

Magothy River Index for 2015

Celebrating 70 Years, 1946-2016

Presented at "State of the Magothy" Wed. 2/17/16, by the Magothy River Association

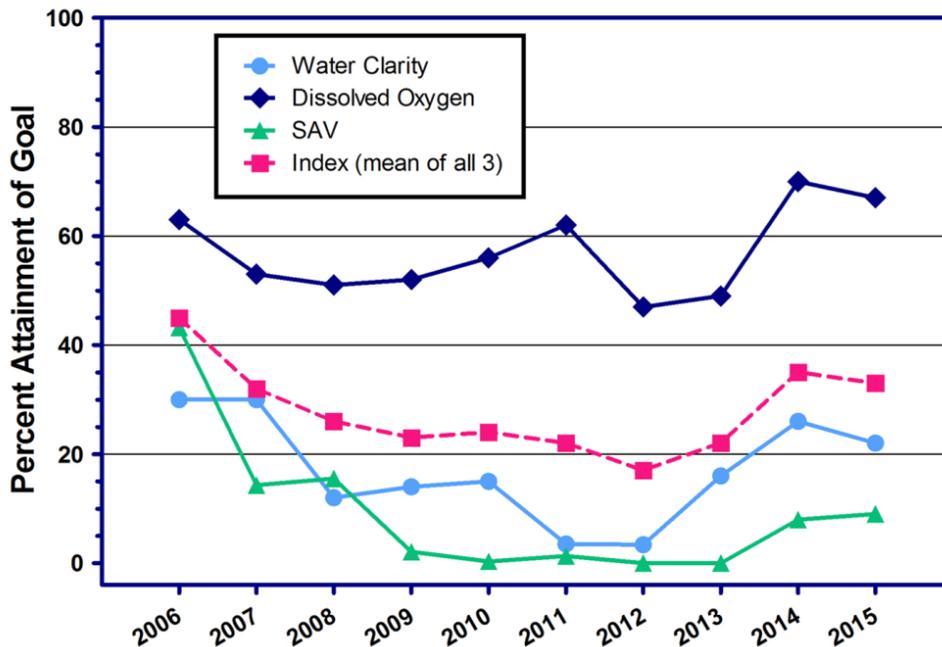


Magothy River Health Was 33% in 2015 (Grade: D)

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 and 80-100% is an A. The criteria are:

- water clarity based on Secchi disk depth of at least 1 meter
- dissolved oxygen of at least 5 mg/L in the water column and
- acreage of submerged aquatic vegetation (SAV) as measured by the Virginia Inst. of Marine Science and BayLand Consultants & Designers, Inc.

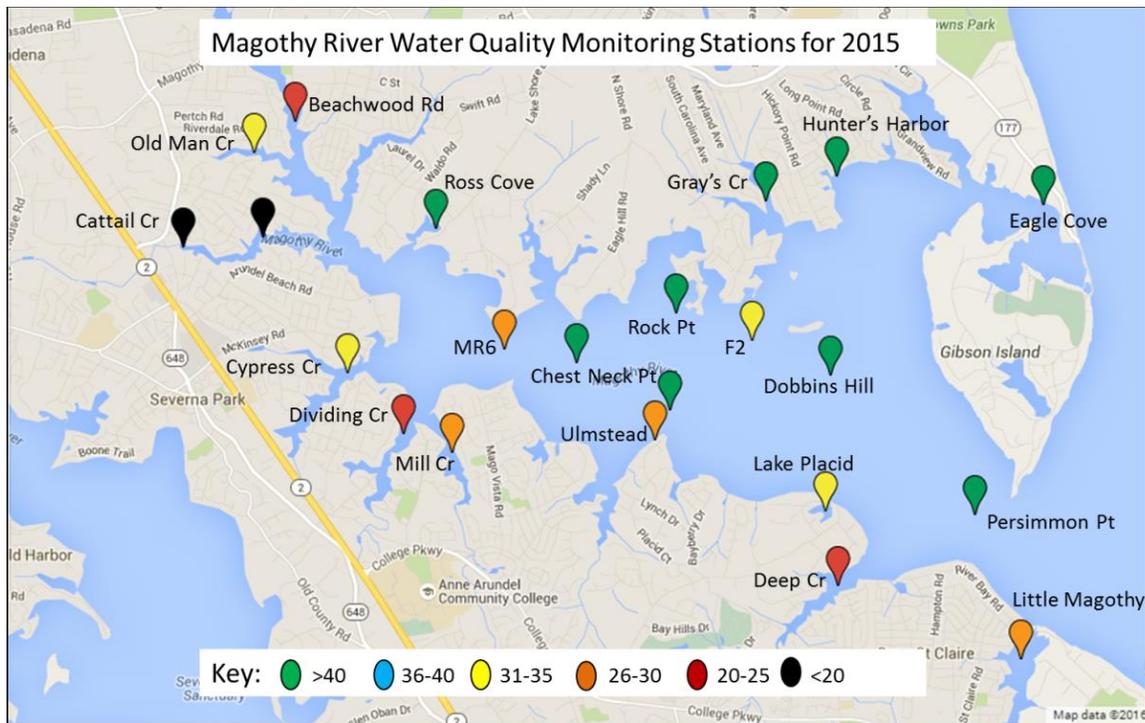
Magothy River Index, 2006-2015



SAV provides key food and habitat for fish and crabs and reduces the impact of wave action on the shore while they require adequate light to grow. Most fish and aquatic invertebrates require at least 5 mg/L dissolved oxygen in the water column for their growth and reproduction. The 2014 SAV curve has been corrected by data that we received after the index was presented last February. The SAV coverage was approximately 8% of the Chesapeake Bay Program goal in 2014 and 9% of that goal in 2015. The index for 2014 has been slightly upgraded from 32 to 35, based on SAV

coverage. Thus far we have only BayLand's data for SAV coverage for 2015. This year's index is based on water clarity and DO data collected by volunteers from ten mainstem sites and twelve creek or cove sites. Results for individual sites are shown on page 2. A rating of 33 is a D and is slightly lower than last year's corrected index, reflecting the slightly lower oxygen levels and water clarity. Based on anecdotal data, we appeared to have fewer dark false mussels in 2015 and this may have contributed to the lower water clarity and oxygen levels.

We thank our volunteer monitors for their dedicated work this year: the Mill/Dividing/Cypress Creek and Ulmstead sites were monitored by Steve Troy, Dave Kemp and Mike and Trish Lehman; Chris Kershner monitored the Little Magothy, Deep Creek and Lake Placid sites while Paul Spadaro monitored Cattail, Old Man and Gray's Creek plus the mainstem and cove sites of Beachwood Forest, Ross Cove, Hunter's Harbor and Eagle Cove. Dick Carey continued to monitor the seven open water sites, with assistance from Chris Kershner and Paul Spadaro. Students from Anne Arundel Community College monitored Mill and Dividing Creeks during the summer through a grant funded by Anne Arundel County Watershed Protection and Restoration Program. An overview for all sites is shown in the figure below. Percentages are based on attainment of water clarity > 1 m, DO > 5 mg/L and presence of SAV. New sites for 2015 are Ross Cove, Gray's Creek, Eagle Cove, and Lake Placid. We sincerely thank waterfront property owners for access to their piers.



We also thank Bayland Consultants for providing acres of SAV coverage in time for us to include in the calculation of indices. They measured the acreage of grasses in all of the creeks that MRA volunteers monitored except Cattail Creek. The presence of SAV helped boost the Index scores for several sites this year. MRA volunteers also looked for SAV while kayaking this year but we were not able to measure acres covered accurately. SAV was not found in Cattail Creek or the Little Magothy but was found in all of the other creeks

that were monitored. The most common SAV seen in the Magothy was Horned Pondweed (*Zanichellia palustris*), see photo. Although this grass completes its life cycle by June and floats away, it does provide good early season habitat and food. Other grasses seen later in the season were Sago pondweed (*Stuckenia pectinata*), Eurasian Watermilfoil (*Myriophyllum spicatum*), Wild Celery (*Vallisneria americana*) and Coontail (*Ceratophyllum demersum*).



Fig. 3 Horned Pondweed

Bacterial Water Quality in the Magothy

Our waterways were generally safe for recreational use this summer. We monitor the population of enterococci (*Enterococcus faecalis*) in our waterways as this bacterium is an indicator of recent input of fecal waste. Most sites are sampled biweekly by students at AACC in the Magothy 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 on Thursday afternoons. In

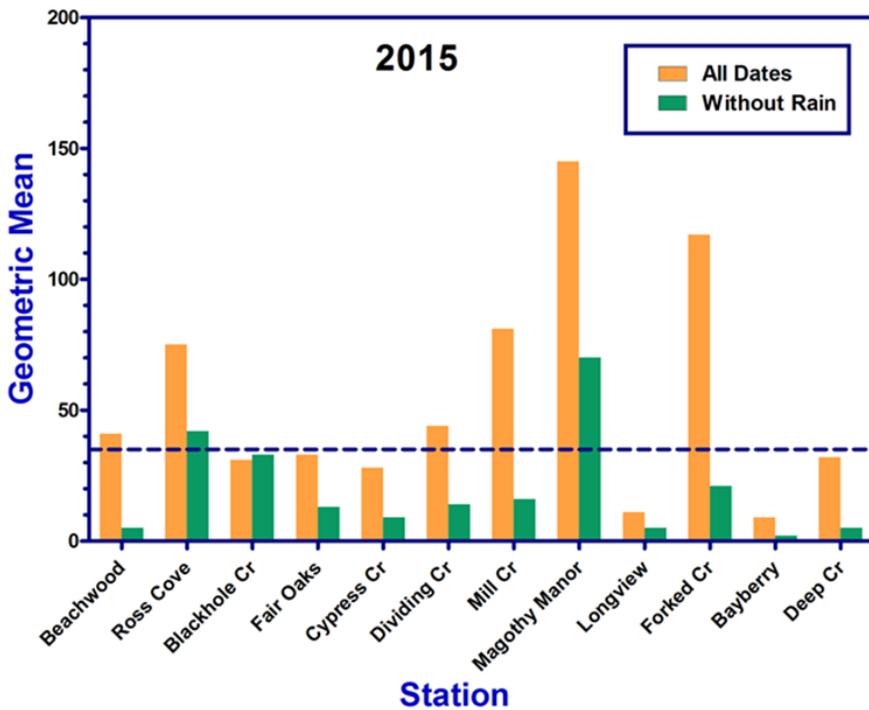


Fig. 4 Enterococci (CFU/100ml) at Magothy sites

Fig. 4, bacterial numbers are expressed as the geometric mean, which enables us to see the summary for each site for the season. The dotted line is drawn at 35, which is the upper limit for safe recreational use. Heavy rains produce stormwater runoff, sweeping pet and wildlife waste into our creeks. The sites with the highest counts are areas where ducks are common.

Fig. 5 shows the trend for the last 15 years. The good news is that most of the time most of our waterways are suitable for swimming. It is important to note that bacterial counts are always greater after rain and swimming after rain is not recommended.

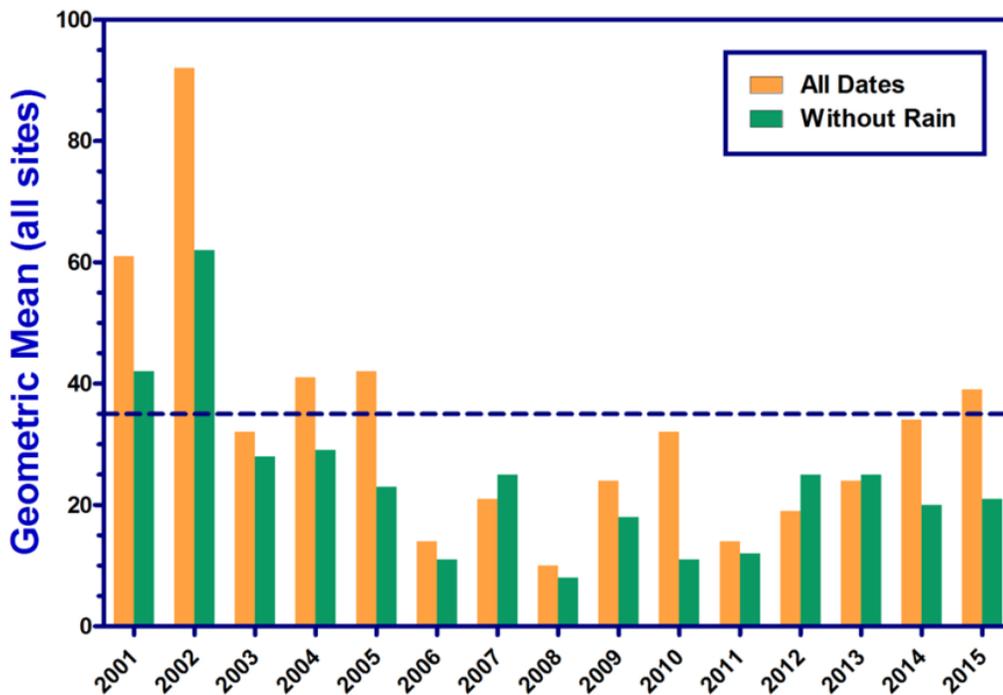


Fig. 5 Enterococci counts (CFU/100 ml) in the Magothy

We also measured the enterococci count entering the wetlands of Cattail Natural Area and at the fish ladder at Asbury Road, downstream of the wetland. We found an average of 35% reduction in bacterial numbers during a six week period. This reduction in the enterococci population as water moves through the wetland gives us an indication of the ability of a functional wetland to improve water quality.

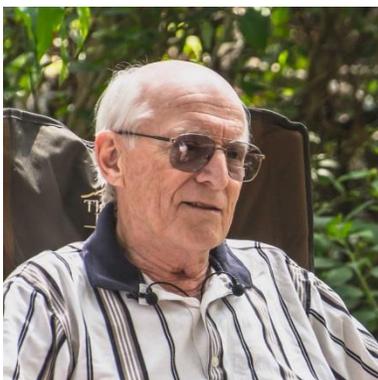
MRA Celebrates 70 Years

Since 1946 MRA has stayed true to its land use mission, while focusing on environmental programs and scientific data collection for water quality, fish species, oyster viability and longevity and monitoring submerged aquatic vegetation (SAV). MRA's past leaders like E. Gordon Riley and James Gutman, who have scholarships named for them at Anne Arundel Community College, have acted on their vision and passion for improving the quality of life along the Magothy River. The MRA has met environmental challenges with innovative programs that engage caring and passionate volunteers who want to make a difference where they live and play. Thanks to their efforts and thanks to your efforts, the Magothy is on the road to recovery. Join MRA and together we can restore the Magothy for generations to enjoy.

Ways To Get Involved

We have lots of activities for interested watershed residents:

- Waterfront residents can buy three plant floating gardens from the Providence Center or one plant gardens from the MRA. Contact Lise Crafton at mrafloatinggardener@gmail.com
- Subscribe to The Floating Gardener Newsletter published quarterly by Lise Crafton
- Learn water quality monitoring techniques in the field. Contact Paul Spadaro at president@mra.org
- Paddle in our creeks and look for SAV; post results on our Google map. Contact sally.hornor@gmail.com
- Help monitor construction sites for sediment runoff; contact Randy Bruns at rbbruns@verizon.net
- Volunteer for oyster gardening; contact Carl Treff at magothyriver savers@yahoo.com
- Volunteer to plant trees and help with trails at Beechwood Park, contact Kelly Kalinowsky at kellyjkalinowski@gmail.com
- Encourage students to apply for MRA scholarships at AACC
- Attend Magothy River Day on **June 11 2016** on the water.
- Do you have stories about growing up on the Magothy that you would like to share in our Living History project? Contact sally.hornor@gmail.com
- Thanks to Charles Germain, we have short videos on Living History, Floating Gardens, and Cattail Creek to name a few. Find them at YouTube Magothy River Assn or on our soon to be updated website magothyriver.org



This Index is dedicated to Charles Nolte, a true friend of the Magothy River and a long time Board member of the Magothy River Assn.

Charles Nolte 1937-2015