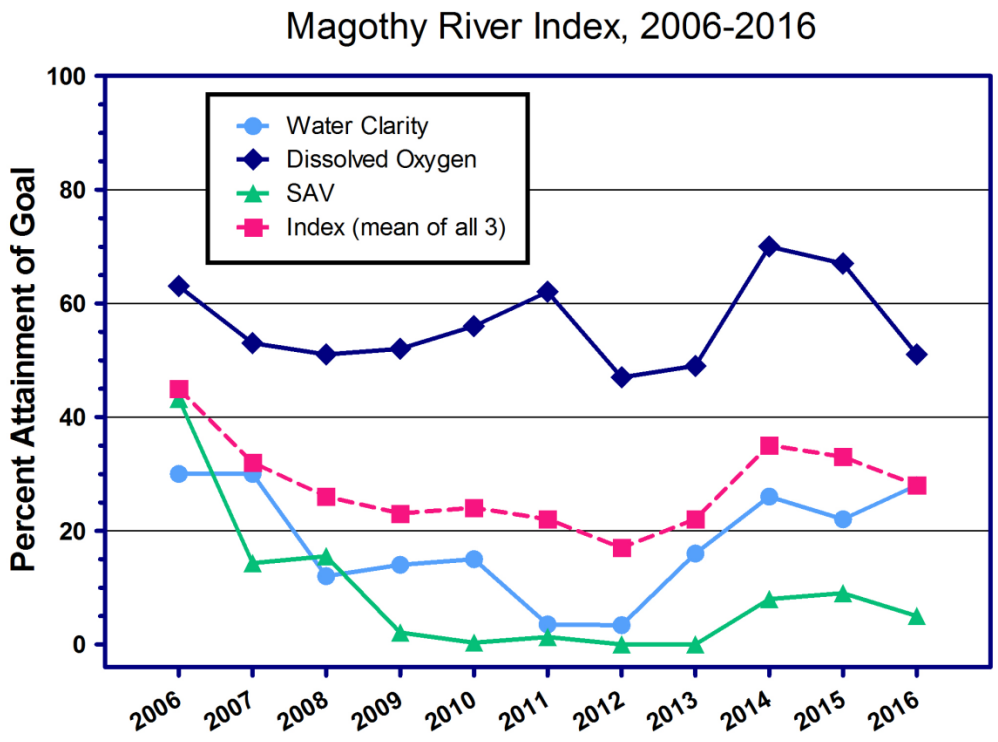
# Magothy River Index for 2016

*Presented at "State of the Magothy" 2/24/17 by the Magothy River Association*

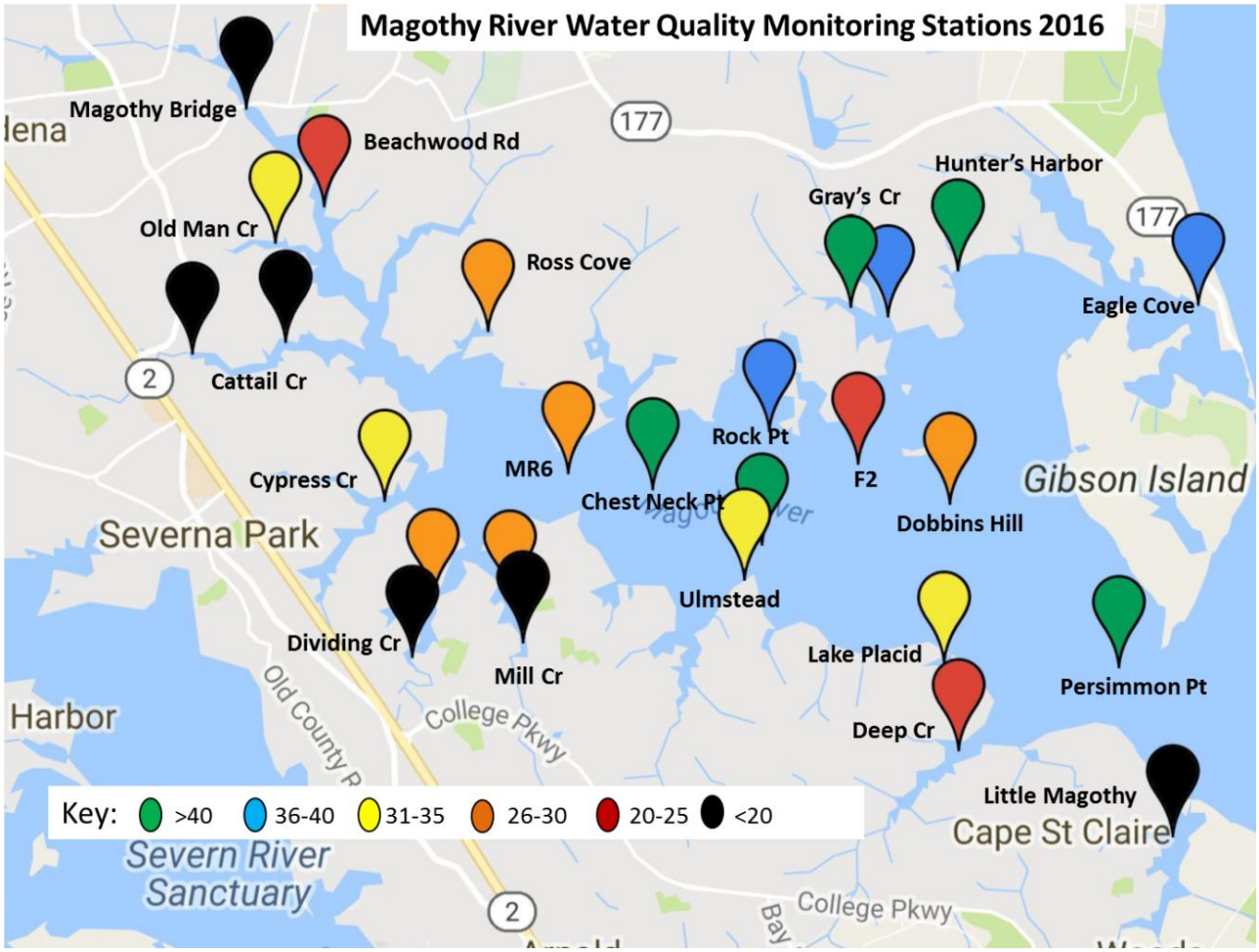
## Magothy River health fell to 28% in 2016

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 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
- percent attainment of the Chesapeake Bay Program Goal of 544 acres of submerged aquatic vegetation (SAV) as measured by the Virginia Inst. of Marine Science and BayLand Consultants & Designers, Inc.




SAV provides dissolved oxygen as well as 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. In 2016, BayLand only surveyed two creeks in the Magothy (Gray's and Cockey) and the upper mainstem of the River, finding 21 acres of grasses. VIMS data from 2016 showed 7 acres of SAV in Magothy Narrows and Cool Spring Cove. The total SAV coverage is 28 acres which is 5% of the desired goal. This year's index is based on water clarity and DO data collected by volunteers from ten mainstem sites and fourteen creek or cove sites. We did not include the most upstream sites of Cattail Creek or Mill and Dividing Creeks in the final index since we did not have these measurements for any of the other creeks. Results for individual sites are shown on page 2. A rating of 28 is a D, lower than last year's index of 33, based on much lower levels of dissolved oxygen but slightly improved water clarity. SAV coverage was nearly identical. River water in the mainstem was almost 2°C warmer in 2016, which is an 8% increase in water temperature compared to 2015. Warmer water holds less oxygen and supports accelerated algal growth, resulting in algal blooms which eventually die off, reducing oxygen concentrations in the deeper water.

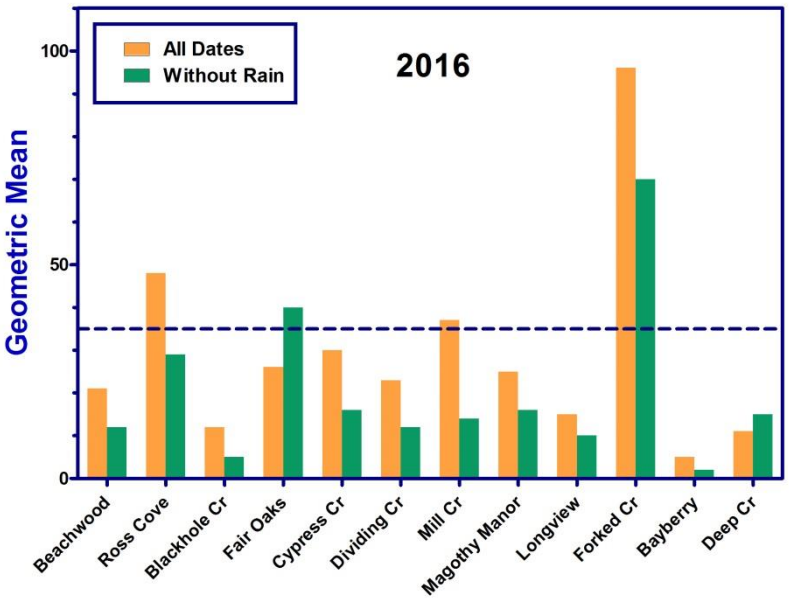



We thank our volunteer monitors for their dedicated work this year: the Mill/Dividing/Cypress Creek and Ulmstead sites were monitored by Steve Troy, Dave Kemp and Mike and Trish Lehman; Chris Kerchner monitored the Little Magothy, Deep Creek and Lake Placid sites while Paul Spadaro, Bob Royer and Bill Houghton monitored Cattail, Old Man and Gray's Creek plus the mainstem and cove sites of Magothy Bridge, Beachwood Road, Ross Cove, Hunter's Harbor and Eagle Cove. Dick Carey continued to monitor seven open water sites, with assistance from Tonya Powell. 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. Colored points on the map represent attainment of water clarity ≥ 1 m, DO ≥ 5 mg/L and percent of subwatershed covered by submerged aquatic vegetation. Magothy Bridge was a new site added for 2016. We sincerely thank waterfront property owners for access to their piers.

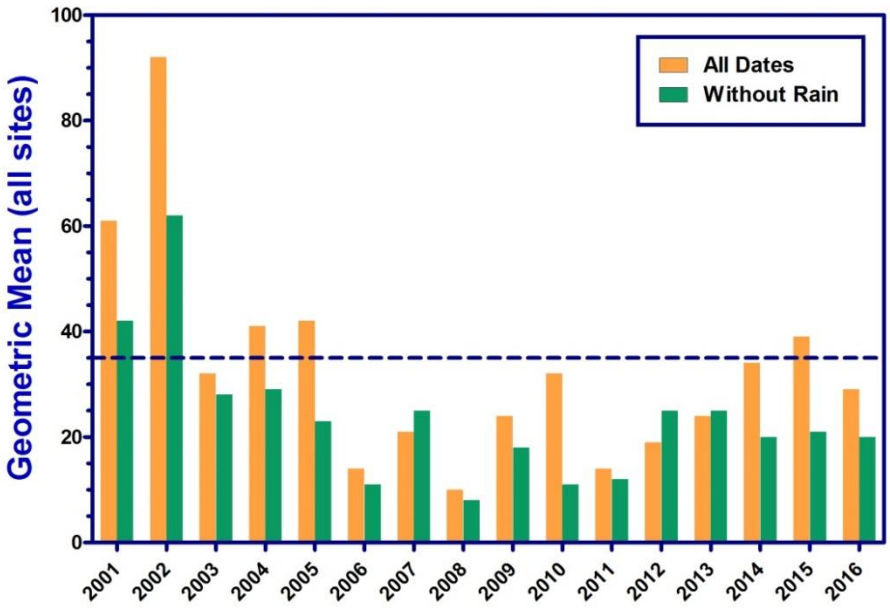
We also thank Bayland Consultants for providing acres of SAV coverage. MRA volunteers also looked for SAV in small boats this year but we were not able to measure acres covered accurately. SAV was not found in Cattail Creek or the Little Magothy but was found in many of the other creeks that were visited. We found horned pondweed (*Zanichellia palustris*) in many of our creeks early in the season and what appeared to be healthy beds of Widgeongrass (*Ruppia maritima*), small patches of Eurasian Watermilfoil (*Myriophyllum spicatum*), Wild Celery (*Vallisneria americana*) and Redhead (*Potomogenton perfoliatus*) in James Pond and Bodhal Pond late in the season. Although horned pondweed completes its life cycle by June and floats away, it does provide good early season habitat and food.

# Bacterial water quality was good in 2016

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 (https://ola2.aacc.edu/tldomanski). In the figure to the left, 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 CFU/100 ml, which is the upper limit for safe recreational use. Heavy rains produce stormwater runoff, sweeping pet and wildlife waste into our creeks. The one site with high counts this year, Forked Creek, is in an area surrounded by septic systems plus several major storm drains.




*Enterococci (CFU/100 ml) at Magothy sites*




*Enterococci counts (CFU/100 ml) in the Magothy*

The second figure 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 in the 48 hours following a heavy rain is not recommended.

In a separate study, we measured both the amount of sediment and the enterococci count entering the wetlands of Cattail Natural Area and at the fish ladder at Asbury Road, down stream of the wetland. Ten samples were collected between June and December. We found a 40% reduction in enterococci and a 55% reduction in suspended sediments. This reduction in the enterococci population and in suspended sediments as water moves through the wetland gives us a good indication of the ability of a functional wetland to improve water quality.

## MRA Completes the Water Trail

After several years, we have completed the brochure for the water trail. We first made them available at our 70th Anniversary Crab Feast in October 2016. They will also be available at kiosks placed at our two new County public water access sites, Beechwood Park and Spriggs Farm. They are also available at Ferry Point Marina and at The Point restaurant and at Deep Creek restaurant and other marinas. One of the most popular aspects of the water trail are the videos taken by drone over most of the creeks by Charles Germain. We thank Charles and Andrea Germain for their work on this brochure.

## Yellow Perch Survey Successful

Last spring the MRA undertook a study to determine if yellow perch are able to successfully reproduce in the River. With the help of Margaret McGinty and Jim Uphoff of MD Dept. of Natural Resources Fisheries program, we counted almost 200 egg chains deposited by yellow perch females in the upper Magothy in February, representing many thousands of eggs. In March, we traveled to 10 stations in the upper Magothy with Dick Carey at the helm, fishing for yellow perch larvae with a net. We did indeed collect larval yellow perch in 10% of our samples. We plan to continue this study in 2017. Paul Spadaro, President of MRA says "***2016 yellow perch survey indicates that the yellow perch are trying to make a comeback. With a little help protecting their habitat the fish can be restored 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 to place at their waterfront. Download copies of The Floating Gardener Newsletter at our website, magothyriver.org. We thank Lise Crafton for this timely information published quarterly.
- 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 at gmail.com.
- Help with the yellow perch survey this spring; volunteers can contact Sally.Hornor at gmail.com.
- Help monitor construction sites for sediment runoff; contact Randy Bruns at rbbruns at verizon.net.
- Volunteer for oyster gardening; contact Carl Treff at magothyriversavers@yahoo.com.
- Volunteer to help with trails at Beechwood Park, contact kellyjkalinowski at gmail.com.
- Encourage students to apply for MRA scholarships at AACC.
- Do you have stories about growing up on the Magothy that you would like to share in our Living History project? Contact sally.hornor at gmail.com.
- Thanks to Charles Germain, we have many short videos on Living History, Floating Gardens, and drone views of our creeks. See the listing in the Water Trail Brochure and find them at YouTube MRA.
- Launch a canoe, kayak or SUP at our two new public water access sites made possible by the Anne Arundel County Dept of Parks and Recreation. Thanks to County Executive Steve Schuh for making these launch sites possible. And thanks to Tom Caperna for building the kiosks with information at these two sites.

This newsletter prepared by Sally Hornor, graphics help from Tom Caperna. Thanks to Sandy Spadaro for editing.