GLOBAL CHANGES IMPACT OUR RIVER

According to NASA and NOAA scientists, the past three years were the hottest on record - each year topping the previous one. The signs of a globally changing climate become more evident with each passing year as incrementally increasing temperatures lead to more frequent and severe storms and prolonged coastal flooding.

But how do these changes impact our local communities and the ecosystem of the Sassafras River? Below are just a few examples of how the changing global climate can impact our community, and what we can do to mitigate these negative and potentially dangerous effects.

Warmer air temperatures result in an increase of water temperatures in the Chesapeake Bay and its tributaries (ie: the Sassafras River). While swimmers may rejoice in the warmer water and longer swim season, it also threatens our local water bodies by fostering rapid growth of bacteria and algae. This sometimes results in harmful algal blooms, and can result in local fish kills.

In addition, the seasonal uptick in storms will likely result in more severe coastal flooding. As high water recedes, it carries fertilizers, bacteria, spilled oil, trash, and even leaked septic effluent, transporting the pollutants into our rivers and bays - further impairing our precious water bodies.

By monitoring important river health indicators, such as temperature, turbidity, dissolved oxygen, and nutrients, Sassafras River Association tracks seasonal and yearly trends in the health of the Sassafras. The monitoring efforts by our RIVERKEEPER® and year-round volunteers allow us to identify and fix sources of pollution, helping to restore and protect our river.

Sassafras Samplers work hard for the river!

Remember that what we do on land has a profound impact on the quality of the water that we all enjoy and rely on. The pollution in the Sassafras is local pollution. It comes from the land around the river.

Clean water increases tourism, business, and the value of properties in the watershed.

We all benefit from a cleaner river. As water temperatures continue to rise in future years, we must be more aware of how our everyday actions affect the health of our beautiful Sassafras River.

WHAT'S THE DAM PROBLEM?

The Susquehanna River is responsible for much of the sediment and nutrient pollution in the Chesapeake Bay, but the Conowingo Dam is sometimes targeted with the blame. The Dam has been an effective sediment trap for nearly 90 years, but the sediment trap behind the Dam is so full now that fast flowing waters from large storms in the Susquehanna watershed cause scouring, and pour sediment into the Bay in large quantities.

Some claim that when scouring occurs at the Dam, the work of watershed organizations like the Sassafras River Association is negated. To the contrary, a decade of extensive tidal and non-tidal water quality testing clearly shows that the highest concentrations of sediment and nutrients in the Sassafras are in the headwaters of the river - and that's where we implement our restoration projects. There are legitimate reasons to advocate for dredging the sediment trap at the Conowingo Dam, but the myth that storm surges negate the work of watershed organizations is not one of them.

If we are serious about our goal to "Save the Bay", we must concentrate on cleaning the rivers that flow into the Bay. Our restoration projects will continue to provide benefits into the future - regardless of what happens at the Conowingo Dam.

SRA is a member of WATERKEEPER® ALLIANCE, Waterkeepers Chesapeake, and a number of other organizations in order to network, communicate issues, and share initiatives. We are active in the Cecil County Watershed Implementation Plan (WIP) Advisory Committee and the Kent County WIP Committee. We also participate in the Upper Shore WIP and the Eastern Shore WIP groups.

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The Sassafras River Association is a 501(c)(3) nonprofit organization. Donations are tax-deductible to the extent allowed by law.

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Science-based

Advocacy

Restoration

Outreach

Restoring the health of the Sassafras River

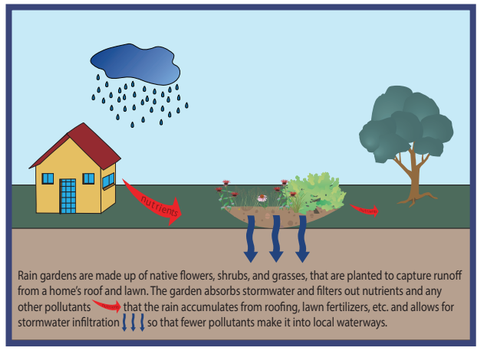
WE LOVE BMPs!

A BMP, or Best Management Practice, is any endeavor that reduces the negative impact of human activity on the river. There are many BMP's being implemented by homeowners, farmers, and boaters in our watershed.

The wastewater treatment plants in Betterton and Galena are being upgraded with Enhanced Nutrient Removal systems, greatly reducing nitrogen and phosphorus emissions into our waters.

Farmers are implementing grass waterways, cover crops, vegetative buffers, no-till practices, and GPS-targeted nutrient application. The Sassafras River Association has worked with local farmers to install treatment wetlands, and to construct projects which reduce gully and stream erosion.

Homeowners are using rain barrels, constructing rain gardens, removing or reducing impervious surfaces, installing Best Available Technology septic systems, routinely pumping out their septic tanks, and applying fertilizer only after having a soil test to establish the amount needed. These BMPs are not only good for the river, but also may enhance property values!



More and more boaters understand that they should always use pump-out facilities at marinas. It's important to know that bacteria-killing marine sanitation devices do not remove any nitrogen or phosphorus, and therefore add to the pollution of the river.

The BMP that we all can implement is proper trash disposal. Every April, the Sassafras River Association conducts a watershed cleanup where volunteers walk the river banks and roads in our watershed picking up trash. The amount of trash we collect every year is astonishing.

We invite you to join the SRA! Help us educate more and more people, so that every resident and visitor in the Sassafras River Watershed can say, "We love BMP's!"

SCIENCE-BASED WATER QUALITY SAMPLING:

THIS ANNUAL SASSAFRAS RIVER REPORT CARD is primarily a report on the water quality of the tidal and non-tidal segments of our watershed. Water samples are taken and analyzed either with our own scientific equipment or at the University of Delaware. SRA uses protocols and standard operating procedures established by the Mid-Atlantic Tributary Assessment Coalition.

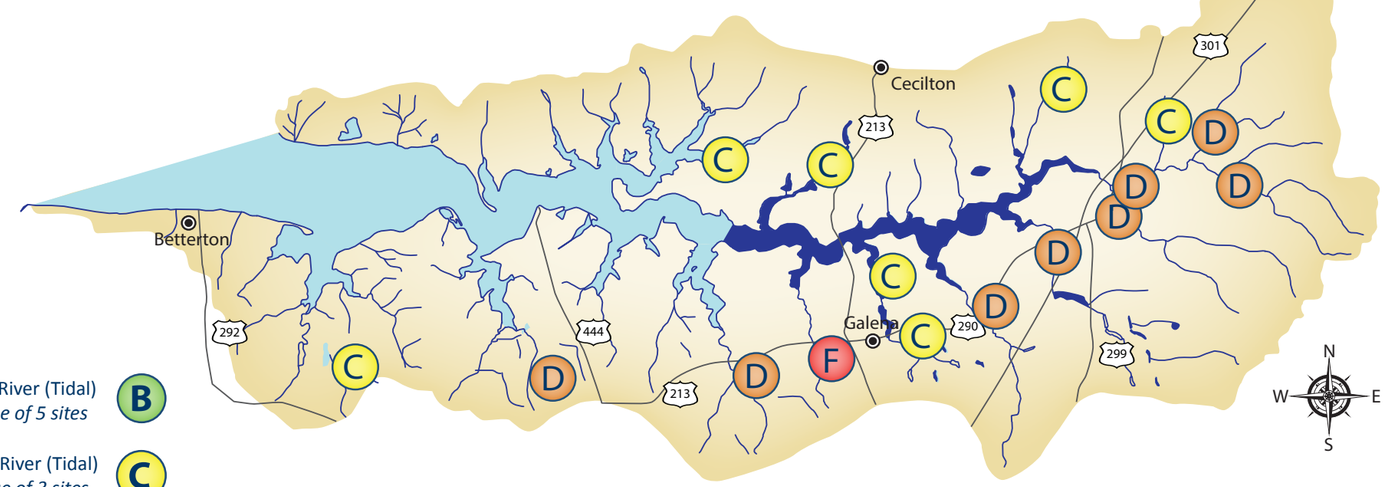
TIDAL: Eight sites on the Sassafras River are sampled for water quality indicators – dissolved oxygen, specific conductivity, temperature, total nitrogen, total phosphorus, salinity, turbidity, pH, and chlorophyll-a. Our RIVERKEEPER™ samples seven sites weekly from April through October, and one site is electronically monitored by the Maryland Department of Natural Resources for the same indictors every 15 minutes throughout the year. The grading includes SAV (submerged aquatic vegetation), which is measured in acres by the Virginia Institute of Marine Science.

NON-TIDAL: The Sassafras River Association is fortunate to have 24 trained - and periodically re-trained - volunteers who conduct year round water quality monitoring at 16 sites on the non-tidal streams that run into the Sassafras River. We proudly call our volunteers the "Sassafras Samplers."

OUR MISSION:

The Sassafras River Association is dedicated to promoting good water quality, a balance among recreation, wildlife and economic activity, and an educated community that takes action to restore and maintain the health of the watershed.

Individual Creek (Non-Tidal) Grades



Lower River (Tidal) *Average of 5 sites* — B

Upper River (Tidal) *Average of 3 sites* — C

Creek (Non-Tidal) Final Grade *Average of 16 sites* — D

What do grades mean?

- **A** All water quality and biological health indicators meet desired levels (80-100%) leading to very good habitat conditions for fish and shellfish.
- **B** Most water quality and biological health indicators meet desired levels (60-79%) leading to good habitat conditions for fish and shellfish.
- **C** There is a mix of good and poor levels of water quality and biological health indicators (40-59%)leading to fair habitat conditions for fish and shellfish.
- **D** Some or few water quality and biological health indicators meet desired levels (20-39%) leading to poor habitat conditions for fish and shellfish.
- **F** Very few or no water quality and biological health indicators meet desired levels (0-19%) leading to very poor habitat conditions for fish and shellfish.

River (Tidal) Health Indicators		Lower River	Upper River
Dissolved Oxygen		A	A
Water Clarity		C	C
Chlorophyll-*a*		A	D
Aquatic Vegetation		F	F
Nutrients	Total Nitrogen	A	B
	Total Phosphorus	A	C

Creek (Non-Tidal) Health Indicators	
Dissolved Oxygen	A
Turbidity	F
Total Nitrogen	D
Total Phosphorus	B
Creek Bed Organisms	F