic areas continue to be the upper north shore. It was disappointing to see that many of the south shore sites that have shown improvements in recent years were downgraded in 2025. In addition, this was the first time that we have seen poor water quality in the mainstem although it is important to note that neither the F Mark station (in red) nor the MR6 site (in orange) are over an oyster bar. The Dobbins site (in orange) is over an oyster bar.

We thank our volunteer monitors for their dedicated work again this year: Mike and Trish Lehman, John Maliszewski, Chris Kerchner, Paul Spadaro, Bob Royer, Jim Crafton, Chuck McClain, Jay and Jennie Mulford, Larry Turner, and Angela Cremeans. We sincerely thank waterfront property owners for access to their piers.

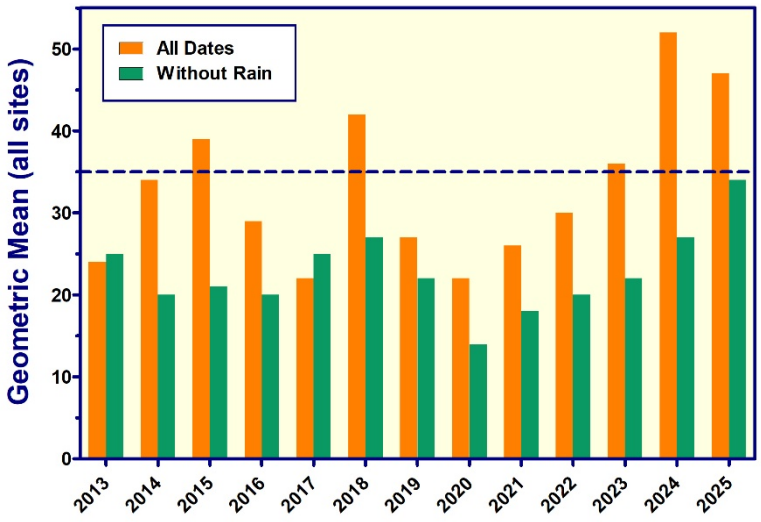
Good Bacterial Water Quality in 2025

Our waterways were safe for recreational use this year most of the time and at most sites; in fact 79 % of water samples showed good bacterial water quality. We monitor the population of enterococci (*Enterococcus faecalis*) in our waterways as this bacterium is an indicator of recent input of fecal waste from mammals and birds. When counts of these bacteria are elevated, it is likely that other pathogenic bacteria may be present. Sites are sampled weekly or biweekly by students at AACC in the Op. Clearwater program. Water samples are collected on Wednesday mornings, processed by filtration at the lab, and results, expressed as colony forming units or CFU/100 ml, are posted on Dr. Tammy Domanski's website: [aaccecoperationclearwater]



We expect to see high enteric bacterial populations at the Berrywood restoration site and at the Old Man Creek site since water depth is only about one foot and they receive a great deal of runoff after at least a half inch rain. MRA monitored enterococci at these sites because they support both algal and bacterial blooms and we are concerned about the pistachio tide events seen there. We also monitored the kayak launch site at Beachwood Park and found good recreational water quality there. The Deep Creek site has had high bacterial counts for years and we determined last year that geese at the Bay Hills golf course were the source. We also suspect that the higher counts at Manhattan Beach are due to waterfowl. Magothy Manor (Mago Vista area) is sampled in rather shallow water adjacent to a storm drain outfall.

Enterococci (CFU/100 ml) at Magothy sites



In the figures above, bacterial numbers are expressed as the geometric mean, which enables us to see the overview for each site each season. The dotted line drawn at 35 CFU/100 ml is the upper limit for safe recreational use. Heavy rains producing stormwater runoff wash pet and wildlife waste into our creeks. By showing both dry weather conditions and all weather conditions, we can see which sites are most impacted by stormwater. The second figure shows the trend for the last 13 years. Although bacterial water quality is good most of the time, it's important to remember that swimming in the 48 hours following a heavy rain is not recommended. If you are interested in

having your community join Operation Clearwater, you can find the application for the 2026 season at the AACC website given above.

President's Statement

2026 marks the 80th anniversary of the Magothy River Association. For eight decades, MRA has dedicated itself to protecting and preserving the Magothy River and its watershed. I invite you to join the MRA. We also encourage you to celebrate our 80 years of service by purchasing a ticket to our Anniversary Crab Feast on September 20. By working together, we can restore the river for future generations to enjoy. Thank you for your support.

Congratulations to two AACC Students who received MRA Scholarships

This year two AACC students received the two MRA Scholarships: the Jim Gutman Award and the E. Gordon Riley Award. We would also like to recognize our two summer interns : Zoe Philip (pictured here) and Spencer Woodbury.

Lake Waterford Dredging Begins

Lake Waterford water quality is threatened by the high nutrient content of its sediments. Nutrients are brought into the lake from upstream and by waterfowl in the lake. Water quality is so poor that we have seen persistent low dissolved oxygen levels, toxic blue-green algal blooms and fish kills. To remediate the lake, the County is now dredging approximately 65,000 cubic yards of sediment from the bottom, with the plan of returning the lake to its historic contours, including a 14' deep area in the center. Dredging started in the fall of 2025 and continued till mid-February, while it is closed between 2/15 and 6/15 for yellow perch and other anadromous fish spawning activity. Dredging is expected to be completed by December 2026. Creating a fishing pier, a walking path and planting the perimeter will be completed next spring. We expect that water quality in the entire Magothy River will benefit from this work. We thank the Dept. of Public Works Bureau of Watershed Protection and Restoration for undertaking this task.

MRA Volunteers in Action

- Interested in monitoring for SAV? We will provide instruction on SAV identification and methods for monitoring and ask that you go out at least twice between May and September to look for grasses in an area of your choice. Please contact sally.hornor@gmail.com to find out more and to volunteer.
- Interested in growing oysters at your pier or in helping to monitor construction sites for sediment runoff? Contact Brad Knopf at bdknopf@gmail.com.
- Do you have stories about growing up on the Magothy that you would like to share in our Living History project? Contact Andrea Germain at a3germain@gmail.com.

This index prepared by Sally Hornor with graphics support from Tom Caperna.